5.4 Methodology of Irrigators' Associations Establishment

5.4.1 General

(1) Necessity for Establishment of Irrigators' Association (IAs)

As referred to previously, the NIA's operation and maintenance works on the national irrigation systems cover all facilities except those downstream from the turnouts. The national investment for irrigated agriculture development projects are commonly borne fully or postly by governments so to meet requirements of national agricultural policies and the demand-and-supply for food through encouraging agricultural activities.

The Philippine government has taken a policy of total investment by government in agricultural development until those beneficiary farmers are well developed and they can repay the investment. On the other hand, the post-project O & M services for major facilities are commonly carried out by either of the two ways; in the Philippines NIA has rendered O & M services for major irrigation facilities, and the farmers have responsibility for O & M works at the on-farm level the necessary costs for which have been collected from beneficiary farmers concerned as "irrigation fees" at a fixed rate in every cropping season.

Orginally, however, it was deemed appropriate that beneficiary farmers should be responsible for making O & M services of the facilities and bear the necessary costs. As described in the Chapter on the Project Area, the critical issue in this respect in the AMRIS area is similar in nature to the other projects' where accumulated national expenditures have much pressed the national budget. As a countermeasure to alleviate a heavy budgetary burden, it is recommended that the beneficiary farmers shall be formed into

groups to carry out part of the O & M work of the facilities. Such works by beneficiary farmers themselves will enable NIA to render better quality services in irrigation water supply.

In other respect, NIA has long taken the initiative in major parts of planning and construction of the national irrigation projects, and such project management and O & M services undertaken by NIA have had the beneficiaries away from these works. Under the circumstances, resolution of this problem will reasonably require the establishment of an organically close relationship between NIA and beneficiary farmers through appropriate organization of proposed Irrigators' Associations.

(2) Specific Tasks of Irrigators' Association

The farmers' groups or association relating to farm production will cover the following various tasks; procurement of farming materials, crediting, sales of materials, agri-extension services, agrarian reform, and so forth.

It is no exaggeration that the multiplier effects created by functions of the above farmers' group for agricultural production, irrigation water supply and O & M services for facilities have been running successful farm management. There will be no organizations superior in functions to a comprehensive organization for successful accomplishment of the said purposes. At present, however, a variety of agriculture policies taken by government will cause difficulties in making up a comprehensive organization in a short period.

From these view points, the major tasks of the Irrigators' Association (IA) should be, in principle, to carry out O & M and rehabilitation of the local irrigation/drainage

facilities, roads and water management, and to collect the necessary irrigation fees. It is suggested, however, that the said organization should be raised to a comprehensive agricultural production organization through gradually staged future development.

(3) IA's Organization by Staged Development

The Philippine rules define that the beneficiary farmers should bear part of project construction costs and the necessary operation and maintenance costs. Besides the national irrigation projects, NIA shall control the national pumping irrigation projects and communal irrigation projects. The communal irrigation projects, as a rule, shall be implemented by NIA through feasibility study with designing and suveying in details after receiving project application submitted by 15 representatives of beneficiary farmers. Such projects, when completed, will be handed over to beneficiary farmers on the condition that the beneficiary farmers shall bear the necessary project costs and carry out the O & M works. The national irrigation projects managed by NIA in every respect and part of the project costs shall be recovered without interest by the beneficiary farmers. Consequently, the successful management and control made by IAs for projects larger in size and facilities will require a gradual and steady development of the IAs according to the results of prudent study on growing process and capability of the IAs.

The irrigation water is commonly supplied to terminal facilities through the main, lateral and sub-lateral canals from the diversion facilities. And conflicts of interests among IAs and individual members have often been caused in close relationship with facilities provided in the Project. Under the circumstances, the turnover of the facilities to the proposed irrigators' associations shall be made step by

step from the transfer of the on-farm level facilities as a first stage to the sub-lateral canal systems for their successful O & M services. Then the transfer of the second and the third stages shall proceed from the lateral canal systems to the main canal systems to cover the O & M works of the larger areas.

(4) Methodology of Establishment of Irrigators' Associations

A successful establishment of an irrigators' association will essentially require for beneficiary farmers to voluntarily and positively participate in it.

It is demand indispensable to render government financial assistance in the transitional period and powerful administrative guidance throughout the period. At present, NIA has been trying a variety of methods for the purpose, each of which has its own merits and demerits. The AMRIS Project, however, will employ a bottom to top method to take farmers as the terminal group so as to have a gradual development of the organization available through the FIOP (Farmers Irrigator Organizer Program) so that leading farmers should be the core organizers for the expansion of the association.

(5) Time to be Required for Establishment of Association

A gestation period for organizing the association should be studied taking into account such factors of the associations as size, number of members, administrative capacity of NIA, staffing plans, financial assistances available, procedures and components of organization, training of organization staff, etc.

The first stage organization of farmers will be made on the basis of about 120 ha to 200 ha to be commanded by sub-lateral, totaling about 240 associations in number,

each of which will consist of about five groups per unit of turnout level covering 28 ha (total number of groups: about 1,230). Improvement and consolidation of the on-farm level facilities is considered vitally important for assurance of the farmers' consensus for the works, and a successful establishment of an association will take about five years in view of the program of various construction works and partial benefit accrual from the Project, etc. Furthermore, the abve 240 associations shall be divided into three major groups from the view point of staffing plan for administrative guidance and training, and the services of these three groups will staff at the first project year, the second and the third, respectively, for effective organization procedures.

5.4.2 Executing Body for Establishment of Irrigators' Association and Mobilization Plan

(1) Organization and System of NIA

An illustrated in Figure B.5.2-1, the executing organization for establishing the associations consists of the Administrative Division, Institutional Development Divison, Construction Division, Operation and Maintenacne Division under the control of NIA's AMRIS office Irrigation Superintendent-V, and various committees.

The Institutional Development Division (IDD) of NIA will be fully and directly responsible for establishing the associations, and other NIA's divisions shall cooperative with IDD for smooth execution of the works.

In commencing the Project works, the proposed North and South Zone Engineer Offices are to be provided in the respective sites, and the former controls seven working stations existing as No.6 to No.12, while the latter five working stations existing as No.1 to No.5. These two offices

FIGURE B.5.4-1 MAJOR ACTIVITIES ON THE ESTABLISHMENT OF IRRIGATORS ASSOCIATIONS 1/4

Phase and Major Activities		1st				2nd				3rd				4th				5th			
Major Activities	Detailed Description	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I. Phase-1	Establishment of IA at Sub-lateral Level																				
A. Management and Coordination	Mainly NIA activities																				
1. Management Evaluation																					
1.1. Project Orientation	Orientation of the project development	Once																			
1.2. Management and Evaluation Committee	Management and evaluation of overall project implementation on the institutional development	Once every two months																			
2. Coordination																					
2.1. Data Collection and Assessment	Data collection and assessment of beneficiary farmers in the project area																				
2.2. Activities Planning	Preparation and revision of overall project activities planning																				
2.3. Selection and Recruitment of FIO	Selection and recruitment of 240 farmers irrigators organizers (FIO)	Once																			
2.4. Assignment of SFIO	To assign supervisor of FIO from WMI in respective sections (SFIO)																				
2.5. Consultation with Farmers	Consultation with farmers on the establishment of IA and on-farm development																				
2.6. Coordination Meeting	Work progress and coordination meeting between coordination group and FIOs	Once a month																			
2.7. Supervisory, Assessment Meeting	Assessment of the activities	Once a month																			
2.8. Technical Inputs to FIOs	Guidance of the organizational and systems management to FIOs	Continuously																			
2.9. Staff Development	Formal staff development seminar	Once every 4 months																			
2.10. Partial Turnover	Partial turnover documentation																				
B. Organizational Development	Mainly FIOs activities																				
1. Survey/Data Collection																					
1.1. Identify Group Leader	Identify some group leaders in each terminal group																				
1.2. Data Gathering and Verify	Data collection of local condition and general information																				

FIGURE B.5.4-1 MAJOR ACTIVITIES ON THE ESTABLISHMENT OF IRRIGATORS ASSOCIATIONS 2/4

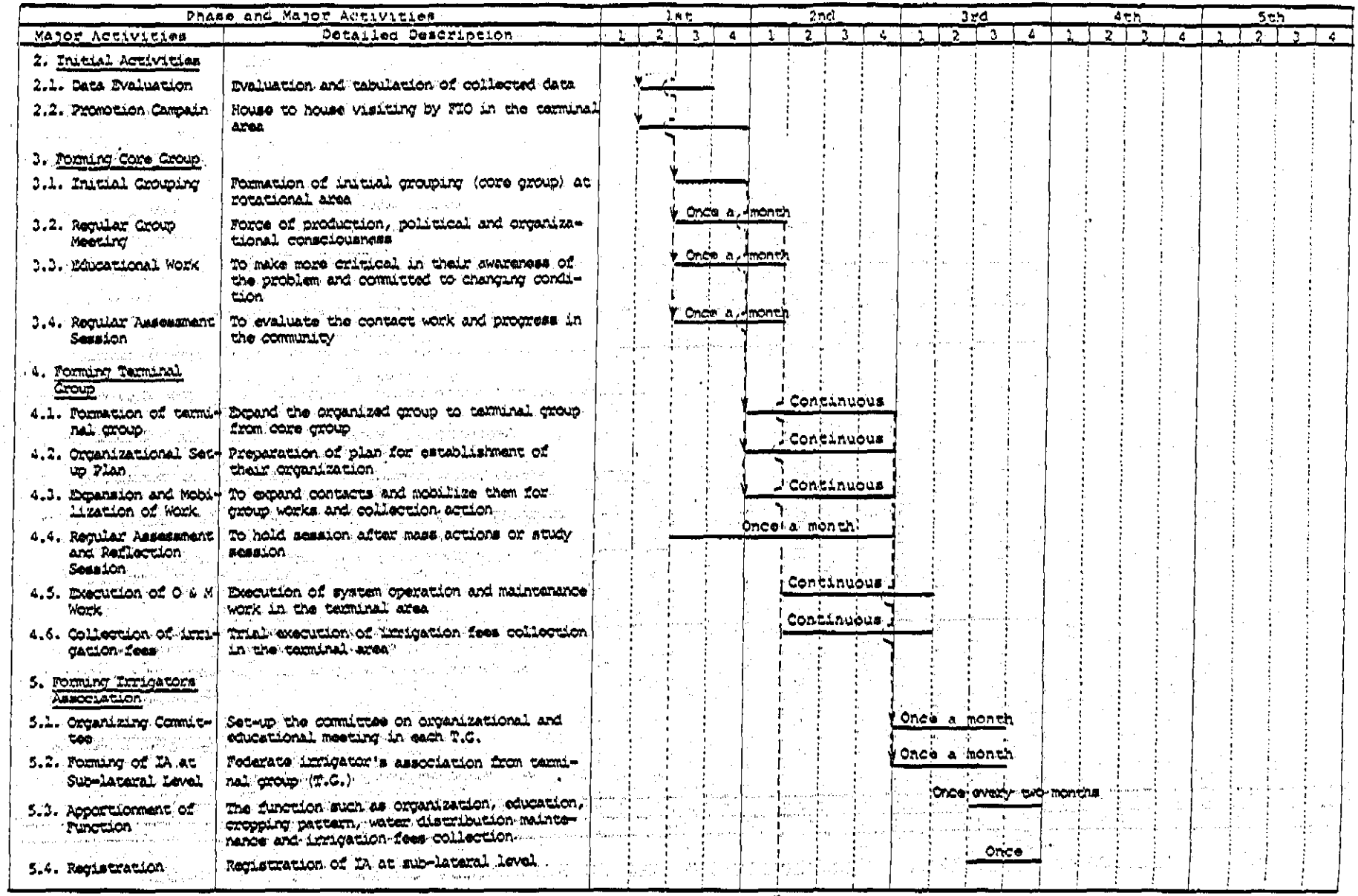


FIGURE B.5.4-1 MAFOR ACTIVITIES ON THE ESTABLISHMENT OF IRRIGATORS ASSOCIATIONS 3/4

Phase and Activities		1st				2nd				3rd				4th				5th			
Major Activities	Detailed Description	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C. Action Research																					
1. Diagnosis, Data Gathering and Processing																					
1.1. Diagnosis	Diagnostic framework on FIO supervision, respective stage organization						Continuously														
1.2. Data Gathering and Processing	Data gathering, processing and documentation																				
1.3. Data Feedback, Analysis	Discussion and analysis the data collected						Once every 4 months														
2. Action and Monitoring																					
2.1. Action Taking	Action taking based on the analysis						Continuously														
2.2. Monitoring and Evaluation	Repeat data gathering from the result of monitoring and evaluation						Once every 4 months														
D. Training Program																					
1. NIA Staff Training																					
1.1. Orientation Seminar	Orientation seminar of the project implementation	Once																			
1.2. Seminar on IA Establishment	Workshop on the establishment of irrigators association	Once																			
1.3. Seminar on IA Business Operation	Seminar on the business operation of IA		Once																		
1.4. SFIO Formal Development	Upgrading technique and knowledgement of institutional development						Once every 4 months														
2. Farmers Training																					
2.1. Establishment of IA	Concept and manner of establishment of IA		Once		twice																
2.2. Business Operation of IA	Business operation practice of IA			Once			Once														
2.3. Field Water Management Practice	Workshop on field water management and control practice				Once		Once a month														
2.4. System Maintenance Practice	Workshop on the system maintenance practice				Once		Once a month														
2.5. Practice of Irrigation fees Collection	Workshop on the irrigation fees collection				Once		Once a month														
2.6. FIO Formal Development	Upgrading technique and knowledgement of institutional development																				

FIGURE B.5.4-1 MAJOR ACTIVITIES ON THE ESTABLISHMENT OF IRRIGATORS ASSOCIATIONS 4/4

Phase and Major Activities		1st				2nd				3rd				4th				5th			
Major Activities	Detailed Description	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
III. Phase-2	Establishment of Federation of Irrigators Association (FIA)																				
1. Management and Evaluation Committee	Management and evaluation of overall project implementation on FIA													Once every two months							
2. Coordination of the Activities																					
2.1. Activities Planning and Documentation	Activities planning of forming FIA and preparation of document related																				
2.2. Assessment and Coordination Meeting	Assessment of activities and resolution of problem areas													Once a month.							
3. Organizational Development																					
3.1. Organizational Set-up Plan	Preparation and creation of the organization of FIA at each lateral level													Continuously							
3.2. Registration	Registration of each FIAs																				
4. Training Program																					
4.1. O & M Practice	Training of O & M practice of the systems													3 time every 2 months							
4.2. Irrigation Fees Collection	Training of irrigation fees collection procedures and practice													3 time every 2 months							

are responsible for the establishment of the irrigators' associations and construction supervision as well as present O & M routine work. Of these, the establishment of the associations will be carried out concurrently with the O & M work, and the officer (Irrigators' Association Worker = WMT) in charge of association related work, who shall be assigned by IS-V shall assist the Farmers Irrigators' Organizer (FIO) who is to represent the beneficiaries in promotion of the association establishment. And the said WMTs shall cover the Area for six to seven proposed associations in general, and two assistants selected from ditchtenders will be assigned for one WMT so as to promote the procedures smoothly. The details are shown in Table B.5.2-1.

(2) Provision of Committees

In the process of establishing the associations, a variety of committees should be provided as follows for smooth execution and fair evaluation and guidance of the works.

1) Management and Evaluation Committee

A bimonthly regular committee shall be held to evaluate the works and give appropriate advice to the staff concerned with reference to the reports to be submitted by other committees, work progress, critical issues and action plans, etc. and an extra session shall be held from time to time when necessity arises. The Committee consists of the following members.

Chairman : Regional Irrigation Director-III
Members : Representative of Farmers Assistant Department of NIA Central
Members : Representative of System Management Department of NIA Central
Members : Irrigation Superintendent-V of AMRIS

Members : Manager of Operation and Maintenance Division of Regional Irrigation Office-III (RIO-III)
Members : Manager of Agricultural Coordination and Development Division of RIO-III
Secretaries: Manager of Institutional Development Division in AMRIS
Secretaries: Manager of Operation and Maintenance Division in AMRIS
Secretaries: Manager of Construction Division in AMRIS
Observers : Consultants

2) Coordination Committee

The committee will discuss and study matters regarding the establishment of the association that the IDD plans, executes and evaluates, and furthermore, will prepare the data/information and reference materials of the construction works, O & M works of existing facilities, design of on-farm facilities and coordinating works for cropping pattern during the construction period for the Management and Evaluation Committee.

The Committee shall be held on the monthly basis with the members as follows:

Chairman : Irrigation Superintendent-V of AMRIS
Members : Irrigation Superintendent-III of AMRIS
Members : Manager of IDD of AMRIS
Members : Manager of OMD of AMRIS
Members : Manager of CD of AMRIS
Members : Manager of AD of AMRIS
Members : Chief of North Zone Engineer Office
Members : Chief of South Zone Engineer Office
Secretaries: Chief of Farmers Organization Section of AMRIS
Secretaries: Chief of Engineering Supporting Section of AMRIS
Observers : Manager of ACDD in RIO-III
Observers : Representative of FAD in NIA Central
Observers : Consultants

(3) Employment of Farmers' Irrigator Organizer (FIO)

A FIO will be selected following the procedures below:

For the unit area (acreage: abt.150 ha) along the sub-lateral where an association is to be established, the NIA staffs of SWMT, WMT and IDD will make a preliminary selection according to the following rules.

(i) A candidate for FIO should be well-qualified as a beneficiary farmer in the proposed association unit area, and be a high school graduate or equivalent.

(ii) A existing compact farm association leader, if qualified as above, can be preferably considered as candidate.

(iii) A leader or person who is in a position to take leadership in a local society like Barangay can be selected as a candidate.

According to the above, condidates shall be selected in every group as proposed leaders of terminal groups and then, FIO shall be selected from these candidates, The preliminary selection also will be made for every working station by staffs of SWMT, WMT, DT, etc. IDD will check and study the candidates' lists submitted by each working station and then, the Coordination Committee will deliberate the results. The candidates who are finally selected at the deliberation of the Coordination Committee will be assigned as FIOs by Office Chief of AMRIS (IS-V) with approval of the Management and Evaluation Committee. The groups of the beneficiary farmers, which shall be engaged in establishing the associations will consist of the following members for expediting the works:

- Farmers' Irrigation Organizers (FIO):
  One FIO will be selected for an area of about 150 ha to be responsible for general matters of the establishment of the association.

- Assistants to FIO: One assistant to FIO will be assigned for an area of about 30 ha, selected from the terminal group, so as to assist the FIO in the execution of the works and to be appointed as leaders of the Terminal Groups in future; consequently, five to six assistants will be assigned for one association.

(4) Staffing Plan of NIA

The staffing plan of NIA for establishing the association is shown as follows:

(i)	Institutional Development Division (IDD)	(25 persons)
	Secretariat Staff to Division Chief	3 persons
	Engineering Supporting Section	6 persons
	Farmers Organization Section	16 persons
(ii)	North Zone Engineers Office	(84 persons)
	WMT (Concurrent)	28 persons
	DT (Concurrent)	56 persons
(iii)	South Zone Engineers Office	(54 persons)
	WMT (Concurrently)	18 persons
	DT (Concurrently)	36 persons
	Total	163 persons

The staffs of both the North and the South Zone Engineers Offices consist of WMT and DT, and shall carry out O & M works on the existing facilities together with promoting the establishment of the associations and giving advice and assistance to FIOs when appropriate. It is considered reasonable that the WMT and DT who have much knowledge and experience in O & M of the existing irrigation facilities in the Project Area and in who keep close contact with the beneficiary farmers, should give advice and guidance to the FIOs.

TABLE B.5.4-1 COST REQUIRED OF IAs ESTABLISHMENT FOR PHASE-1

(Per 1,000 hectares)

Work Description	Frequency	Persons	Amount 1/	Remarks
1. Project orientation	Once	20	₱ 125	Refer to Fig.B.5.4-1, item A.1.1
2. Management, evaluation committee	Once/two months	20	2,250	" " " A.1.2
3. Recruitment of FIOs	Once	140	11,200	" " " A.2.3
4. Coordination meeting	Once/a month	9	17,040	" " " A.2.6
5. Supervisory, assessment meeting	"	9	17,340	" " " A.2.7
6. Technical inputs to FIOs	"	42	138,240	" " " A.2.8
7. Seminor of staff development	Once/four months	2	1,612	" " " A.2.9
8. Assessment session	12 times	105	2,475	" " " B.3.4
9. Terminal group meeting	Continuously	105	12,600	" " " B.4
10. Irrigators association meeting	"	105	11,200	" " " B.5
11. Travel, allowance for FIO and LTG	Continuously	42	66,150	" " " B.4
12. Workshop on diagnostic work	"	L.S	800	" " " C.1.1
13. Data gathering, processing	"	"	5,400	" " " C.1.2
14. Data feedback and action planning	Once/four months	"	4,500	" " " C.1.3
15. Monitoring and evaluation	"	"	4,500	" " " C.2.2
16. Orientation and seminor of NIA staff	Three times	25	159	" " " D.1.1
17. SFIO staff development	Once/four months	25	2,961	" " " D.1.4
18. Pre-deployment training	Eight times	42	18,400	" " " D.2
19. Pre-deployment practice	Once/a month	42	18,480	" " " D.2
20. FIO development	Once/four months	42	14,107	" " " D.2.6
Total			349,539	

Note 1/: Refer to TABLE B.5.4-3

TABLE B.5.4-2 COST REQUIRED OF FIAs ESTABLISHMENT FOR PHASE-2

Work Description	Frequency	Persons	Amount 1/	Remarks
1. Management, evaluation committee	Once/a month	52	1,500	Refer to Fig. 4.4-1, item 1
2. Supervisory, assessment and planning	Twice/a month	279	10,960	" " " 2
3. Coordination meeting	Once/a month	279	10,960	" " " 2
4. Recruitment of IA officer	Once	L.S	1,530	" " " 3
5. Pre-deployment training	"	12	1,740	" " " 4
6. Formal staff development	"	12	2,310	" " " 3
7. Session with supervisor	3 times/a month	12	47,520	" " " 3
8. Workshop on diagnostic work	Once	L.S	800	" " " 2
9. Data gathering, documentation	Continuously	"	4,500	" " " 2
10. Data feedback and action plan	Once/four months	"	3,000	" " " 2
11. Monitoring and evaluation	"	"	1,500	" " " 2
Total			86,320	

Note 1/: Refer to TABLE B.5.4-4

TABLE 8.5.4-3 BUDGETARY REQUIREMENT OF IAs ESTABLISHMENT FOR PHASE-1 (1/4)

Work Description	Items of Estimation		Calculation
1. Project Orientation Figure 4.4-1 (A.1.1)	1) Travelling Expenses of NIA Specialist	(400) 3/	₱ 1500 3/ per meeting in whole project 3 meeting per 1000 ha:1500 x 3 1/ x 1000/36000 2/ = 125
	2) Miscellaneous for Meeting	(50)	
	3) Gasoline Allowance of Field Staff	(800)	
	4) Supplies & Materials	(250)	
2. Management, Evaluation Committee Figure 4.4-1 (A.1.2)	- ditto -		₱ 1500 3/ per metting in whole project 3 meeting During 3 year 18 meeting per 1000 ha:1500 x 3 1/ x 1000/36000 2/ x 18 = 2250
3. Recruitment of FIOs Figure 4.4-1 (A.2.3)	1) Meals/Snack	(700)	₱ 1600 3/ per meeting (on IA area) per 1000 ha:1600 x 252 1/ x 1000/36000 2/ = 11,200
	2) Supplies & Materials	(500)	
	3) Gasoline Allowance of Field Staff	(150)	
	4) Miscellaneous for Meeting	(250)	
4. Coordination Meeting Figure 4.4-1 (A.2.6)	1) Travell/Incentive Allowance of FIO	(1400)	₱ 2840 3/ per meeting in whole project 6 meeting per 1000 ha:2840 x 6 1/ x 36 4/ x 1000/36000 2/ = 17040
	2) Travell Expenses of NIA Specialist	(400)	
	3) Miscellaneous for Meeting	(50)	
	4) Gasoline Allowance	(550)	
	5) Incentive Allowance of Supervisor of FIO	(240)	
	6) Supplies & Materials	(200)	

Note :
1/: The number in frequency of meeting for the whole Project Area.
2/: Converted into the cost per 1000 ha.
3/: Figure in parenthesis show the costs to be required by spending items for a meeting.
4/: 36 months = 3 years
5/: The cost with ₱ show the total expenditures in a meeting.

TABLE B.5.4-3 BUDGETARY REQUIREMENT OF IAs ESTABLISHMENT FOR PHASE-1 (2/4)

Work Description	Items of Estimation		Calculation
5. Supervisory, Assessment Meeting Figure 4.4-1 (A.2.7)	1) Travell/Incentive Allowance of FTO	(1400)	₱ 2890[5] per meeting
	2) Travelling Expenses of NIA Specialist	(400)	in whole project 6 meeting
	3) Miscellaneous for Meeting	(100)	per 1000 ha: 2890 x 6[1] x 36[4] x 1000/36000[2]
	4) Gasoline Allowance	(50)	= 17340
	5) Incentive Allowance of Supervisor	(240)	
	6) Supplies & Materials	(200)	
6. Technical Inputs to FIOs Figure 4.4-1 (A.2.8)	1) Meals/Snacks - 2 day/time -	(2940)	₱ 3840[5] per meeting by Leader of group
	2) Supplies & Materials	(500)	in whole project 36 meeting during 3 year
	3) Gasoline Allowance	(150)	per 1000 ha:3840 x 36[1] x 1000/36000[2] x 36[4]
	4) Miscellaneous	(250)	= 138,240
7. Seminar of Staff Development Figure 4.4-1 (A.2.9)	1) Meals/Snacks - 2day/time -	(1750)	₱ 2150[5] per meeting by IDD & EEO Staffs
	2) Supplies & Materials	(200)	in whole project 3 meeting
	3) Miscellaneous	(200)	per 1000 ha:
			2150 x 3[1] x 1000/36000[2] x 36[4] x 1/4[6] = 1612
8. Assessment Session of Group Figure 4.4-1 (B.3.2 - 3.3 - 3.4)	1) Meals/Snacks		₱ 200[5] per meeting by FTO & SFTO
	2) Incentive Allowance of SFTO		in whole project 36 meeting for 3 years
	3) Supplies & Materials		per 1000 ha:
			200 x 36[1] x 1000/36000[2] x 12[7] + 75[8] = 2475
9. Terminal Group Meeting Figure 4.4-1 (B.4.4)	1) Incentive Allowance of Member		₱ 100[5] per meeting by T.G. members
			in whole project, 252 times during 18 months
			per 1000 ha:
			100 x 252[1] x 1000/36000[2] x 18 = 12600

Note : 1/: The number in frequency of meeting for the whole Project Area.
2/: Converted into the cost per 1000 ha.
3/: Figure in parenthesis show the costs to be requried by spending items for a meeting.
4/: 36 months = 3 years
5/: The Cost with ₱ show the total expenditures in a meeting.
6/: Once every 4 months. 7/: 12 Times during one year. 8/: Miscellaneous.

TABLE B.5.4-3 BUDGETARY REQUIREMENT OF IAs ESTABLISHMENT FOR PHASE-1 (3/4)

Work Description	Items of Estimation	Calculation
10. Irrigators Association Meeting Figure 4.4-1 (B.5.1 - 5.2 - 5.3)	1) Miscellaneous of Meeting	₱ 100 per meeting by T.C. & Assistant member 1. ₱ 100 x 252[1] x 1000/36000 x 9[6] + 400[7] = 6700 ... Fig. 5.1 - 5.2 2. ₱ 100 x 252[1] x 1000/36000 x 6[6] + 300[7] = 4500 ... Fig. 5.3 Total 11200
11. Travell/Incentive Allowance of FIO & TC Figure 4.4-1 (B.4.1 - 4.2 - 4.3 - 4.5)		₱ 525 per meeting by FIO and LTC per 1000 ha: 3150 x 36 x 1000/36000 x (6[10] - 15[11]) = 66150
12. Workshop on Diagnostic Work Figure 4.4-1 (C.1.1)	1) Miscellaneous 2) Travelling Expenses	₱ 800 Once in the whole project
13. Data Gathering Processing Figure 4.4-1 (C.1.2)	1) Materials 2) Miscellaneous	₱ 150 per meeting by IDD staff per 1000 ha: 150 x 36[1] x 1000/36000 x 36[8] = 5400
14. Data Feedback and Action Planning Figure 4.4-1 (C.1.3)	1) Travelling Expenses of NIA C.O. Specialist 2) Materials 3) Miscellaneous	₱ 500 per time per 1000 ha: 500 x 36[1] x 1000/36000 x 36[8] x 1/4[6] = 4500

Note : [6]: Once every 4 months.
[7]: Miscellaneous.
[8]: Month.
[10]: Formation period of C.C.
[11]: Formation period of T.C.

TABLE B.5.4-3 BUDGETARY REQUIREMENT OF IAs ESTABLISHMENT FOR PHASE-1 (4/4)

Work Description	Items of Estimation	Calculation
15. Monitoring and Evaluation Figure 4.4-1 (C.2.2)	1) Travelling Expenses of NIA C.O. Specialist 2) Supplies & Materials 3) Miscellaneous	₱ 500 per meeting in whole area 36 meeting per 1000 ha: 500 x 36[1] x 1000/36000[2] x 36[3] x 1/4[4] = 4500
16. Orientation and Seminar of NIA Staff Figure 4.4-1 (D.1.1, 1.2, 1.3)	1) Meals/Snacks 2) Supplies & Materials 3) Miscellaneous	₱ 1275 per meeting in whole area 3 meeting per 1000 ha: 1275 x 3[1] x 1000/36000 x 6[2] x 1/4[4] = 159
17. SFIO Staff Development Figure 4.4-1 (D.1.4)	1) Supplies & Materials (3day/time) 2) Miscellaneous of Meeting	₱ 3950 per meeting in whole area 3 meeting per 1000 ha: 3950 x 3[1] x 1000/36000[2] x 36 x 1/4[4] = 2961
18. Pre-Development Training Figure 4.4-1 (D.2)	1) Meals/Snacks 2) Supplies & Materials 3) Miscellaneous	₱2300 per time in whole area 36 meeting per 1000 ha: 2300 x 36 x 1000/36000 x 8[12] = 18400
19. Pre-Development Practice Figure 4.4-1 (D.2)	1) Incentive Allowance 2) Miscellaneous of Meeting 3) Supplies & Materials	₱ 880 per time in whole area 36 meeting per 1000 ha: 880 x 36 x 1000/36000 x 21[13] = 18480
20. FIO Development Figure 4.4-1 (D.2.6)	1) Supplies & Materials (3day/time) 2) Miscellaneous	₱ 2090 per time in whole area 36 meeting per 1000 ha: 2090 x 36 x 1000/36000 x 27[8] x 1/4 = 14107

Note : 12/: 8 times during 9 months.
13/: during 21 months.

TABLE B.5.4-4 BUDGETARY REQUIREMENT OF FIAs ESTABLISHMENT FOR PHASE-2 (1/2)

Work Description	Items of Estimation		Calculation
1. Management, Evaluation Committee Figure 4.4-1 (1)	See to Table B.5.6-4 (1)		₱ 125 per 1000 ha per meeting 125 x 24[3/] x 1/2[2/] = 1500
2. Supervisory Assessment and Planning Figure 4.4-1 (2)	1) Travelling Expenses of FIO	(1400)	₱ 2740 per meeting in whole project 6 times meeting per 1000 ha: 2740 x 6[1/] x 1000/36000[2/] x 24[3/] = 10960
	2) Travelling Expenses of NIA Specialist	(400)	
	3) Miscellaneous of Meeting	(50)	
	4) Gasoline Allowance	(550)	
	5) Incentive Allowance of Supervision FIO	(240)	
	6) Supplies & Materials	(100)	
3. Coordination Meeting Figure 4.4-1 (2)	- ditto -		- ditto - 10960
4. Recruitment of IA Officer Figure 4.4-1 (3)	1) Meals/Snacks - 2 day/time -	(630)	₱ 1530 per time in whole area 36 meeting per 1000 ha: 1530 x 36[1/] x 1000/36000[2/] = 1530
	2) Supplies & Materials	(500)	
	3) Gasoline Allowance	(150)	
	4) Miscellaneous of Meeting	(250)	
5. Pre-development Training Figure 4.4-1 (4)	1) Meals/Snacks - 2 day/time -	(840)	₱ 1740 per time in whole area 36 meeting per 1000 ha: 1740 x 36[1/] x 1000/36000[2/] = 1740
	2) Supplies & Materials	(500)	
	3) Gasoline Allowance	(150)	
	4) Miscellaneous of Meeting	(250)	
6. Formal Staff Development Figure 4.4-1 (3)	1) Meals/Snacks - 2 day/time -	(1260)	₱ 2310 per time in whole area 36 meeting per 1000 ha: 2310 x 36[1/] x 1000/36000[2/] = 2310
	2) Supplies & Materials	(500)	
	3) Gasoline Allowance	(300)	
	4) Miscellaneous of Meeting	(250)	

Note : 1/: The number in frequency of meeting for the whole project area.
2/: Converted into the cost per 1000 ha.
3/: During 24 months.
4/: Once every 2 months.

TABLE B.5.4-4 BUDGETARY REQUIREMENT OF IAs ESTABLISHMENT FOR PAHSE-2 (2/2)

Work Description	Items of Estimation		Calculation
7. Session with Supervisor Figure 4.4-1 (3)	1) Meals/Snacks	(420)	₱ 1320 per time in whole project 36 meeting per 1000 ha:1320 x 36 x 1000/36000 x 24 x 3/2[5/] = 47520
	2) Supplies & Materials	(500)	
	3) Gasoline Allowance	(150)	
	4) Miscellaneous of Meeting	(250)	
8. Workshop on Diagnostic Work Figure 4.4-1 (2)	1) Miscellaneous of Meeting	(400)	₱ 800 per time per 1000 ha: 800 x 36 x 1000/36000 = 800
	2) Travelling Expenses of NIA Specialist	(400)	
9. Data Gathering Documentation Figure 4.4-1 (2)	1) Material	(150)	₱ 250 per time in whole project 36 meeting per 1000 ha: 250 x 36 x 1000/36000 x 24 x 9/12 = 4500
	2) Miscellaneous	(100)	
10. Data Feedback and Action Plan Figure 4.4-1 (2)	1) Travelling Expenses of NIA C.O. Specialist	(400)	₱ 500 per time in whole project 36 meeting per 1000 ha: 500 x 36 x 1000/36000 x 24 x 1/4[6/] = 3000
	2) Materials	(50)	
	3) Miscellaneous	(50)	
11. Monitoring and Evaluation Figure 4.4-1 (2)	1) Travelling Expenses of NIA C.O. Specialist	(400)	₱ 500 per time in whole project 36 meeting per1000 ha: 500 x 36 x 1000/36000 x 24 x 1/8 = 1500
	2) Supplies and Materials	(50)	
	3) Miscellaneous	(50)	

Note : 5/: 3 time every 2 months.
6/: Once every 4 months.

FIGURE B.5.4-2

ESTABLISHMENT SCHEDULE OF IA

W.S.	IA-Stage 1		IA-Stage 2		Schedule
	No of IA	No of TG	Name of IA	Area (ha)	1st 2nd 3rd 4th 5th 6th 7th
I	5	34	SM-1	746	
	9	70	TP	1,286	
				2,032	
II	4	24	SM-2	532	
	5	17	SM-3	645	
	12	43	SM-4	1,687	
				2,864	
III	7	34	SM-5	1,078	
	9	36	SM-6	1,066	
	8	32	SM-7	1,003	
				3,147	
IV	10	53	SM-8	1,538	
	8	54	SM-9	1,305	
				2,843	
V	9	39	SM-10	1,245	
	2	22	SM-11	552	
	5	18	SM-12	814	
				2,611	
Total	93	476		13,497	
VI	1	18	KM-1	341	
	5	51	KM-2	1,023	
	7	40	KM-3	985	
	11	47	UK-1	1,409	
	6	23	UK-2	702	
	7	30	UK-3	900	
				5,360	
VII	7	56	KM-4	1,276	
	7	39	LK-1	1,059	
	5	23	LK-2	680	
				3,015	
VIII	9	56	KM-5	1,610	
	11	59	KM-6	1,610	
	3	15	KM-7	550	
				3,770	
IX	4	18	KM-8	492	
	17	73	KM-9	2,463	
				2,955	
X	9	28	KM-10	1,091	
	4	19	KM-11	584	
				1,675	
XI	6	25	KM-12	891	
	3	12	KM-13	439	
	10	48	KM-14	1,430	
				2,760	
XII	6	29	KM-15	738	
	9	42	KM-16	1,195	
				1,923	
Total	147	751		21,468	
Grand Total	240	1,227	34	34,965	

5.4.3 Size and Service Components of Irrigators' Association

(1) Appropriate Size of Irrigators' Association

The size of the irrigators' associations will be determined by the areas commanded by on-farm facilities, sub-laterals, laterals and main canal systems, respectively, since the organization is founded on the number of the farmers benefitting from the on-farm facilities and the related beneficiary acreages arising therefrom.

The average commanded areas by existing facilities are shown as follows:

Kinds of Canals	Average Beneficial Acreage
1. Turnout Level	28 ha
2. Sub-laterals	
North Angat Main Canal	133 ha
South Angat Main Canal	105 ha
Average	120 ha
3. Laterals	
North Angat Main Canal	1,274 ha
South Angat Main Canal	741 ha
Tibagan Pump	643 ha
Upper Maasim Diversion	1,055 ha
Lower Maasim Diversion	530 ha
Average	925 ha

The above figures show the average of 31,485 ha which is covered by the existing facilities.

In the selection of areas for the associations, the following criteria will be adopted.

1) An area commanded by sub-lateral canal will be a unit of association.

2) In case an area commanded by a sub-lateral canal exceeds 300 ha, it will be subdivided into two areas that represent the respective interests regarding the irrigation.
3) In case the water is diverted directly from main or lateral canals through turnouts, an area of about 150 ha which is served by different turnouts yet shares the mutual interest will be a unit of association.

The review of the canal system covering 34,965 ha including 3,480 ha of newly-irrigable areas for grouping by sub-laterals and turnout levels has resulted as follows in the number of associations to be organized in the first stage and the number of the terminal groups and the irrigable areas.

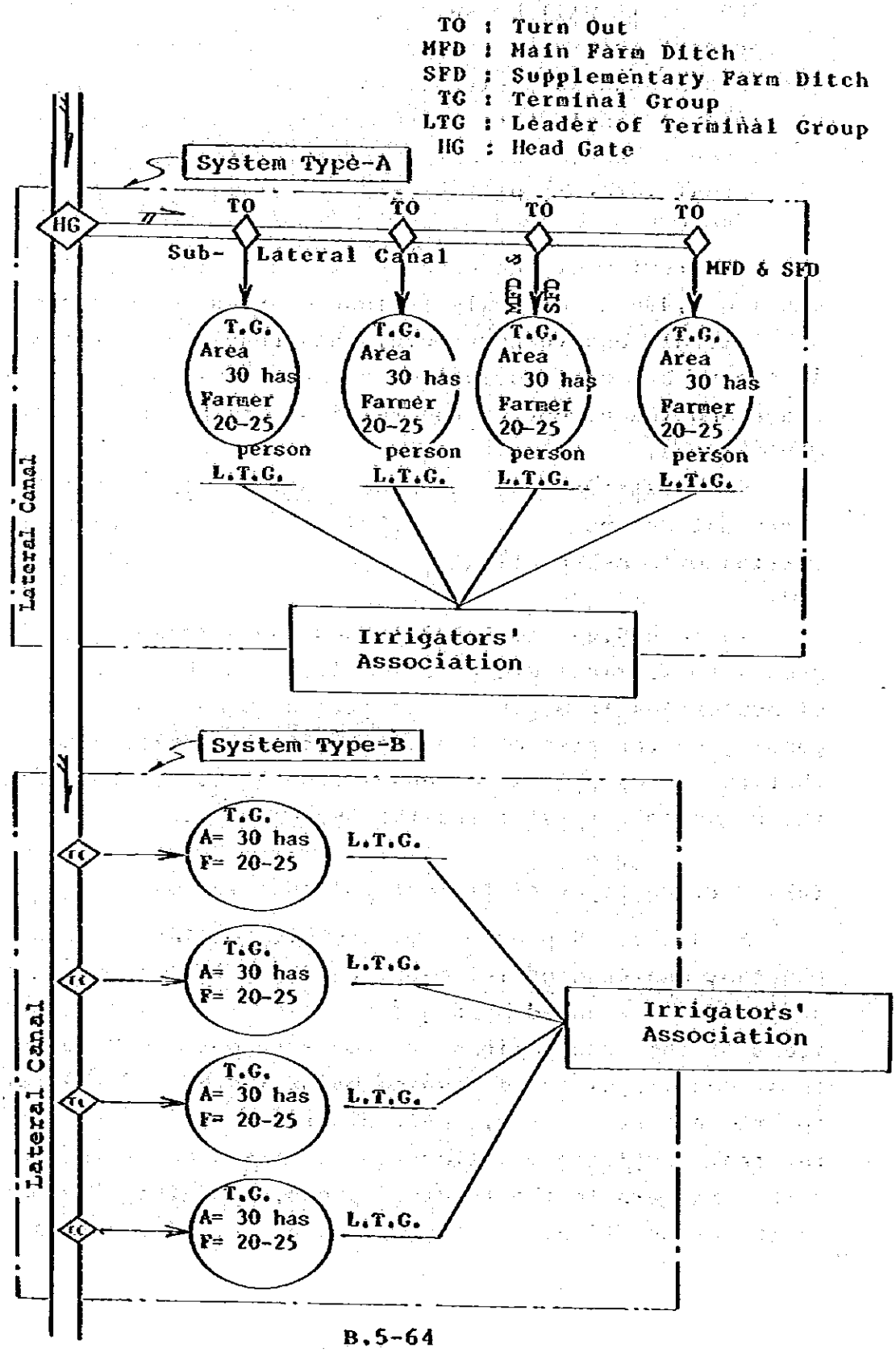
Organization	No. of Organization	Irrigable Areas
Terminal Groups	1,227	28 ha
Irrigator's Association	240	146 ha

Table B.5.2-4 to B.5.3-1 show the average number of groups in Terminal Group to be five and the average number of households to be 102. The size of membership varies depending on the size of the association. Tables also reveal that the membership size ranges from 37 to 254 depending on the member's farm size and the system size.

(2) Service Items of Irrigators' Association

As discussed previously, the size of IAs is in principle that one unit of IA comprises about 150 ha of the irrigable area commanded by sub-laterals. The major service items of the associations are to carry out O & M works for those canal systems commanding below 150 ha and the related appurtenant structures, water distribution, control of the terminal facilities, collection of irrigation fees from the member farmers in the terminal areas, and effective operation of the association. On top of the above, necessary agricul-

FIGURE B.5.4-3 MANAGEMENT SYSTEM IN IRRIGATORS' ASSOCIATION



tural production activities and those related thereto shall indirectly be the responsibility of the associations. Establishment of the Irrigators' Association requires a legal registrar as juridical person, articles of association, and other various procedures completed.

And at a proper time after establishment, NIA and newly established association should make a written agreement for partial turnover of the facilities and the related mutual confirmation of the management. The major works to be performed are as follows:

- to establish cropping acreages, cropping periods and cropping pattern, and to make reports to the NIA divisions concerned about the above matters,
- to formulate a water distribution plan for terminal groups in the Project Area, and to perform O & M services for the respective turnouts, and to make regular reports to NIA about the results,
- to give guidance and instructions on the water distribution to the terminal groups,
- to formulate an O & M plan of the national irrigation/drainage system turned over to the terminal groups and to carry out effective O & M services,
- to give guidance and advice to the beneficiary farmers on O & M of the on-farm facilities,
- to prepare and arrange necessary cadasters and cadastral maps of the beneficiary farmers in the Project Area,
- to collect the irrigation fees and association operation charges from beneficiary farmers and to pay necessary fees to NIA, and
- to handle and treat the matters concerned with association other than those referred to above.

5.4.4 Methodology and Procedures for Establishment of Irrigations' Association (IA)

(1) Basic Policy for Establishment of Irrigators' Association

Necessity, functions and roles of the IAs have been discussed already, and the basic matters for establishing the IA are described herein.

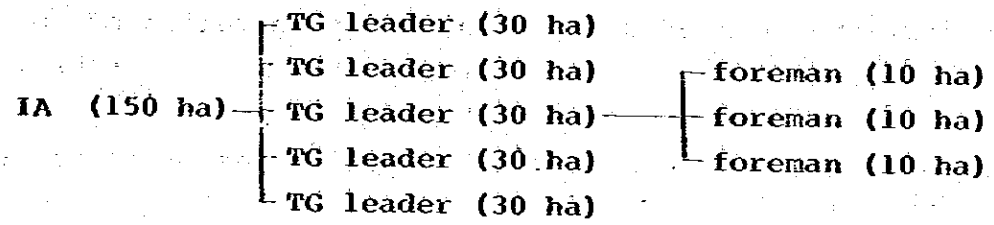
The propose of establishing the IA is to carry out the voluntary O & M work of the irrigation/drainage facilities in the Project Area and to organize functional groups to help these activities.

An association should be organized through the strengthening of the infrastructure with beneficiaries' concensus and then expanded in its organization gradually by evaluating and confirming the functions appropriately. The association in the Project Area should be established according to the scale of the irrigation facilities which the respective associations can cover.

In the first stage, terminal groups (TGs) should be organized, and in the ANRIS Area except the Upper Maasin Area, about 1,000 TGs have been established in approximately 29,400 ha, but at present they do not seem to function successfully. The existing Compact Farm should be decomposed so that the TG with a unit area of about 30 ha can be provided firmly as strong core groups. And the relevant group leaders shall control foremen to be assigned for every supplemental farm ditch who can assist the group leader as well as being responsible for the O & M works for a 10 ha area.

These TGs, several joined together, shall form an association on the basis of the sub-lateral canal unit. The PIOs who are to be employed by NIA shall be educated to become future presidents of the respective Irrigators' Associations as well as to be fully responsible for the association.

The TG leaders shall be educated to become assistants to the respective association presidents. Consequently, the scales of the respective associations and their compositions will be as follows:



In the second stage, prudent evaluation shall be made on the functions of each IA, so that these IAs can be developed into the Federation of Irrigators' Assocation (FIA).

(2) Procedures of Establishing IAs

Major procedures for establishing IAs are illustrated in Figure B.5.4-1. The major items shall cover five fields such as management and evaluation of the works, planning and coordination, guidance and education in the works, promotion of establishing the IAs and study of evaluation results and training. The below-mentioned summary shows the targets and expected achievements in the respective fields.

1) Management and Evaluation

The major works are to control the progress of the general works for establishing IAs, to formulate plans, to try and solve problems concerned, to give evaluation and

advice for the work, and furthermore, to give training and education of staff engaged in the works, to coordinate with NIA in personnel affairs (PIA, SFIO), budget issues etc.

2) Planning Coordination and Administrative Guidance

According to the comments and instruction/advice given by Planning and Coordinator Committee, the plans shall be made for the work progress, and guidelines for administrative guidance shall be prepared and actual guidance be given. And besides, basic data collection and arrangement shall be made as well as exchange of opinions with beneficiary farmers and other general works summarizing the beneficiaries comments/requests, and preparation of improvement programs.

3) Institutional Development and Activities of IA Establishment Promotors

The below-mentioned procedures for establishing the IAs shall be followed in Phase-1.

The action program for this purpose is illustrated in Figure B.5.4-1 and the details can be referred to under the mutual relations among major activities.

The activities are classified into three phases with seven parts as follows:

Phase-1

Part-1 Basic survey and research for the areas covered by IAs and TGs, respectively.

Part-2 Preparation for forming core groups.

Part-3 Training, completion and substantial development of core groups.

Phase-2

Part-4 Preparatory works by core groups for organizing TGs.

Part-5 Completion of organizing TGs, and giving on-the-job training in O & M services to leaders of PIOs and TGs.

Phase-3

Part-6 Preparation for forming IAs and giving training to IA staffs.

Part-7 Completion of establishing IAs with legal procedures and registration followed, and conclusion of agreement between NIA and respective IAs.

a) Phase-1

Part-1: Figure 5.4-1 (B-1)
1st/2nd quater of the 1st year

Purpose

- The general survey/research and data collection shall be carried out so as to grasp the status-quo of the relevant regions on O & M works and other subjects shown below. See Figure B.5.4-1 (B-1.1 - 1.2).
  - ° Diversion system and the related problems
  - ° Present services rendered for O & M and rehabilitation of the system

° Present cropping pattern

° Present land ownership and status-quo of the farmers (including cadastral maps)

- A campaign for establishing IAs shall be encouraged through close contact with farmers and a general area formulation shall be made at the level of the unit IAs, and TGs. See Figure B.5.4-1 (B.2.2)

- The preliminary selection shall be made for PIOs candidate (enlisting candidates).

Methodology and Staff in Charge

- Status-quo surveys and data collection shall be carried out by IDD staffs and WMTs and DTs in each zone engineers office. Currently, the data collection shall be made and arranged for quick reference with respect to farmers registration books for on-going O & M works, cadastral maps, etc. which have been kept in the AMRIS office. The data collection on diversion systems and their related problems shall be made by the working level staff in charge in the respective zone office by way of interview surveys on present conditions in their responsible areas through respective WMTs and DTs.

- The IA establishment campaign through contacting with farmers shall be cooperated with by the staffs of IDD, IAs and zone engineer office visiting every unit of IAs. When making such visits, various issues on successful formulation of the terminal groups shall be discussed in the meetings.

- A few candidates of PIOs shall be selected preliminarily through the compaign and visiting surveys.

Outputs from Part-1

° Collection/arrangement of existing data and information required for establishment of TGs and IAs.

° Preliminary approximation of the areas covered by TGs and IAs respectively, on the basis of their commanding canal systems.

° Enlisting a few candidates for PIOs.

Research and Coordination: Figure B.5.4-1 (A-1, A-2)

The IDD will carry out study and analysis of the data and information available and the coordination meeting and/or supervisory meeting will study the data and information to make coordination and arrangement of them in the contents.

Part-2: Figure B.5.4-1 (B-1)
1st/2nd quarter of 1st year

Purpose

- PIOs' approval by committee and assignment by Irrigation Superintendent.

- Confirmation of TGs' and IAs' commanding areas approximated in Part-1. See Figure B.5.4-1 (A.2.2).

- Detailed study and review of the data/information collected in Part-1.

- Selection of members of CGs

- Preliminary formation of CGs. See Figure B.5.4-1 (B.1.1).

- More intensive campaign to get famers' concensus in rendering O & M services by IAs themselves. See Figure B.5.4-1 (B.2.2).

Methodology and Staff in Charge

- Approval and assignment of FIOs shall be elaborated by the coordination Committee and the related services shall be entrusted by zone engineering offices with approval of the Evaluation Committee.

- After being elaborated by Coordiantion Committee, the areas approximated in Part-1 as by TGs and IAs shall be confirmed preliminarily by management and the Evaluation Committee.

- The data/information collected and arranged in Part-1 shall be studied and reviewed in detail by IDD. And the zone engineer offices shall check and review consistency and accuracy of the data with actual status in respect to the following matters.

    ° Check and review of farmers' registration books and cadasters

    ° Check and confirmation on the on-farm systems and their covering areas

    ° Additional survey and studies on the problems of irrigation

- The members of core groups shall be selected and designated by respective staff in charge at IDD and the zone engineer offices (Supervisors of FIOs), and FIOs. Such selection shall be made through use of the said staffs' direct contact with farmers. See Figure B.5.4-1 (A.2.5) or (B.2.2).

- Through the preliminary formation of core groups as mentioned above, the IDD personnel in charge and FIOs shall give guidance to the core groups and select candidates for future TGs. In the course of selecting core group members, review and revision of TG areas shall be finalized together with defining the member farmers of the respective TGs.

- More intensive campaign of farmers shall be carried out by FIOs under the assistance of IAs staff or SFIOs of the zone engineer office. For the successful campaign, the IDD should prepare a variety of materials for propaganda such as programs for entertainments, TV by video-tapes, pamphlets, etc. Every minute throughout the campaign should be utilized to obtain the farmers' consensus and to educate and select would-be TGLs.

Outputs in Part-2

- The basic data will be completely arranged to establish the IAs by additional and supplemental collection of necessary data/information.

- The core groups will be formed and ready to work.

- The areas commanded by TGs and IAs shall be corrected for final confirmation as IAs' areas.

- These outputs, which should be arranged and analyzed at IDD, should be coordinated and elaborated at the Coordination Committee level. Eventually, the management and the Evaluation Committees shall approve matters.

Research & Coordiantion

- While the project works are being executed to produce the aforesaid results, the IDD shall continue the necessary surveys and researches.

- In this phase, the Coordination Committee shall continue to elaborate a variety of things such as FIO's approval, approximation of TGs' and IAs' areas, and collection/arrangement of the various data farmers' registration cadastrial maps, on-farm system, etc.

Part-3: Figure B.5.4-1 (D-3) - (B-3)
3rd/4th quarter of 1st year

Purpose

Those who are selected as TGL candidate or members of ICGs in Part-2 shall learn the method and activities of the groups. Through such works as above, the TGs will be organized and established as the foundation of O & M services for the relevant systems.

Methodology and Staff in Charge

- Training or education to new CG members, shall be given through regular meetings for successful

formation of groups. The regular meetings shall be invited and operated by PIOs or TGLs, while the IDD and zone engineering office, will attend the meetings as observer.

The subjects to be taken up in the meetings and trainings will be shown as follows:

- Operation/Management of the IA as group activities
- Works for terminal irrigation water management
- O/M and rehabilitation of the terminal facilities
- Irrigation fees collection

Outputs in Part-3

The core group members shall learn the methodology of IA activities in view of group dynamics as well as O & M the facilities and collection of irrigation fees. In the course of trainings and meetings in this period, how to find critical issues in the group activities and how to solve them shall be learned by attendants.

Research and Coordination

- The IDD shall control the regular meetings and trainings of the core groups to take up and settle the questions/requirements made by farmers.
- The diagnosis given by IDD shall be elaborated at the Coordination Committee so as to make a good coordination to get success in Part-3.

b) Phase-2

Part-4: Figure B.5.4-1 (B-4), (D-2)

Purpose

- The core groups formed in the Part-3 shall be composed of areas with 30 ha terminal groups as units.

- The guidance shall be given to the beneficiary farmers as terminal group members so as to make them understand how to carry out O & M services, colleciton of irrigation fees, etc. through collective works.

- TGLs and assistants to TGLs shall be selected and their scopes of works shall be decided.

Methodology and Staff in Charge

- The core group members shall call all of the expected TG members to join the TL organization. Successful organization of TGs will require FIOs and core group members to render positive O & M extension works and collection activities for all related TG members through regular meetings.

- In parallel with the aforesaid activities, quidance shall be given to the TG members as beneficiary farmers so as to give them sufficient knowledge on O & M services, collection of irrigation fees, etc. as collective works. In this respect, the core group members shall keep direct and close contact with farmers to give guidance on practical works under the assistance of FIOs and zone engineer office.

- TGLs and their assistants shall be selected through these activities by election or recommendation among farmers themseleves.

Outputs of Part-4

- Preliminary formation of TGs will be completed.

- All the TG members will be enlisted.

- TGLs and their assistants will be assigned.

Research and Coordination

- IDD shall prepare the data on the core groups' activities and their effect throughout the period of TG formation and give diagnosis to the said results.

- The Coordination Committee shall review the analysis results by IDD regarding the TG formation to judge whether or not TGs should be established, and also check the elected TGLs and their assistants' qualifications.

Part-5: Figure B.5.4-1 (B-4), (D-2)

Purpose

- The TGs to be preliminarily formed in Part-4 shall be formed so that activities as IAs and successful O & M services can be carried out effectively.

Methodology and Staff in Charge

- FIOs, TGLs and their assistants shall learn the method and techniques to successfully carry out O & M services, collection of irrigation fees within the scope of works defined. In this connection, the personnel in charge at IDD and WMT/DT of zone

engineer offices shall work as observers to give adequate advices and extend cooperation from time to time.

Outputs of Part-5

- TGs will be able to function as a well-established organization.

- TGLs shall learn the methods and techniques for running meetings and various works through training.

Research and Coordination

- The staffs of IDD shall make TGLs and their assistants understand the practical work of O & M and collection of irrigation fees through training.

- IDD shall prepare data/records for holding regular meetings for establishing TGs, and arrange the records and prepare minutes of meetings.

- The Coordination Committee shall elaborate the analysis results of data by IDD and study in detail the possibility of successful achievement of the project works on this parts.

c) Phase-3

Phase-6: Figure B.5.4-1 (B-5) - (D-2)

Purpose

- TGs under sub-lateral groups (IAs) shall be so organized so that they can operate and manage themselves.

- Operation and management of the sub-lateral groups as IAs and O & M services shall be preliminarily defined in their scopes and training shall be given to TGLs (would-be directors of IAs). And necessary committees for IAs shall be prepared.

- The scope of works as IAs shall be decided and the respective assignments shall be designated, and the directors and leaders shall be officially nominated.

Methodology and Staff in Charge

- For the sub-lateral groups to function as IAs, PIOs or the well-qualified personnel and TGLs selected in Part-4 shall hold a meeting under the guidance of IDD so as to bring about the IAs' establishment and their successful operation.

- In the aforesaid meeting, the scope of works or functions of the various committees and officers' responsibility shall be defined, respectively.

- Every meeting and training shall be always carried out under the assistance and guidance of the IDD/zone engineer office.

- Phase-3 will establish IAs after IDD's detailed analysis of their activities and structures and the Evaluation Committee shall have a detailed review of the proposed plan for establishing IAs.

Outputs of Part-6

- The functions and the scope of IA's works shall be determined as well as selection of the directors and other staffs through meetings and trainings.

- Directors and working staffs to be assigned shall learn their own jobs so as to make the organization function practically as IA.

Part-7

Purpose

- The IA's structure and staffing shall be registered and approved.

- The draft regulations of the IA shall be prepared and the IAs shall be officially approved.

- Agreement and memorandum shall be concluded between NIA and the respective IAs.

Methodology and Staff in Charge

- Establishment of IA shall be declared under the name of the Preparatory Committee of IA Establishment.

- Commencement of IA's works, directors' and staffs' assignment shall be released in the directors' board meeting.

- The directors' board meeting shall prepare the IA draft regulation under guidance from IDD and finalize the regulations to be registered.

Outputs of Part-7

- IAs will be established and begin their activities.

Research and Coordination

- In the process of IA establishment, IDD shall give appropriate adivice and guidance to the relevant groups in preparing various documents required for the procedures.

- After elaboration by the Coordinating Committee, the establishment of IAs shall be approved by the Management and Evaluation Committee.

4) Action Research

The data/information collected by NIA's Coordination and PIOs' activities shall be analyzed and assessed, and according to the data collected by the association-to-be, the respective works shall be allotted for each stage and the results shall be reported to the related committees.

With the results, some recommendations shall be made for reviewing the works from time to time, so that the appropriate reaction and correction/deviation can be made.

Together with these action researches, monitoring and evaluation of the works shall be continuously carried out at a previously determined time and by adequate method.

5) Training Program

The training program will include the training and education of NIA staffs concerned as well as PIO members and beneficiary farmers. The respective training shall be carried out as timely as possible in parallel with the aforesaid works or before or after the said works so as to have better results.

The training of NIA staffs concerned shall be given regularly for upgrading the services and technology in

quality for the association members in charge of the financial affairs, establishment of association and SFIO (Supervisor of the Farmers Irrigators' Organizers).

5.4.5 Organization and Responsibility of the Association

(1) Organization of the Irrigators Association

The Irrigations' Associations should be organized as illustrated in the organization chart in Fig. B.5.3-1 so as to carry out independently the O & M works of the facilities provided in the responsible area. The IA shall be headed by a president and vice-president, and have two units of administration and O & M for carrying out smooth management. The president shall function to give guidance and supervision directly on the O & M of the Terminal Groups.

The board of directors of the policy-making organization association shall consist of Terminal Groups' leaders to be assigned as directors.

(2) Staffing Plan of IAs

The staffing plan of the IAs is shown as follows:

President
Vice-president
Directors (TG leaders)
Staffs of administration unit
Staffs of O & M unit

The works responsible by the respective staffs are referred to as follows:

1) President

President shall conduct a general supervision of managerial works of the association and give guidance to T.G. leaders in their practice of O & M works.

2) Vice-president

The Vice-president shall assist the President in the general supervision of the IA and serve as acting-president during absence or leave of the President.

3) Directors (TG leaders)

The TG leaders, who represent turnout commanding areas, shall be appointed as directors of the IAs and keep close areas, contact with about 20 farmers belonging to the turnout commanding 30 ha of farm lands so as to gather the requests of farmers for IA's O & M works and collection of irrigator fees and try to arbitrate between IA and farmers whenever various troubles and disputes arise. Furthermore, the TG leaders, shall be assigned to members of both the standing and ad-hoc committees of IA to participate in the discussion and determination of the IA's policy making. The members of the committees will be the chairman of the following committees.

Chairman of Irrigation Management Committee
Chairman of Maintenance Committee
Chairman of Irrigation Fees Collection
Chairman of Complaint Comittee

4) Auditors

The auditors shall have right to execute the regular and special auditing of the financial standing of the IA, and have obligation to make reports on the auditing results to the related standing committee and the general assembly of the IA.

5) Staff of Administration Unit

The Administration Unit shall deal with the administration works including accounting and general office works. In particular, accounting works for the irrigation fees collected through each TG leader shall be executed by this unit; in other words, the unit shall treat the invoices of

irrigation fees and the relevant receipts issued by NIA and handle the collected money to be paid to NIA.

6) Staff of the O & M Unit

The staff belonging to this unit shall be engaged in the work of issuing, keeping and dispatching O & M related reports and documents such as weekly reports, monthly reports and other documents defined in the O & M regulations.

(3) Appointment of Staffs Required for IA

The necessary staff for IA should be selected to be appointed by the following order and method.

1) Terminal Group Leader

A TG leader shall be selected from the farmers by election or any other suitable method.

2) President, Vice-president and Director and Auditors

The TG leaders will be the member of Board of Directors, and the board meeting will select a president, a Vice-president and auditors from the directors by election.

3) Chairman of Committees

The chairman of committees, which will be provided as standing committees or ad-hoc committees under the Board of Directors, shall be mutually elected from the members of the committee.

4) Staffs of the Units

The President shall have a right to appoint staff of the Units of Administration and O & M to handle necessary works.

(4) O & M of On-farm Facilities

The irrigation systems included in the areas under the jurisdiction of the IAs can be classified into two types; one is the area specified as IA's commanding area by sub-lateral (system Type-A) and the other is the area commanded by lateral system or main canal system with direct connection of turn-

outs (system Type-B). The relevant figure is presented in Figure B.5.4-3.

The O & M works to be executed by respective IAs are as follows:

a) System Type-A

As maintenance works for sub-lateral canals, the IAs' foremen will render routine checking services, while the seasonal regular maintenance works and those made before canal operation will be carried out by many farmers to be mobilized at the request of the Foremen through TG leaders. The necessary costs for these works shall be expended out of the account of the relevant IAs.

The O & M works for lateral canal systems shall be limited to the Area bounded by the neighbouring areas under other IA's administration.

On the other hand, the maintenance works for the terminal group areas of 30 ha, will be made by the group farmers themselves for the main ditches, supplemental ditches as collective activities together with cropping control at the on-farm level.

The gate keepers shall be responsible for operation of all the turnout gates. NIA will directly carry out O & M works for main and lateral canal systems.

b) System Type-B

In this case, the scope of O & M works shall cover the main farm ditches, supplemental farm ditches, and the turnouts connecting therewith.

In the case, however, that the water source of the canal system is beyond the jurisdiction of NIA, the IA concerned shall make maintenance works for the Areas under the control

of the IA. The IA shall operate the turnout gates and farm ditches which exist within the Areas under the control of the IA.

5.4.6 Financial Assistance for Establishment of IA

The cost breakdown for establishing the association and the annual budget required are shown in Table B.5.4-1 and B.5.4-2 respectively. The major items of the cost include those for the committee and other meetings, transportation, employment for FIO and other miscellaneous items, and the cost per 1,000 ha of the beneficiary area was estimated at 349,000 pesos.

The cost required for the institutional development proposed in the Phase-1 is approximately 11.9 million pesos.

5.4.7 Articles and Agreement Memorandum

(1) Providing Articles of Irrigators' Association

The proposed articles for the IA should contain the following fundamental items. The details are referred to in Appendix B Reference-1.

Name domicile and purpose
Membership
Rights and duties of membership
Termination and suspension of membership
Membership fees and dues

Fixed deposit and savings deposit
Membership meeting
Board of directors and committees
Officers
Education and training committee
Finance and development committee
Irrigation management committee
Audit and inventory committee
Agricultural supervisory committee

The dissolution and liquidation
Operation and maintenance of irrigation facilities
Other rules and regulations
Use and disposition of association funds
Miscellaneous provisions

(2) Agreement Memorandum Between NIA and IA

The scope of O & M works along with the major duties for IAs are stipulated in the aforesaid Articles. Establishment of IA further requires an exchange of Agreement Memorandum with NIA.

The principal items to be listed in the Agreement Memorandum are as follows and the sample document is attached in Reference-2 of Appendix B.

- Scope and duties of O & M works for IA
- Scope and duties of O & M works for NIA
- Scope of irrigation fee collection for IA and NIA
- Provisions regarding irrigation fee collection such as incentive bonus vis-a-vis the targest collection amount and allocation of O & M expenditures necessary for IA.

REFERENCE MATERIAL-1.

SAMPLE DOCUMENT OF I.A's ARTICLE

BY-LAWS
OF THE

_____ Irrigators' Association Inc.

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned, all of legal age, Filipino citizens, residents of _____, _____, _____ Philippines, together constituting the majority of the entire membership of the _____ Irrigators' Association, Inc., do hereby promulgate the herein By-Laws:

ARTICLE I

NAME, DOMICILE AND PURPOSE

The name, domicile, and purposes of the Association are those set forth in its Article of Incorporation.

ARTICLE II

MEMBERSHIP

Section 1 - QUALIFICATIONS FOR MEMBERSHIP - Membership shall be open to any person of legal age, who is an agricultural lessee, amortizing owner, owner-cultivator and other lawful possessor of agricultural lands situated within the irrigable/service area of an irrigation system/project and is actually engaged in farming.

Section 2 - APPLICATION FOR MEMBERSHIP - The application for membership shall be made in writing on the prescribed form and shall be submitted to the Board of Directors through the Association's Secretary-Treasurer. Such membership application shall be subject to the provisions of Section 1 of this Article, a majority of the Board of Directors shall admit the applicant to membership. Notice of admission shall be communicated by the Secretary to the applicant within five (5) days after the Board's action.

Section 3 - MEMBER IN GOOD STANDING - A member in good standing is one who faithfully complies with the duties set forth in Article III. Section 2 of this By-

Laws as well as the terms and conditions of the Membership Agreement.

ARTICLE III

RIGHTS AND DUTIES OF MEMBERSHIP

Section 1 - RIGHTS OF MEMBERS -

1. To exercise the right to vote on all matters affecting and related to the Association;
2. To be eligible to any elective positions of the Associations;
3. To participate in all deliberations during membership meetings and to express his opinions or ideas on any matter under discussions;
4. To make use of any assistance, services and benefits of the Association upon compliance with the conditions and requirements therefore; and
5. To thoroughly examine the records of the Association.

Section 2 - DUTIES OF MEMBERS -

1. To faithfully obey and comply with the By-Laws and such other rules and regulations as may be promulgated by the Board of Directors and/or competent authority;
2. To regularly attend all meetings, conferences and seminars that may be called by the Board of Directors and/or any government agency engaged in food production;
3. To promptly pay his irrigation fees and other dues;
4. To willingly contribute personal services for the welfare of the Association;
5. To willfully participate in the procurement, processing and marketing of farm products that may be initiated by the association;
6. To work jointly with co-irrigators in proper management, operations, use and maintenance of terminal irrigation facilities and other appurtenant structures within the Association's jurisdiction;
7. To religiously adopt and apply modern and proven farm techniques as may be suggested, taught and directed by government technicians engaged in food production;

8. To comply with the agreed decisions of duly constituted authority and the Board regarding the type/nature of crops to be planted, the area to be planted as well as the timing of planting; and

9. To closely coordinate and assist in other related group activities on irrigation matters.

ARTICLE IV

TERMINATION AND SUSPENSION OF MEMBERSHIP

Section 1 - Any member may be suspended or terminated on the following grounds:

1. Loss of ownership or right of possession of the land in respect of which he has applied for membership in the Association;

2. Willful failure to pay membership fee, irrigation fee, dues and other contributions for _____ times without reasonably cause;

3. Failure to comply with any of the duties of the membership;

4. Failure to comply with the terms and conditions of the Membership Agreement;

5. Act or omission injurious or prejudicial to the affairs of the Association, e.g., destruction and obstruction of irrigation canals, farm ditches and other structures preventing the free and smooth conveyance of the water; and

6. Violation of any of the provisions of the By-Laws and other rules and regulations promulgated by the Board. Any member who has resigned, suspended or terminated shall not obstruct or intervene in any manner in all operational activities of the Association.

ARTICLE V

MEMBERSHIP FEES AND DUES

Section 1. MEMBERSHIP FEES - Every prospective member shall pay a membership fee of _____ ( ) upon his admission to the Association.

Section 2. IRRIGATION FEES - Every member of the Association shall pay such amount per harvest season planted to rice or for crops other than rice, in accordance with

the prevailing and duly authorized NIA irrigation fee rate.

Section 3 - ANNUAL DUES - An annual due of _____ (₱_____) shall be paid by every member in January of each year. For delay in payment thereof, a sur-charge of one percentum (1%) shall be imposed.

Section 4 - CONTRIBUTIONS - The Association may raise funds through contributions or donations from member-irrigators and non-members in the form of cash, labor or in kind, and through benefit programs considered appropriate and legal for the purposes.

Section 5 - GENERAL FUND - All penalties or fines paid by members as well as donations, contributions and monies derived from other sources shall be part of the general fund of the Association.

ARTICLE VI

FIXED DEPOSIT AND SAVINGS DEPOSIT

Section 1 - FIXED DEPOSIT - A monthly fixed deposit of ₱_____ for a maximum period of twelve months shall be deposited by each participating member with the Secretary-Treasurer, who in turn, shall issue a corresponding pass book. The Secretary-Treasurer shall maintain a systematic and up-to-date record of the individual deposit of all members. Pooled fixed deposits shall be deposited with the nearest depository bank in the name of the association.

Section 2 - SAVINGS DEPOSIT - Association members shall be encouraged to save, the amount of which depends on their own discretion. All savings deposit shall be deposited with the Secretary-Treasurer. To maintain trust and confidence, he shall issue a corresponding passbook to the participating member and shall keep an individual and complete record of the savings deposits. The entire personal savings deposit shall be deposited by the Secretary-Treasurer with the depository bank in separate account and in the name of the Association.

ARTICLE VII

MEMBERSHIP MEETING

Section 1 - FISCAL YEAR - The fiscal year of the Association shall commence on the first day of January and end on the last day of December.

Section 2 - ANNUAL MEETINGS - The members shall meet at least once a year within ____ days after the end of the fiscal year.

Section 3 - SPECIAL MEETINGS - Special meetings of members may called at any time by the Board of Directors or upon written request of at least five (5) members in good standing or majority of the membership.

Section 4 - NOTICE OF MEETING - Notice of every annual or regular meeting shall be delivered personally to all members within ____ days before such meeting. In addition, a copy of such notice shall be posted for such period in conspicuous or frequented places within the premises of the Association's office. Such notice shall include the purpose, the date and the meeting place.

Section 5 - QUORUM AND VOTING - A majority of the entire membership shall constitute a quorum, the meeting of the members may adjourn from time to time until the quorum shall be present.

In every meeting of the entire membership, each member shall be entitled to one vote.

Section 6 - ORDER OF BUSINESS - The order of business in every meeting shall, as far as practicable, be as follows:

a) Roll call and proof of quorum;
b) Proof of the notice;
c) Reading of and action on the minutes of the last meeting;
d) Report of officers and committees;
e) Recommendations and proposals;
f) Approval of the budget for the ensuing year;
g) New business;
h) Election of directors and/or officers; and
i) Adjournment

ARTICLE VIII

BOARD OF DIRECTORS AND COMMITTEES

Section 1 - NUMBER OF DIRECTORS AND QUALIFICATIONS - The affair and business of the association shall be administered by a Board of Directors of ( ). However, the number of Directors may be increased according to need. The Board of Directors must possess the following qualifications:

1) He must be a member in good standing;
2) He must know how to read and write;
3) He must be of good moral character and reputation in the community;
4) He must be engaged in actual farming within the area of operation of the Association;
5) He must not be holding any elective position in the government higher than a barrio councilman nor actively engaged in partisan politics.

Section 2 - ELECTION AND TERM OF OFFICE - Directors shall be elected at the annual meeting within ____ day from the end of the Fiscal Year, by secret ballot. Elected Directors shall hold office for a term of one year until the election and qualification of their successors. No Directors shall be elected for more than two consecutive terms.

Section 3 - ELECTION OF OFFICERS - The Board of Directors immediately after election shall meet and elect from among themselves by secret ballot, the President and the Vice-President. Each of whom shall hold office until the election and qualification of their successors, unless sooner removed for cause.

Section 4 - VACANCIES - Whenever a vacancy occurs in the position of a director through death resignation removal, the members of the Association shall meet to elect a successor who shall serve only the unexpired term; provided, that where such vacancy occurs within two months immediately preceding the next regular election of directors, the vacancy shall be filled at such regular election.

Section 5 - REMOVAL OF DIRECTORS - Any member of Association may bring charges against a director by filling the same in writing with the Secretary of the Association together with a petition signed by at least five (5) members in good standing of the Association. The Board of Directors must call a special meeting of the Association to reconsider theremoval. The affirmative vote of two-

thirds (2/3) of the entire membership of the association shall be necessary to remove the director in question. The Director, against whom charges have been brought, shall be informed in writing of the charges against him at least ten (10) days before the meeting, and shall have an opportunity to be heard in person or by counsel and to present witnesses during the meeting called for the purpose, and the person or persons bringing the charges shall have the same opportunity.

Section 6 - REIMBURSEMENT OF EXPENSES - The Board of Directors shall serve the Association without any compensation or honorarium. However, as far as practicable, they may be reimbursed for actual and necessary expenses incurred by them for activities directly related with the Association.

Section 7 - COMMITTEES AND OFFICERS - Six standing committees are hereby created, to wit:

1. Education and Training Committee

   Manner of Election - Consists of three members with the Vice-President automatically serving as Chairman. Two members are appointed by the Board of Directors, during its first meeting from the general membership.

2. Finance and Development Committee

   Manner of Selection - The Secretary-Treasurer who shall also serve as Chairman and two members are elected from and by the General Assembly during its first organizational meeting.

3. Audit and Inventory Committee

   Manner of Selection - This is a three-man committee. The Auditor who shall concurrently serve as Chairman and the two members are elected by the general assembly from among themselves during its first organizational meeting.

4. Irrigation Management Committee

   Manner of Selection - This is also a three-man committee. The Irrigation Superintendent or his duly authorized representative shall serve as Chairman and the two members shall be appointed by the Board during its first meeting.

5. Agricultural Supervisory Committee

   Manner of Selection - A Chairman and two

members shall be appointed by the Associations Board of Directors during its first meeting from among the members.

6. Complaint Committee

Manner of Selection - A Chairman and two members are elected by the General Assembly from among themselves during its organizational meeting.

Section 8 - REGULAR MEETING - Regular meetings of the Board of Directors shall be held at the principal office of the Association on the _____ of each month or at such other place as the Board may determine.

Section 9 - SPECIAL MEETING - A special meeting of the Board of Director shall be held whenever called by the President or by majority of the Directors on _____ days written notice to each Director. Such notice shall state the time, place and purpose of the meeting.

Section 10 - QUORUM - A majority of the Board of Directors shall constitute a quorum at any meeting thereof, a majority vote of the Directors present at any Board meeting shall be enough to decide any question.

Section 11 - POWERS AND DUTIES OF THE BOARD - The Board of Directors shall have entire charge of the affairs and properties of the Association and general management of its activities and operations. The Board of Directors shall have the following powers and duties:

a) To formulate and implement rules and regulations not inconsistent with law, the Articles of Incorporation and By-Laws for the management of the affairs of the Association and for the guidance of the Association's officers and members;

b) To fix uniform rate of irrigation fees per hectare per harvest season in accordance with the NIA's standard rate;

c) To require proper records to be kept of all transactions of the Association;

d) To elect officers of the Association;

e) To appoint other employees, who may not be members of the Association and to fix their compensation;

f) To help member-irrigators secure loans from any government and private lending agencies;

g) To submit to the membership the _____ financial statement of the Association;

h) To decide on the matter of merging or federating with other similar associations;

i) To decide on the disposition of any surplus funds in case of dissolution and/or liquidation of the association; with the concurrence of the majority of the general membership;

j) To act on the application for and withdrawal from membership; and

k) To create other committees as it deems necessary.

ARTICLE IX

OFFICERS

Section 1 - DUTIES AND POWERS OF THE PRESIDENT - The President shall have the following powers and duties:

a) To exercise general supervision and direction of the Association's affairs and to oversee the proper implementation of resolutions and instructions of the Board of Directors;

b) To represent the Association in all social and economic activities to which it is a party or participant;

c) To preside over all meetings of the Board of Directors;

d) To prepare in consultation with appropriate officers and committees, a yearly program of activities of the association;

f) To exercise such other powers and perform such other duties as the Board may from time to time fix or delegate.

Section 2 - DUTIES OF THE VICE-PRESIDENT - The Vice-President shall exercise all the powers and perform all the duties of the President during the absence or incapacity of the latter and shall concurrently serve as chairman of the Education and Training Committee.

Section 3 - DUTIES OF THE SECRETARY-TREASURER -

a) To keep full minutes of all meetings of the members committees and the Board of Directors;

b) To serve as custodian of all records, assets and other finances of the Association;

c) To keep an up-to-date list of members;

d) To receive and present application for membership to the Board of Directors and to inform the applicant of whatever action is taken by the Board;

e) To fill and countersign all certificates of membership issued; and

f) To give or cause to be given, all notice required by law or by-laws of the Association, as well as notices of meetings of the members and the Board of Directors; and shall concurrently serve as the Chairman of the Finance and Development Committee.

Section 4 - IRRIGATION SUPERINTENDENT - The System Superintendent shall:

a) Take charge of the day-to-day management and operation of the irrigation system within the jurisdiction of the Association;

b) Assist in the preparation of annual program of activities;

c) Supervise canal and farm ditches repairs and maintenance, water distribution and use within the Association's jurisdiction;

d) Be responsible for the maintenance and safekeeping of terminal irrigation facilities and other appurtenant structures within the Association's jurisdiction;

e) Concurrently serve as chairman of the Irrigation Management Committee; and

f) Perform such other duties as the Board of Directors may from time to time prescribe or delegate.

Section 5 - SUPERVISING AGRICULTURIST - The Supervising Agriculturist (Agricultural Supervisory Committee) shall:

a) Prepare a calendar of farming activities in accordance with the approved program of activities of the Association;

b) Be responsible for the day-to-day follow-up of Association's farming operations and see to it that instructions on proven and modern farm practices are carried out properly;

c) Assist farmer-irrigators in the preparation of farm plan and budget;

d) Assist the System Superintendent in the supervision of drainage canal and farm ditches maintenance and repairs;

e) Assist in the proper distribution and use of irrigation water;

f) Concurrently serve as the Chairman of the Agricultural Supervision Committee; and

g) Perform such other duties as the Board of Directors from time to time may prescribe.

Section 6 - AUDITOR - The Auditor shall audit the book of accounts of the Association and shall concurrently serve as Chairman of the Audit and Inventory Committee.

ARTICLE X

EDUCATION AND TRAINING COMMITTEE

The Education and Training Committee shall be responsible for all education, training and/or information aspects of agricultural production, i.e., improved irrigation procedures and other related group activities on irrigation matters and shall make an annual program for water-users education in coordination with the President and other specialized committees. It shall be responsible for the promotion of cooperative work to enhance the promotion of farm activities to benefit the water-users.

ARTICLE XI

FINANCE AND DEVELOPMENT COMMITTEE

The Finance and Development Committee shall plan and implement savings scheme and other fund-raising projects; shall coordinate with other committees as may be necessary; and shall spearhead affiliation or federation of the association with other similar associations.

ARTICLE XII

IRRIGATION MANAGEMENT COMMITTEE

Section 1 - The Irrigation Management Committee shall be in charge of planning, coordination and actually executing the efficient distribution and use of irrigation water. It shall be responsible for the joint or group actions of farmer-irrigators in the proper maintenance and operation of farmditches and drainage canals and within their jurisdiction. It shall also be in charge of closely coordinating other related group activities on irrigation matters.

ARTICLE XIII

AUDIT AND INVENTORY COMMITTEE

Section 1 - The audit and Inventory Committee shall be responsible for auditing the account of the Association. It shall conduct an inventory of all assets of the Association. It shall conduct such audit at least quarterly and submit its report thereon to the Board of Directors.

ARTICLE XIV

AGRICULTURAL SUPERVISORY COMMITTEE

Section 1 - The Agricultural Supervisory Committee in coordination with Education and Training Committee and Irrigation Management Committee shall be in charge of formulating and preparing calendar of farming activities and operations. It shall also be responsible for overseeing and supervising actual application and adoption of recommended modern and proven farming practices such as, use of high yielding varieties of rice, proper land preparation, proper water management, use of recommended rate and timely application of fertilizer, insecticides, herbicides, etc.

ARTICLE XV

COMPLAINT COMMITTEE

The Complaint Committee shall welcome any and all grievances and complaints filed by a member of the Association against any of the other members or officers. It shall establish procedures whereby such complaint can promptly be investigated and acted upon with dispatch. Any action of the Complaint Committee is appealable to the Board of Directors or to the entire membership at their annual or special meeting called for the purpose.

ARTICLE XVI

THE DISSOLUTION AND LIQUIDATION

Section 1 - CAUSES FOR DISSOLUTION - The Association may be dissolved by resolution adopted by a majority and affirmative vote of all members at a regular or special meeting called for the purpose or any cause provided by existing laws.

Section 2 - ORDER OF PAYMENT OR LIQUIDATION - After dissolution, the assets of the Association shall be used to pay liquidation expenses and all debts of the Association. Any surplus assets may be donated to any community project, whether economic, educational, cultural or social or may be prepared among members and officers of the association depending upon the final decision of the entire membership.

ARTICLE XVII

MAINTENANCE OF IRRIGATION FACILITIES AND STRUCTURES AT THE FARM LEVEL

Section 1 - All terminal irrigation facilities and other appurtenant structures within the Association's jurisdiction shall be maintained by rendering voluntary and personal services either individually or jointly. Members of the Association must see to it that irrigation ditches and drainage canals are in good condition and free of silt deposits and vegetative growth so as to have free and smooth conveyance of irrigation water in their area.

ARTICLE XVIII

OTHER RULES AND REGULATIONS

The Board of Directors may deem necessary to promulgate such other rules and regulations governing the relationship of the members among themselves in line with the rendition of personal or joint services, distribution of irrigation water, use and disposition of irrigarion water, construction of dikes, ditches and drains and such other matter as may be involved in the operation of irrigation systems within the Association's jurisdiction. All members shall abide and comply with such rules and regulations. Violations of such rules and regulations as well as those of the By-Laws may subject the offender to a penalty in an amount not exceeding _____ (P_____).

ARTICLE XIX

USE AND DISPOSITION OF ASSOCIATION FUNDS

Section 1 - Funds derived by the Association in the form of required fees, dues and other contributions from other entities considered legal for the purpose, shall be part of the general fund and may be used for:

a) Payment of discharges and obligations of the Association.

b) Payment of cost of maintenance and repair of terminal facilities and other irrigation structures, particularly in communal irrigation projects/systems.

c) Payment of such other expenses that may arise in the conduct and operation of its activities.

Above-mentioned accummulated funds shall be deposited with the nearest depository bank in the name of the Association. Withdrawal of said funds shall only be made on the signature of any officer or officers of the Association as may be designated by the Board of Directors.

Section 2 - FIXED DEPOSIT - The rules and regulations as to the use of this deposit shall be decided upon with proper resolution by the Association itself.

Section 2 - PERSONAL SAVINGS - This shall be withdrawable only on the signature of any officer/officers as may be designated by the Board of Directors at any time upon the need of the members.

ARTICLE XX

MISCELLANEOUS PROVISIONS

1 - Merger - The Association may upon recommendation of the Board of Director, affiliate itself with other associations having similar objectives as those of the association.

2 - Seal - The Board of Directors or the President, by delegation of the Board, shall provide a suitable seal for the Association.

3 - Printing - The Articles of Incorporation and By-Laws shall be prepared in pamphlet form and a copy thereof shall be distributed to each member.

ARTICLE XXI

1 - Amendments - These By-Laws may be amended, altered, or repealed whole or in part, or a new By-Laws may be adopted at any regular or special meeting called for the purpose, by a vote of the majority of all the members entitled to vote.

Adopted in the Municipality of _____ Province of _____ this ____ day of _____ 19___ by the vote of a majority of the members of the Association.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

REFERENCE MATERIAL-2.

SAMPLE DOCUMENT OF IA's MEMORANDUM OF AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

This Memorandum of Agreement made and entered on June 29, 1982, at Dulong Ilog, Candaba by and between

The National Irrigation Administration (NIA), a government owned corporation created under Republic Act No. 3601 with office address at NIA Building Complex, EDSA, Quezon City, represented by its Regional Irrigation Director, FEDERICO L. GENDRANO, Region III, Tambubong, San Rafael, Bulacan

- a n d -

The MASIKAP IRRIGATORS ASSOCIATION, INC., an association duly registered under the laws of the Philippines with principal address at Barangay Dulong Ilog, Candaba, Pampanga represented by its President CONRADO MANAPUL

WITNESSETH

WHEREAS, the NIA operates and maintains the Angat Massim River Irrigation Systems from the diversion structures.

WHEREAS, the MASIKAP IRRIGATORS ASSOCIATION, INC. is desirous to undertake the operation and maintenance of South Main Canal (SMC) Sta. 0+000 up Sta. 6+150 serving their areas from Dulong Ilog, Candaba up to San Juan, San Luis, Pampanga.

WHEREAS, the NIA has decided to turnover the operation, maintenance and collection of irrigation fees of South Main Canal to MASIKAP IRRIGATORS ASSOCIATION, INC., and in return NIA shall pay the Association NINE THOUSAND PESOS (₱9,000.00) per annum and a 3% bonus of their collections provided they had collected at least 100% of the current account in one year. The 3% bonus will be computed after deducting the 10% discount given to irrigation users who paid their irrigation fees on or before the scheduled collection.

WHEREAS, the payment for operation and maintenance of said canal will be paid every second month of the year, while payment of bonus for the current collection will be paid on July 31, 1983, after the rainy season of 1982, dry season of 1983 and succeeding years to come.

WHEREAS, the MASIKAP IRRIGATORS ASSOCIATION, INC. shall assume the responsibility of collecting irrigation fees from its members and the usual 10% discount to early payers shall be decided upon them.

WHEREAS, the MASIKAP IRRIGATORS ASSOCIATION, INC. shall assume also the responsibility of collecting irrigation fees from its delinquent members and in return NIA will give the Association 10% bonus on these delinquent irrigation users. This said bonus will be given on July 31, 1983 and succeeding years to come.

WHEREAS, the NIA and the MASIKAP IRRIGATORS ASSOCIATION, INC. will jointly review all list of irrigated and planted farms as well as farms not included but being irrigated and not irrigated at the time of planting season.

WHEREAS, any complaint of its members in connection with irrigating their farms will be the responsibility of the Association and all complaints not covered and under the jurisdiction of the Association will be referred to NIA.

WHEREAS, this Agreement will be renewed every July 1 of every year and will be supplemented or amended its contents based on mutual understanding of both parties, and if the responsibility of the Association so warrants.

WHEREAS, this Agreement will take effect on July 1, 1982.

NOW, THEREFORE, the parties have agreed and by these presents do hereby agree on the following:

I. OBLIGATION OF THE NIA:

1. To guarantee the supply of irrigation water both for dry and wet season crops up to turnout level based on pre-determined water delivery schedule furnished by the NIA.

2. To provide the MASIKAP IA on advance information in case of inability to deliver water due to unavoidable circumstances.

3. To perform major repairs of the irrigation facilities such as canals and appurtenant structures, turnouts and project drains.

4. To pay the MASIKAP IA the amount for operation and maintenance of South Main Canal (Sta. 0+000 up to Sta. 6+150) every end of two months.

5. To furnish the MASIKAP IA the total bills of the members at least ten (10) days before harvest.

6. To furnish the MASIKAP IA the bills of unpaid irrigation fees of its members.

7. To provide the MASIKAP IA with parcellary maps of the area under contract.

8. To study the list of farms being planted submitted by the Association.

9. To provide technical supervision in the proper implementation of the agreement.

10. To appoint Collectors who will give official receipts to the members of the Association at the time of collection scheduled by the Association.

II. OBLIGATION OF THE MASIKAP IRRIGATORS ASSOCIATION, INC.

1. To clear, maintain and provide minor repairs to irrigation service canals and structures under contract and to include farm ditches and drains.

2. To appoint a Common Irrigator who should manage water distribution to individual farms and designate a place preferably a shed along the canal for NIA to hold a consultation of assistance works.

3. To follow strictly the agreed irrigation water delivery schedule.

4. To submit to NIA a weekly report of List of Irrigated and Planted Areas and duly signed request of water deliveries of its members.

5. To attend to meetings called by the NIA-re-operation and maintenance of canals.

6. To serve irrigation bills and to collect irrigation fees among individual members.

7. To coordinate, confer, collect and pay to NIA all collections for irrigation fees based on scheduled time for issuance of official receipts by the NIA.

8. To submit to NIA rules and regulations in order to attain objectives of both parties.

Translated by:

ARTURO C. SOLANO
NIA Legal Assistant A

5.5 Collection of Irrigation Fee

5.5.1 Payment Availability of the Beneficiary Parmers on the Irrigation Fee

According to the NEDA Resolution No.20 (Series of 1978), "Irrigation fees are to be established at levels that will Provide for total coverage of working expenses incurred in the operation and maintenance of irrigation systems".

Current situations of collected fees and actual expenditures of AMRIS are tabulated as follows:

		1978	1979	1980	1981	1982
Collected fee	(A)	3,657	4,467	4,598	6,336	6,647
Collectible	(B)	6,281	7,940	8,835	10,046	10,837
Expenditure	(C)	6,195	5,280	7,000	8,157	9,363
Ratio A/B (%)		58	56	52	63	61
B/C (%)		101	150	126	123	116
A/C (%)		59	85	66	78	71

Note: Unit of amount is thousand pesos

The percentage of collected fees to collectible fees and collected fees to actual expenditures for the last five (5) years from 1978 to 1982 are about 58 percent and 72 percent on average, respectively.

According to the farm economy survey conducted by the team, percentage of irrigation fee occupied in disposal incomes which are obtained from the difference between gross income (farm income + off-farm income) and expenditures (production cost + living allowance) is 10.2 for lease holder, 5.7 for amortizing owner and 5.5 for owner operator respectively. It is concluded that the majority of the beneficiary farmers can pay the imposed irrigation service fees as long as they are harvesting paddy without any natural disasters.

5.5.2 Prospect of Collectible Irrigation Fees

Collectible irrigation fees of the without and with Project based on the NIA standards are estimated as follows:

Item	Wet season Paddy (ton)	Wet season Amount (₱1,000)	Dry season Paddy (ha)	Dry season Amount (₱1,000)
A. Without Project				
Gravity area (29,113 ha)	2,099	3,778	3,938	7,088
Pump area (2,373 ha)	356	641	593	1,067
Total (31,485 ha)	3,455	4,419	4,531	8,155
B. With Project				
Gravity area (32,592 ha)	2,420	4,356	5,564	10,015
Pump area (2,373 ha)	356	641	593	1,067
Total (34,965 ha)	2,776	4,997	6,157	11,082

Incremental collectible irrigation fees are estimated at about 3.51 million pesos as the surplus between without project amount of 12.57 million pesos and with project amount of 16.08 million pesos.

On the other hand, required operation and maintenance costs for before and after partial turnover of O & M works were already been discussed in the previous paragraph. The collection efficiencies of irrigation fees are estimated as follows:

(Unit: ₱1,000)

Item	Before Turnover	After Turnover
Collectible fees (A)	16,079	16,079
Required O & M cost (B)	9,580	13,092
Ratio (C)=(A)/(B)x100	60	81

The current collection efficiencies of irrigation fees including back account fees are about 60 percent more or less. From the above table, the target collection efficiency can be expected to increase to about 80 percent in future if proposed expansion area of about 3,500 ha and crop intensity of 182 percent could be developed or realized.

5.5.3 Collection Procedures of Irrigation Fee

1) Basic Policy

Policy of the irrigation fee collection after a capable irrigators association has been established shall adopt the following conceptions.

a) Irrigation Service fees shall include the fee for NFA requirements and the annual operation costs for IAs.

b) The beneficiary farmers shall pay the amount of NIA requirements for their programmed areas in the respective crop season in advance befor starting the crop.

c) Advanced payment shall be cleared off by the IAs based on the actual planted area at the harvest period.

d) The IAs shall keep and deposit the fees collected from the beneficiary farmers up to the harvest season. The interest resulted from the deposit will be used as a part of the operation costs required of IAs.

e) Operation cost of the IAs shall be collected from the farmers adopting same manner of item b described above.

2) Preparatory Work

Preparatory work includes the following item.

a) Preparation and consolidation of parcellation (Cadastral) maps and statement for each beneficiary farmer within the Area of IAs.

b) Preparation of reports on the programmed area, actual irrigated area and harvested area.

c) The IAs shall prepare annual budget schedule and collection scheduled for IAs' operation costs.

d) The president of respective IAs shall submit timely the reports on programmed irrigated and harvested area through the zone engineer offices.

3) Billing

Billing shall be made by the Bill, Collection section in the AMRIS main office for both NIA and IAs requirements during the initial period of IAs developments.

All billing inclusive of back account calculation and accounting shall be computerized in order to reduce operation costs and speed up the work.

4) Collection Process

Both bills such as NIA requirements and IAs will be distributed from bill, collection section to respective IAs through each engineer's office.

The bills after being checked by the IA Office shall be distributed to LTG from respective IA Office.

The LTG shall collect the fees from his group members under the cooperation of DT. Collected fees for both IA and NIA requirements shall be remitted to the IA Office directly by the LTG.

The president of IAs shall remit collected fee for NIA requirements to the AMRIS main office directly and or deposit to the specified bank by NIA after adjustment has been made, and accepted by NIA.

If collected fees are in kind, IAs will have to pay the cash equivalent of irrigation fees using government support price for palay.

NIA shall emphasize to IAs the benefits of prompt payment of fees. It may grant the IAs direct collection incentives, commissions, or rebates for actual collection.

5) Incentive Bonus Plan

a) NIA shall pay the IAs following rates of incentive bonus for their collections made for the current account in one year.

Collection Efficiency	Incentive Bonus*
100 - 95%	3%
94 - 90%	2%
89 - 80%	1%

* The incentive bonus to be paid by NIA shall be the collected amount multiplied by the above rates.

b) The association shall assume responsibility for collecting irrigation fees from its members and the usual ten percent discount to early payers shall be decided upon them.

c) The association shall also assume responsibility for collecting irrigation fees from its delinquent members and in return NIA will give the association a ten percent bonus on these delinquent irrigation users.

5.6 Strengthening Operation and Maintenance Facilities and Equipment

5.6.1 Building

The buildings under the AMRIS Office presently comprise the main office, waterhouse for paddy storage, motor pool and office of twelve working stations including local staff houses for gatekeepers.

The first necessity is to provide two zone engineer's offices at an appropriate location on Angat North and South main canals. These office will be used as main field offices during the project implementation period and post project.

Existing working station offices shall be furnished to related irrigator associations after operation and maintenance work is turned over to IAs and AMRIS Office is also reorganized.

5.6.2 Computerization of the Work

In order to speed up work performance and several data processing and analysis, computerization of the related work is vitally important for improving O & M structures in the Project. Utilization of a computer system with appropriate capacity will result in smooth execution of the work and cost reduction of O & M work.

Major purposes of computerization are processing, analyzing and evaluation of collected data and information for water management and inputting basic data on the billing and computing irrigation fee and accounting for remitted fees.

5.6.3 Proposed Operation and Maintenance Equipments

(1) Number of Equipments and Deployment Scheme

The majority of the existing equipments and vehicles are being utilized continuously from the end of AMIADP. There are a number of operable equipments and vehicles in existence. Some of them, however, have already used their economic durable life while others have not yet. Therefore, proposed numbers of equipment and vehicle as listed in Table B.5.6-1 will be required to strengthen maintenance works.

It has been proposed to deploy totally 386 O & M equipments consisting of 11 currently/operation ones, 27 equipments that will be first mobilized for rehabilitation work and later transferred for O & M, and the remaining 348 will be newly purchased for O & M works.

(2) Operation Scheme for Reinforced O & M

Table B.5.6-2 presents the annual operation scheme for these equipments. The scheme estimates for each equipment the annual standard operable days, operation hours/distance per day, and the ratio of operable equipment.

The annual standard operable days is 90 - 60 days for canal excavation equipment. Since these machines are mobilized only when no water is distributed in the canal and, therefore, tend to be well repaired, the ratio of operable equipment is assumed to be 95 percent and the operation hours are 10 hrs per day.

An annual standard operation time of 200 days per annum is allocated for vehicles that are most often utilized such as Dump Truck and Bulldozer, in comparison to 240 days for staff's transportation such as Jeep and Station Wagon, etc.

Proposed operation scheme (Table B.5.6-2) reinforces the actual 1982 scheme to enhance the efficiency of O & M works.

Table B.5.6-3 lists the equipments with their major proposes and quantity.

(3) Heavy Equipment Support for IAs O & M Works

After partial turnover of O & M works to IAs, NIA shall follow up IAs' Maintenance Work and when IAs execute construction works using heavy equipments. In this case, IAs shall pay the cost of operator wage, fuel and depreciation cost of the equipments.

TABLE B.5.6-1 PROPOSED EQUIPMENT FOR O&M

Name of Equipment	Quantity	through from Existing	Transfer	Procured	Remarks
Dump truck 6.0 ton	8	2	6	-	L.E.
Stake truck 6.0 ton	4	-	-	4	L.E.
Front end loader	2	2	-	-	H.E.
Backhoe 0.4 cu.m.	5	-	5	-	H.E.
Crawler crane	2	2	-	-	H.E.
Bulldozer 140 HP	4	-	4	-	H.E.
Motor grader 75 HP	3	-	3	-	H.E.
Road roller 8 ton	1	-	1	-	H.E.
Trank tractor	2	2	-	-	H.E.
Station wagon	4	-	1	3	L.E.
Jeep	4	-	-	4	S.V.
Pick-up Truck 3/4 ton	9	-	-	9	L.E.
Fork lift	1	1	-	-	H.E.
Mobile car	1	1	-	-	L.E.
Lubrication car	1	1	-	-	L.E.
Water tank truck	1	-	1	-	L.E.
Concrete mixer	6	-	6	-	L.E.
Centrifugal pump 100mm	6	-	-	6	L.E.
Sand pump unit	2	-	-	2	L.E.
Motorcycle	320	-	-	320	Tr
Total	386	11	27	348	

Note: L.E.: Light Equipment 42 unit.
H.E.: Heavy Equipment 20 unit.
S.V.: Service Vehicle 4 unit.
Tr : Transportation Eq. 320 unit.

TABLE B.5.6-2 PROPOSED OPERATIONAL DISTANCE/HOUR

	Actual (1982)		Proposed		Item of Estimation			
	Unit	Operated Distance/Hr	Unit	Operation Distance/Hr	Annual Standard Operable Days	Daily Operation Hrs/Distance	Ratio of Operable Equipment (%)	Note
Dump Truck	8	87,319 km	8	102,400 km	200	80 km	80	
Stake Truck	4	10,352 km	4	25,600 km	100	80 km	80	
Loader	2	1,445 km	2	1,600 km	100	10 km	80	
Backhoe	5	3,732 hr	5	4,275 hr	90	10 hr	95	
Crawler Crane	2	577 hr	2	1,140 hr	60	10 hr	95	
Bulldozer	3	2,884 hr	4	3,200 hr	200	5 hr	80	
Motor Grader	3	354 hr	3	1,200 hr	100	5 hr	80	
Road Roller	1	69 hr	1	400 hr	100	5 hr	80	
Truck Tractor	2	11,633 km	2	12,800 km	100	80 km	80	
Station Wagon	1	52,434 km	4	61,440 km	240	80 km	80	
Pick-up	9	138,832 km	9	138,240 km	240	80 km	80	
Jeep	2	37,415 km	4	61,440 km	240	80 km	80	
Fork Lift	1	150 hr	1	800 hr	100	10 hr	80	
Lube Truck	1	Not available on file	1	684 hr	240	3 hr	95	
Mobil Shop. Truck	1	- do -	1	684 hr	240	3 hr	95	
Mixer Concrete	-	- do -	6	2,400 hr	100	5 hr	80	
Pump Centrifugal	-	- do -	6	2,400 hr	100	5 hr	80	
Water Tank Truck	-	- do -	1	400 hr	100	5 hr	80	
Motorcycle	320	- do -	320	184,320 hr	240	3 hr	80	

TABLE B.5.6-3 MAJOR PURPOSE AND FACILITY CLASSIFICATION OF EQUIPMENT

Major Purpose	Name of Equipment	Quantity	Facility Classification		
			Road	Canal	Other
Hauling materials	Dump & stake truck	Δ 12	o	o	o
Excavation	Backhoe	* 5		o	
Deserting & Lifting	Loader (2)	Δ			
	Crane (2)	* 5	o	o	
	Fork lift (1)	Δ			
Earth works	Bulldozer	Δ 4	o	o	
Levelling	Motor grader	Δ 3	o		
Compaction	Road roller	Δ 1	o		
Hauling equipment	Truck tractor	Δ 2	o	o	
Hauling of various material	Pick-up (9)	o 16	o	o	o
	Water tank truck (1)	Δ			
	Mobile car (1)	o			
	Lube car (1)	o			
	Station wagon (4)	o			
Service vehicle	Jeep	o 4			o
Transportation eq.	Motorcycle	o 320			o
Other	Pump (8)	Δ 14			o
	Mixer (6)				
Total		386			

Note : Δ : To be used for 180 to 200 days through the year for road maintenance, etc.

* : To be used for 90 days (45 + 45 days) during the off-season period for canal maintenance.

o : Irrespective of the above, to be used for 240 days through the year for transportation.

5.7. Operation and Maintenance Cost

Operation and maintenance costs of the Project during the last three years from 1980 to 1982 are summarized as follows:

(Unit: P1,000)

Item	1980		1981		1982	
	Amount	%	Amount	%	Amount	%
Personnel service	5,250	70.2	6,386	70.2	6,244	66.7
Power, illumination	1,538	20.6	1,415	16.2	1,738	18.6
Other expenses	697	9.2	924	10.6	1,373	14.7
Total	7,485	100.0	8,725	100.0	9,355	100.0

It is easily understood from the table that shares of personnel services and power for pumping station including office illumination charges reached about 70 percent and 18.5 percent, respectively. With 2.2 percent for material supply for system maintenance, maintenance costs consisting of operator wage for equipment, fuel and materials consumed only ten percent more or less of the total annual expenditures.

A recommendable approach to improve the operation and maintenance works is to provide a sufficient maintenance budget in order to keep proper conditions of the system, supply the water to the farm land timely and equitably. In this way, NIA will earn farmer's confidence in better irrigation services.

To increase budget allocation for maintenance work within the limited annual budget, efforts shall be made to realize the followings.

1) Increasing crop intensity which will increase amount of collectible irrigation fees, resulting in higher amount of total collected irrigation fees.

2) Increasing collection efficiency which can be expected once the farmers are favored with the benefits of better maintained irrigation systems under the active collection of the fees by the NIA and IAs.

3) Cost reduction of operation and maintenance works especially personnel services which can be expected by utilization of computer system to simplify regular tasks and by partial turnover of the operation and maintenance works to IAs.

The prospected annual operation and maintenance costs based on the staffing plans for before and after partial turnover to the IAs are tabulated in Table B.5.7-1 and the summary is described as follows:

(Unit: P1,000)

Description	Before Turnover	After Turnover		
		NIA	IAs	Total
1. Personnel services	6,468	4,900	1,822	6,722
2. Power illumination	1,738	1,800	-	1,800
3. Other expenses	1,374	1,530	3,040	4,570
Total	9,580	8,230	4,862	13,092
Service area (ha)	34,965	34,965	34,965	34,965
O & M cost per ha	0.274	0.235	0.139	0.374

TABLE B.5.7-1 SUMMARY OF OPERATION AND MAINTENANCE COST

(Unit: ₱1,000)

Description	Before Turnover			After Turnover			Remarks
	NIA	IA	Total	NIA	IA	Total	
	*1/			*2/	*3/		
1. Personnel Services	6,468	-	6,468	4,900	1,822	6,722	
2. Power Charges, Illumination	1,738	-	1,738	1,800	-	1,800	
3. Other Expenses							
Travel expenses	32	-	32	40	-	40	
Communication	4	-	4	10	-	10	
Transportation allowance	6	-	6	20	-	20	
Insurances	192	-	192	250	-	250	
Supplies & Materials	256	-	256	300	500	800	
Gasoline, oil, fuel	510	-	510	510	500	1,010	
Depreciation of equipment	-	-	-	-	500	500	
IAs operation cost	-	-	-	-	1,440	1,440	
Other expenses	374	-	374	400	100	500	
Sub-total	1,374	-	1,374	1,530	3,040	4,570	
Total (1-3)	9,580	-	9,580	8,230	4,862	13,092	
Service area (34,965 ha)							
O & M cost per hectare	0.274	-	0.274	0.235	0.139	0.374	

Note: *1/ : Refer to TABLE B.5.7-2
*2/ : Refer to TABLE B.5.7-3
*3/ : Refer to TABLE B.5.7-4

TABLE B.5.7-2 PERSONAL SERVICES FOR NIA OFFICE (BEFORE TURNOVER)

Grade	Salary Basic per Annum	Salary per Annum	Construction		O & M	
			Quantity	Cost	Quantity	Cost
1-A	*1/ 4,800	*2/ 10,268	0.5	5,134	3.5	35,938
1-B	5,300	10,931	-	-	1.0	10,931
1-2	5,628	11,366	2.0	22,732	2.0	22,732
2-4	6,888	13,038	0.5	6,519	0.5	6,519
2-6	7,608	13,993	-	-	224.0	3,134,432
4-2 (3-4)	7,608	13,993	16.0	223,888	3.0	41,979
4-3 (3-5)	7,992	14,502	6.0	87,012	19.0	275,538
4-4	8,400	15,044	18.4	276,810	10.6	159,466
5-3 (4-5)	8,832	15,617	3.4	53,098	16.6	259,242
6-2 (5-4)	9,288	16,222	8.0	129,776	6.0	97,332
7-2 (6-4)	10,260	17,511	25.5	446,530	2.5	43,777
7-3	10,776	18,196	-	-	1.0	18,196
8-2 (7-4)	11,328	18,928	13.0	246,064	13.0	246,064
9-2 (8-4)	12,516	20,504	21.0	430,584	-	-
10-2 (9-4)	13,824	22,239	6.0	133,434	52.0	1,156,428
10-4	15,264	24,150	62.0	1,497,300	5.0	120,750
11-4	16,860	26,267	8.9	233,776	27.1	711,836
13-5	21,624	32,587	-	-	1.0	32,587
14-4	22,728	34,052	0.8	27,242	1.2	40,862
17-2	27,732	40,691	0.4	16,276	0.6	24,415
19-2	33,816	48,762	0.4	19,505	0.6	29,257
	Total		192.8	3,855,680	390.2	6,468,281

Note : *1/ Salary Basic : by "SALARY SCHEDULE - HONTHLY/ANNUM BASIC CLASS "H" CORPORATION" Management Services Department, NIA.

*2/ Salary : (Salary Basic x 1.32667) + 300 x 13 mon.

TABLE B.5.7-3 PERSONAL SERVICE FOR NIA OFFICE
(AFTER TURNOVER)

Grade	Salary Basic per Annum	Salary per Annum	O & M Quantity	O & M Cost
1-A	*1/ 4,800	*2/ 10,268	3.5	35,938
1-B	5,300	10,931	-	-
1-2	5,628	11,366	2.0	22,732
2-4	6,888	13,038	0.5	6,519
2-6	7,608	13,993	92.0	1,287,356
4-2 (3-4)	7,608	13,993	5.0	69,965
4-3 (3-5)	7,992	14,502	32.0	464,064
4-4	8,400	15,044	13.5	203,094
5-3 (4-5)	8,832	15,617	15.5	242,063
6-2 (5-4)	9,288	16,222	12.0	194,664
7-2 (6-4)	10,260	17,511	2.5	43,778
7-3	10,776	18,196	1.0	18,196
8-2 (7-4)	11,328	18,928	13.0	246,064
9-2 (8-4)	12,516	20,504	-	-
10-2 (9-4)	13,824	22,239	53.0	1,178,667
10-4	15,264	24,150	3.0	72,450
11-4	16,860	26,267	25.5	669,808
13-5	21,624	32,587	1.0	32,587
14-4	22,728	34,052	2.0	68,104
17-2	27,732	40,691	0.5	20,346
19-2	33,816	48,762	0.5	24,381
	Total			4,900,776

Note: *1/ Salary Basic: by "SALARY SCHEDULE - MONTHLY/ANNUM BACIC CLASS "H" CORPORATION"
Management Services Department, NIA.
*2/ Salary: (Salary Basic x 1.32667)+ 300 x 1.3 mon.

TABLE B.5.7-4 PERSONAL SERVICES (AFTER TURNOVER) FOR I.A.

Position	Number of Officer	Allowance Annum	Cost
President	240	1,200	286,000
Vice-president	240	-	120,000
Auditor	240	-	120,000
Clerical Staff	480	2,700	1,296,000
Leader of T.G.	1,227	-	-
Foreman	3,497	-	-
Total			≒ 1,822,000

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CHAPTER I. AGRICULTURAL DEVELOPMENT

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CHAPTER I AGRICULTURAL DEVELOPMENT

1.1 General

Agriculture of the Project Area has been characterized by lowland rice cultivation with limited upland crop production. Since the establishment of the river irrigation system by NIA in 1972, rapid progress has been made in rice both in the extent of planted area and average yield, resulting in a remarkable increase in cropping intensity and total paddy production. The yield was only two tons or less per ha in the 1960s, but now yield of dry season paddy has reached a constant level of four tons in 1980s in the AMRIS Area unless the fields are attacked by typhoons or pests.

In spite of such advanced status of agriculture in the Area, some problems still lie in land use, farming practice and upland crops introduction, which need to be improved in this Project.

1.2 Present Agriculture

1.2.1 Land Use

Based on the statistical data collected in the first and second stage studies, land use in the present gross area of AMRIS has been investigated by proportional allotment according to the extent of area of each municipality which lies across the project boundary. Expansion areas have also been surveyed for their agricultural status. The present land use is estimated as shown in Table C.1.2-1.

Within the Project Area where irrigation service has been dealt with by NIA, many data are available regarding paddy land use. The map of Figure C.1.2-1 shows status of rice cropping in each Division of Working Stations based on the data of the Crop the Year in 1981. Double cropped land dominates reasonably on the middle and higher side of the Area where irrigation water is available covering the two seasons. While along the marginal areas, single crop land only in dry season markedly increases. Especially in Divisions C and D of Working Station VIII, more than 90 percent of the fields are being planted in this season because of the submergence in wet season. Similar status is more evident in the areas to be expanded except for WS6EX-1 area.

Some uplands/diversified cropped areas are distributed mainly on the comparatively well-drained lands along the Angat River levees. Future concern should be considered on how to develop the idle lands including marsh/fish pond areas into productive lands.

1.2.2 Farm Size and Land Tenure

(1) Farm Size

Average farm size has decreased year by year from 2.5 ha in 1972 to 1.4 ha in 1980. This trend seems to be progressing in the farming area located near big cities such as Metro Manila, and is probably being encouraged by the Land Reform Program, too.

According to the Division-wise survey conducted this time, farm size on average is 1.36 ha in the present service area. This is much smaller than the 2.7 ha of the national average. The results indicate a wide range of the size from 0.5 to 4.4 ha at Division level. Divisions having a smaller size of one ha or less are located mainly from the Baliuag to Malolos area which is densely populated. While, those along Candaba Swamp and Pampanga River, which is sparsely populated, are bigger; three ha or so.

Another sample survey conducted with some of the Divisions revealed the highest distribution of farm size in number of farmer between 0.5 and 1.0 ha but in total farm area between 1.0 and 1.5 ha. Such a small farm size is a bottleneck for economic crop production which must be advanced by improved farming practice in the future under rehabilitated irrigation facilities.

(2) Land Tenure

Amortizing land ownership has been promoted since 1963 under the Land Reform Program. The Government has pursued the Agrarian Reform Program since 1972 under Presidential Decree No.27. It aims at the transfer of land ownership to tenant farmers on rice and corn lands by providing up to three ha of irrigated area and five ha of rainfed area. The farming land lord can retain up to seven ha. Starting

with holdings over 24 ha, issue of the land transfer certificates to tenants has extended to holdings of less than seven ha but with more than seven ha of other agricultural or urban land from which they can get adequate incomes.

Recent changes in land tenure with farm size in AMRIS Area are estimated as follows;

Farmers	Number of farmers (%)		Average farm size (%)	
	1977	1982	1977	1982
Owner-operators	8	18	1.7	1.4
Amortizing owners	17	15	1.7	1.4
Leaseholders	67	64	1.6	1.4
Share tenants	8	3	2.8	1.2
Total/Average	100	100	1.7	1.4

(Five-year Integrated Agricultural Development Plan, 1977 and the present agricultural survey)

Although difficult to discuss further due to some confusion of classification criteria at every survey, share tenants whose share in total number was 73 percent in 1970 have remarkably decreased, being transfered to leaseholders or amortizing owners. As a result, owner-operators have increased with similar transfer by amortization under the Agrarian Reform Program.

As aforementioned, the farm size deviates with Zone, Working Station and Division, but in all average of AMRIS no district difference can be observed among land holding categories. (see Table C.1.2-2)

1.2.3 Crops and Production

(1) Rice

Bulacan Province has always maintained predominance in the rice yield because of its enterprising spirit and introduction of modern techniques. The AMRIS Area is no exception, attaining a high average yield of 4.5 tons per ha in 1982. This is twice the national average of 2.3 tons of irrigated paddy (1978). At present the existing service area can produce more than 220,000 tons of paddy yearly.

Table C.1.2-3 gives the production development in the Area for the last seven years. Paddy yield has increased steadily on the average at four percent of annual increasing rate. Service area and cropping intensity, however, have not shown any marked progress. The intensity would be more extended by introducing diversified or multiple cropping system under appropriate program of irrigation.

Some portions on South Candaba side were once volunteered by farmers to grow rice. The area could support a fairly good yeild in the dry season water conditions were favourable.

(2) Upland Crops

1) Diversified Upland Crops

In response to the government policy for intensification of crop production, the Upland Crop Project has been implemented since 1981 by NIA, MA (BAEx) with the financial assistance of the Rural Banks and PNB. The Project aimed to diversify some upland crops after the dry season rice crop. Main objectives are to improve the present cropping intensity with additional farm income and to increase the benefit ratio of irrigation water. For the dry season of crop year 1981 and 1982, the target areas were scheduled

to cover 1,394 and 455 ha, respectively. Upland crops selected were corn, mungo, pole sitao, watermelon and so on. The results, however, showed some unexpected disappointments because most of the crops did not prosper due to poor farm management, outbreaks of plant pests, and the occurence of natural disasters such as typhoons.

To remedy this situation, it is recommended that an intensification of agricultural extension work with farmers coupled with action plan on the availability of farm inputs be carried out by the government agencies deployed in AMRIS Area particularly NIA and BAEx fieldmen.

2) Crops of Uplands

Upland crops grown here are corn, watermelon and other vegetables. Major vegetables are beans (sitao, peanut and mungo), eggplant, tomato, okra and ampalaya. These are planted rotationally in many scattered small points of the terraces along the river or near the residential sites. When farmers desire some commercial production, they use their rice fields for a short span between just after the dry season rice and before the wet season rice, that is, from January to March or April.

Among the municipalities, Candaba registers the highest corn production. Watermelons are grown mainly on the Bulacan side, Malolos being the first followed by Guiguinto and Plaridel. These are sometimes planted in rotation with rice in the commercial scale farm.

Compiling some of the statistics available for Bulacan and Pampanga Province, total production in the concerned 19 Municipalities is estimated as follows as of 1980;

Total Upland Crops Production
in the Concerned Municipalities
(1980)

Crops	Corn	Vegetables*	Vegetable fruits *	Watermelon
Harvested Area (ha)	997	308	2,555	301
Production (ton)	2,062	2,555	20,453	4,497

Source : Socio-Economic Profile of Bulacan and Pampanga Province (1981-1982)
* Not including 15 Municipalities of Bulacan P.

3) Fruit Crops

Bulacan Province has provided many kinds of fruits, especially the best mangoes followed by santol, coconut and nuts. Leading municipalities producing mangoes within the AMRIS gross area are Malolos, Pulilan and Guiguinto. The production of mangoes is estimated to be about 2,500 tons a year in both Bulacan and Pampanga Municipalities concerned.

1.2.4 Crop Damages

Because of the incomplete embankment system of Pampanga River, lowlying rice fields of the Area have been damaged every two or three years under the long period submergence caused by big typhoon

Based on the official records of the crop failure since 1972, affected area and production are summarized as follows;

Records of Rice Crop Failure in AMRIS Area
(1972-1981)

Cause of damage	Times (year)	Affected Area (ha)	Estimated loss (ton)
Typhoon	6 (1972 - 80)	8,648	25,957
Drought	1 (1981)	466	655
Stemborer	1 (1980)	15	57
Tungro	1 (1980)	6	33
Rat Infestation	1 (1981)	163	668
Total	10	9,298	27,370

The total loss is estimated to amount to more than one eighth of one year's production out of ten years' production. According to the records in 1980 when typhoon Aring attacked the wet season rice, seriously affected were Station V, VI, VII, VIII, IX and XIII where planting was not done or more than 20 percent of the planted area could not be harvested by the flood damage. Due to lack of records in 1974 when a big typhoon hit the country, the total damage would be underestimated in the above table. Anyhow, urgent measures should be taken to solve the excess water problem and improve the situation.

Although no information is available, upland crops have probably suffered from many kinds of calamities. Different from the case of rice, however, these would be infestation damage from drought, pests and rat.

1.2.5 Cropping Pattern and Intensity

1) Rice

In view of the limited source of the irrigation water, AMRIS office, NIA has programmed the annual cropping patterns separating into north side and south side in

combination with the submerging conditions based on the allocation schedules of Angat Reservoir water.

The present pattern is represented by three types which are shown in Figure C.1.2-2. Pattern A is mostly followed in fairly well drained areas wherein late maturing rice varieties can be grown twice a year. Pattern B is common to poorly drained low-lying areas inculding the expansion areas where only dry season rice can be grown using late maturing varieties due to submergence in the wet season. Pattern C covers a small area where double cropping with rice has been tried at a low intensity using early maturing varieties because of the insufficiency of irrigation water. As a result, only74 and 92 percent of the total area in 1982 have been subjected to cropping in the wet and dry season, respectively. Upgrading of cropping intensity is urgently needed by improving irrigation and drainage facilities, and their maintenance. (Refer to Figure C.1.2-1)

2) Upland Crops

Some crops such as corn, watermelon, pole sitao and okra are grown twice a year. Especially watermelon is characteristic of three kinds of cropping calendar in three different areas, separately. This may be a good way to avoid marketing competition among production areas which will be derived from excessive supply.
There exist many patterns made by combining these crops in uplands where the cropping intensity can reach 200 or 300 percent depending on rotation type and irrigation facility.

1.2.6 Planting Method and Variety

1) Planting Method

Three planting methods of rice have been practiced in the Project Area; Straight transplanting, ordinary transplanting and direct seeding. Of these, straight planting

has been belived to produce the highest yield. According to the present survey, however, it seems to be the same or somewhat inferior to direct seeding and definitely superior to ordinary planting. Their extent and production are summarized as follows;

Planting method	Extension of planted area (%)			Estimated yield of HYV (%)		
	Wet season	Dry season	Average	Wet season	Dry season	Average
Straight transplanting	28	20	24	103	102	102
Ordinary transplanting	41	29	35	92	91	91
Direct seeding	31	51	41	105	107	106
Total	100	100	100	100	100	100

The data explains that ordinary transplanting produces a lower yield ten percent below the average. There are certain areas where direct seeding has been found to be even better than straight transplanting especially in terms of yield and cost of planting.

2) Variety

It is also interesting to note the complete change in rice from the traditional local varieties to the high yielding variety (HYV) majority of which is the IR Series. About 15 years ago extension of IR Series was only 18 - 24 percent with wet and dry season against 82 - 76 percent of local varieties. The ratio turned reversely two years later in 1969 and at present assumes almost 100 percent for the Series. The formerly introduced varieties IR-8, IR-20, IR-22 and IR-24 have been thoroughly replaced by the more improved varieties, IR-36, IR-40, IR-42, IR-44 and IR-50. According to the same survey as mentioned above, IR-36, an early maturing variety of 110 days, occupies approximately

50 percent of the whole planted area and IR-42 extends to 25 percent followed by IR-50, a very early maturing variety. Late maturing varieties such as IR-42 and 44 are grown more in the dry season and can produce more paddy than short period ones. Of the minor varieties, Wag-wag, a local variety producing fancy grains, is still cultivated in the dry season.

The International Rice Research Institute at Los Baños (IRRI) had issued extensive materials on "Characteristics of Masagana 99 Recommended Rice Varieties" yearly up to 1981, which were complied from the field trial data obtained at IRRI. Upon selecting suitable varieties for their fields, farmers can get much information on rice susceptibility to pests and deseases, and tolerance to nutrient disorders and natural calamities. Special concern must be paid to insect susceptibility and tolerance to salinity and submergence.

Planting method and variety of upland crops will be described later in the next paragraph.

3) Seed Production

Supply of high quality seeds to the farming populace is very important to maintain a high level of crop production. For this purpose, seeds of high yielding variety (HYV) must be multiplied for each of the principal crops under the government program. The philippine Seed Board constituted of BPI, UPLB and other concerned authorities and private seed associations has been supervising the seed production programs since 1966.

At the provincial or municipal level, the certified seed paddies are produced by the farmers who are members of the local seed growers association. They can receive the registered seeds necessary to cover three ha at the most. In the Area, the seed production work has been conducted at

San Rafael, Baliuag and Guiguinto.

As for the vegetable seeds including those of garden flowers, Dingras Seed Farm, Ilocos Norte (five ha) and Bagio Experiment Station, Bengust (43 ha) are responsible for breeding, purification and multiplication at the national level. At present, most of the vegetable seeds are sold by B.M. Domingo Campany, Divisoria Market in Manila. More than 20 ha of uplands in San Idefonso owned by the Bureau of Soils are scheduled to multiply the vegetale seeds, though not yet initiated, under the Gulayan Sa Kalusugan Program (GSK, vegetable for health).

1.2.7 Farming Practice and Input Materials

1) Farming Practice of Rice

Wet season crop usually starts from May and extends to November or December. Dry season crop, the first crop for a Crop Year, is grown from November to late February. In case of single crop in the lowlying field, planting is frequently advanced to September or October expecting higher yield with late maturing varieties.

Nursery bed starts with land preparation which is finished within one month. A hand tractor is used in most cases instead of carabaos. The Dopog nursery was once extended in 1960s, but decreased rapidly to five percent of the whole area after the big rat infestation around Baliuag in 1969.

Planting as well as harvesting is still about two months in duration between the earliest and the latest. Application of fertilizers is practiced by most of the farmers in two times of basal and top dressing (panicle initiation stage) with a total nitrogen dose of 60 to 72 kg per ha. First weeding is done at the time of land

preparation by mixing grasses into the soil. Chemicals of weedicide and insecticide are commonly used during the rice growth. Operations for weeding are needed at least twice in case of hand or rotary weeding instead of chemical application. The standard farming practice is given in Table C.1.2-4 with planting methods.

2) Input Materials for Rice

Main input materials are listed in the above Table. According to the informations collected by AMRIS Office, most of the input quantities have increased very slowly without any noticeable change. The situation might be attributed to the recent escalation in unit prices of 10 to 20 percent every year; increased farm income can not always meet the household requirement.

Adequate input increase would be needed so as to get higher yield of paddy which enables the preservation of better balance. For instance, use of fertilizers presently practiced at a comparatively high level can be further increased with a higher harvest provided increases in other inputs are adequately combined.

1.2.8 Farm Labor and Mechanization

1) Farming Population and Labor Force

Assessment study on the present farming population and labor force in AMRIS Project Area has assumed the following figures based on the provincial statistics;

		(1982)
Number of farm household :	Present service area	23,180
	Expansion area	1,380
	Total	24,560
Labor force available :	Farmers	31,920
(Persons)	Landless farm workers	20,320
	Total	52,240

Monthly labor force (Persons/25 days)	:	Farmers	798,000
		Landless farm workers	508,000
		Total	1,306,000

2) Farm Labor Balance

Table C.1.2-5 gives the present labor requirements of rice crop per ha by planting method and crop season, including animal and mechanical power requirements. Labor force needed for each operation was averaged from the present practices surveyed. Hired labor was calculated by subtracting available farmer force from the total labor requirement on the daily basis of operation.

Monthly labor requirements for the total AMRIS Area including the expansion area are summarized in Table C.1.2-6. Since labor requirements per ha differ by planting method and crop season, monthly requirements for each cropping are distributed in proportion to the transplanting and direct seeding area with wet and dry season.

Monthly labor requirement in the Area peaks at three times annually: Planting of wet season rice in July, its harvesting and succeeding land preparation for dry season rice from November to December, and its harvesting in April. Even the highest peak in December would not exceed 660,000 man-days, only a half of the monthly supplying capacity. The situation may be derived from comparatively higher density of farm household as well as population, resulting in abundant labor force both from farmers and landless farm workers.

Although labor requirement for upland crops was not involved in the above Table, it would no change the balance because its share is estimated on one percent at the most according to total area of the uplands and cropping intensity.

3) Farm Mechanization

A steady rundown of carabao population has been registered in the provincial statistics arranged at municipality level. Moreover, a sudden decrease in 1977 due to foot and mouth disease rampancy gave a big chance to many of farmers to adopt farm mechanization. While the recent rapid progress in popularization of the farm machineries may be more or less attributed to their intention to find non-farm tasks in municipalities or in Metro Manila.

Available number of carabaos and other farm machinery in the Project Area is estimated as follows based on the statistical data provided by the Provincial BAEx Office and NFA (1981-1982).

Carabaos	4,380
4-wheel tractor	175
2-wheel hand tractor	1,850
Knapsack sprayer	23,000
Power thresher	136

For each distribution among municipalities, refer to Table C.1.2-7.

Most of the service area is plowed and harrowed by tractors nowadays although carabaos are still used for land preparation. Carabao drawn implements have been found to be effective in final harrowing and levelling the field after plowing by 4-wheel tractor. Carabaos may never disappear in the future because of their multiple usage. Furthermore, the breeding program has been revived by the Bureau of Animal Industry, MA aiming to supply more carabaos for farming operations.

Sprayers are sufficient in number to cover the whole area, but threshers have been owned in much less number than required within the Area so far as statistical data has revealed. Since no manual threshing has been observed in the field, more than half of the farmers seem to use the power threshers served from the adjacent municipalities. Other farm operations such as planting and harvesting have not yet mechanized.

Land preparation being practiced in the Area is divided into three types;

1. Continuous operation by carabao
2. Plowing by 4-wheel tractor and harrowing to levelling by carabao
3. Continuous operation by 2-wheel hand tractor

Coverage of these three types are estimated from the available carabaos and machineries as follows for the dry season rice crop;

Type No.	Operation: Plowing (a)	Operation: Harrowing/Levelling (b)	Total number of animal/machinery (a)	Total number of animal/machinery (b)	Availability of animal/machinery (%) (a)	Availability of animal/machinery (%) (b)
1	Carabao	Carabao	4,380	4,380	50	} 50
2.	4-w tractor	Carabao	175	4,380	80	
3.	2-w tractor	2-w tractor	1,850	1,850	80	80

Type No.	Workable number of animal/machinery (a)	Workable number of animal/machinery (b)	Unit coverage (ha) (a)	Unit coverage (ha) (b)	Coverd area (ha) (a)	Coverd area (ha) (b)	Coverage proportion (%)
1.	2,200	} 2,200	2.2	} 5	4,840	4,840	15.3
2.	140		44		6,160	6,160	19.4
3.	1,480	1,480	14	14	20,720	20,720	65.3
Total					31,720	31,720	100.0

Unit coverage of animal/farm machinery seems to be overestimated but can be considered to indicate the actual circumstances.

1.2.9 Livestock and Poultry

As already described, a sudden decrease due to a disease rampancy in 1977 caused continuous rundown in the number of carabaos. Especially in Bulacan side, the number decreased by 30 percent, where Idefonso has kept the top number. While in Candaba side the number is still increasing probably due to the Carabao Breeding Center located in Candaba.

Cattle raising is constant in these years in spite of varying by municipality and by year, As for poultry, chickens and ducks rank the first followed by pigeons in population. It is centered at Pandi, Calumpit followed by pulilan and Baliuag.

TABLE C.1.2-1 PRESENT LAND USE IN THE AMRIS GROSS AREA

(Unit : ha)

Land use criteria	Present service area	Expansion area											
		WS6 Ex-1	WS6 Ex-2	WS6 Ex-3	WS7 Ex	WS8 Ex-1	WS8 Ex-2	WS9 Ex	WS12 Ex	WS5 Ex	WS2 Ex	Sub-total	Total
Paddy Irrigated	31,485	166	-	-	-	139	216	-	122	-	-	643	32,128
Rainfed	-	-	230	126	293	55	188	446	244	74	102	1,758	1,758
Upland	630	-	-	-	-	-	-	-	-	-	-	-	630
Forest/Orchard	1,580	-	-	-	-	-	-	-	-	-	-	-	1,580
Waste land/Swamp	2,200	-	40	794	492	6	63	63	52	-	-	1,510	3,710
Road/river/Canal (Right of way)	2,080	1	25	39	3	1	1	7	5	1	1	84	2,164
Residence/Other areas	4,725	-	5	-	-	-	-	-	-	-	-	5	4,730
Total	42,700	167	300	959	788	201	468	516	423	75	103	4,000	46,700

Source : Present agricultural survey, BAEx and BAEcon (Provincial Office) (1981-82) and AM/ADP Land Classification Upgrading - NIA (1977)
Paddy irrigation in the expansion areas is being conducted by pumping from river and creeks.

TABLE C.1.2-2 PRESENT FARM LANDHOLDING STATEMENTS IN AMRIS SERVICE AREA (1982)

Zone	Working station	Number of farm household				Average farm size (ha)			
		Owner	Lessee	Share tenant	Total	Owner	Lessee	Share tenant	Average
I	1	729	1,604	45	2,378	0.65	0.89	1.61	0.83
	2	271	1,925	180	2,376	0.78	1.15	0.82	1.08
	3	273	2,214	18	2,505	1.06	1.05	1.64	1.05
	4	155	2,163	311	2,629	1.18	1.19	1.20	1.19
	Sub-total	1,428	7,906	554	9,888				
	Average (%)	14.4	78.0	5.6	100	0.81	1.08	1.12	1.04
II	6	955	671	-	1,626	1.96	2.39	-	2.14
	7	717	1,069	-	1,786	1.66	1.33	-	1.46
	8	186	1,045	-	1,231	2.06	2.02	-	2.02
	10	851	467	-	1,324	1.40	1.83	-	1.55
	Sub-total	2,715	3,252	-	5,967				
	Average (%)	45.5	54.5	-	100	1.71	1.84	-	1.78
III	5	246	1,756	-	2,002	1.06	1.33	-	1.30
	9	134	1,151	-	1,285	0.92	1.89	-	1.79
	11	310	1,093	60	1,463	1.69	1.58	1.38	1.60
	12	64	1,474	-	1,538	1.14	1.27	-	1.26
	Sub-total	754	5,474	60	6,288				
	Average (%)	12.0	87.0	1.0	100	1.30	1.48	1.38	1.46
	Grand total	4,897	16,632	614	22,143				
	Average (%)	22.1	75.1	2.8	100	1.39	1.36	1.15	1.36

Note : Gross area surveyed totalled 30,124 ha, hence 1,361 ha (4.3%) out of total Service Area (31,485 ha) were left unsurveyed as of October, 1982.

TABLE C.1.2-3 RECENT RICE PRODUCTION AND CROPPED AREA IN AMRIS

Item	Season	1976	1977	1978	1979	1980	1981	1982	Average
Service area (ha)		29,375	32,000	32,033	31,526	31,335	31,370	31,485	31,303
Planted area (ha)	Wet	20,361	22,064	22,569	21,594	22,880	23,840	23,378	22,384
	Dry	26,952	28,175	25,111	28,441	28,694	28,195	28,904	27,777
	Total	47,313	50,239	47,680	50,005	51,574	52,035	52,282	50,161
Paddy yield (ton/ha)	Wet	3.58	3.45	2.90*	3.45	3.90*	4.11*	4.32	3.67
	Dry	3.80	3.95	4.15	4.05	4.13	4.47	4.57	4.16
	Average	3.69	3.70	3.53	3.75	4.02	4.29	4.45	3.92
Paddy production (ton)	Wet	72,892	76,121	65,450	74,499	89,143	97,982	103,039	82,733
	Dry	102,418	111,291	104,211	115,065	118,403	127,032	132,862	115,897
	Total	175,310	187,412	169,661	189,564	207,546	225,014	235,901	198,630
Cropping intensity (%)	Wet	69.3	68.9	70.5	68.5	73.0	75.9	74.3	71.5
	Dry	91.8	88.0	78.4	90.1	90.4	89.9	91.8	88.6
	Total	161.1	156.9	148.9	158.6	163.4	165.9	166.1	160.1
Annual increase of yield (%)	Wet	-	-3.7	-15.9	+19.0	+13.0	+5.4	+5.1	+3.8
	Dry	-	+3.9	+ 5.1	+ 2.4	+ 2.0	+8.2	+3.5	+4.2
	Average	-	+0.1	- 5.4	+ 8.3	+ 7.5	+6.8	+4.3	+3.6

Source : Production Reports of NIA, Region III Office (1976 - 1982) * Typhoon damage

TABLE C.1.2-4 FARMING PRACTICE CRITERIA OF RICE AT PRESENT

(Unit : per ha)

Item	Wet season Transplanting/Direct seeding	Dry season Transplanting/Direct seeding
1. Varieties	IR series	IR series
2. Maturing days	105 - 130	105 - 130
3. Amount of seed	100/130 kg (farmer's produce)	100/130 kg (farmer's produce)
4. Nursery period	20 days	20 days
5. Nursery bed	500 m^2	500 m^2
6. Land preparation	One plowing and three harrowing-levelings	One plowing and three harrowing-levelings
7. Planting density	15 cm x 30 cm, 3 seedlings/hill	15 cm x 30 cm, 3 seedlings/hill
8. Fertilizers application	N P_2O_5 K_2O	N P_2O_5 K_2O
Nursery	2 2 2	2 2 2
Field		
Base	12 12 12	12 12 12
First top	23 - -	23 - -
Second top	23 - -	35 - -
Total	60 14 14	72 14 14
9. Chemicals application		
Nursery	Furadan 3G 2 kg	Furadan 3G 2 kg
Field	Furadan 3G 14.7 kg	Furadan 3G 14.7 kg
	Azodrin 202R 1ℓ	Azodrin 202R 1ℓ
	Machete 5G 20 kg	Machete 5G 20 kg
10. Weeding	Two times about 10 and 25 days after transplanting sowing	Two times about 10 and 25 days after tranplanting sowing

Remarks :

TABLE C.1.2-5 LABOR, ANIMAL AND MECHANICAL POWER REQUIREMENTS AT PRESENT CONDITION IN AMRIS AREA (1982)

(Unit : day/ha)

Requirements	Transplanting						Direct seeding					
	Wet season			Dry season			Wet season			Dry season		
	Farmer	Hire	Total	Farmer	Hire	Total	Farmer	Hire	Total	Farmer	Hire	Total
1. Labor Force												
1) Seedbedding	2.0	-	2.0	2.0	-	2.0	-	-	-	-	-	-
2) Land preparation	5.0	5.1	10.1	5.0	5.1	10.1	5.0	5.1	10.1	5.0	5.1	10.1
3) Transplanting/Sowing	2.0	18.0	20.0	2.0	18.0	20.0	3.0	-	3.0	3.0	-	3.0
4) Fertilizing	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0
5) Spraying	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0
6) Weeding	7.5	-	7.5	7.5	-	7.5	9.5	-	9.5	9.5	-	9.5
7) Water management*	5.0	-	5.0	5.0	-	5.0	5.0	-	5.0	5.0	-	5.0
8) Harvesting (Threshing)**	2.0	17.0	19.0	2.4	19.6	22.0	2.0	20.0	22.0	2.4	23.1	25.5
9) Post-harvesting	2.0	1.0	3.0	2.0	1.5	3.5	2.0	1.0	3.0	2.0	1.5	3.5
Total	31.5	41.1	72.6	31.9	44.2	76.1	32.5	26.1	58.6	32.9	29.7	62.6
2. Animal Power	-	2.1	2.1	-	2.1	2.1	-	2.1	2.1	-	2.1	2.1
3. Mechanical power												
1) Land preparation	-	3.0	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0	3.0
2) Spraying	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0	3.0	-	3.0
3) Threshing	-	1.0	1.0	-	1.2	1.2	-	1.0	1.0	-	1.2	1.2
Total	3.0	4.0	7.0	3.0	4.2	7.2	3.0	4.0	7.0	3.0	4.2	7.2

Note : Operators of animal and machinery are summed up in labor force. These figures were obtained by proportion analysis of process types.
* 4.5 man-days with eary maturing varieties.
** Total labor from cutting to winnowing.

TABLE C.1.2-6 MONTHLY LABOR REQUIREMENT AND BALANCE AT PRESENT CONDITION IN AMRIS AREA (1982)

(Unit : 1,000 man-days).

I. Labor Requirement for Farming (a)

Cropping Pattern	Planted area Wet season (ha)	Planted area Dry season (ha)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
A. Rice/Rice (well-drained)	21,635	20,882	210.9	73.1	154.5	346.6	119.0	132.0	382.9	296.4	110.3	144.1	478.7	480.4	2,929.0
B. Fallow/Rice (submerged)	-	9,313	66.1	57.7	163.9	81.0	-	-	-	-	-	1.9	104.3	171.4	646.3
C. Rice/Rice (droughty)	2,111	603	4.0	11.7	3.3	-	6.2	34.6	39.9	10.8	17.9	37.8	11.5	7.2	184.9
Total*	23,746	30,798	281.0 (70.3)	142.5 (31.1)	321.7 (225.4)	427.6 (349.2)	125.2 (100.3)	166.6 (71.2)	422.8 (208.5)	307.2 (138.5)	128.2 (12.0)	183.8 (102.8)	594.5 (370.3)	659.0 (329.0)	3,760.2 (2,008.6)
II. Labor Force Available (b)			1,306	1,306	1,306	1,306	1,306	1,306	1,306	1,306	1,306	1,306	1,306	1,306	15,672
III. Balance (b-a)			1,025	1,164	984	878	1,181	1,139	883	999	1,178	1,122	712	647	11,912

Note : Monthly labor force available = (labor source from farmers + Labor source from landless farm workers) x Monthly workable day = (31,920 + 20,320) x (25 days) = 1,306,000 man days.

* Hired labor requirement is given in parenthesis.

TABLE C.1.2-7 NUMBER OF FARM MACHINERIES AND CARABAOS IN AMRIS AREA (1981-1982)

Municipality	Four-wheel tractor	Two-wheel hand tractor	Power thresher	Water Pump	Carabaos
1. San Rafael	3	48	-	33	215
2. Baliuag	22	321	-	48	487
3. Bustos	19	154	-	0	446
4. Pulilan	22	117	-	0	471
5. Plaridel	15	152	-	0	620
6. Guiguinto	2	57	-	1	242
7. Malolos	11	166	-	15	158
8. Paombong	0	5	-	2	26
9. Calumpit	4	97	-	19	222
10. Bulacan	1	5	-	2	83
11. Balagtas	1	90	-	16	31
12. Pandi	5	107	-	109	255
13. Bocaue	1	16	-	7	39
14. Hagonoy	0	1	-	1	14
15. San Ildefonso	1	9	-	11	150
Bulacan total	107	1,345	95	264	3,459
16. Apalit	11	171	11	14	239
17. San Luis	15	18	6	30	271
18. San Simon	2	97	5	15	156
19. Candaba	40	219	19	73	251
Pampanga total	68	505	41	132	917
Grand total	175	1,850	136	396	4,376

Source : Calculated from the survey data provided by BAEx Office, Bulacan and Pampanga Province.
One or two knapsack sprayers have been owned by every farmers. Most of the water pumps are used for irrigating paddy areas out side of the present service area or uplands.

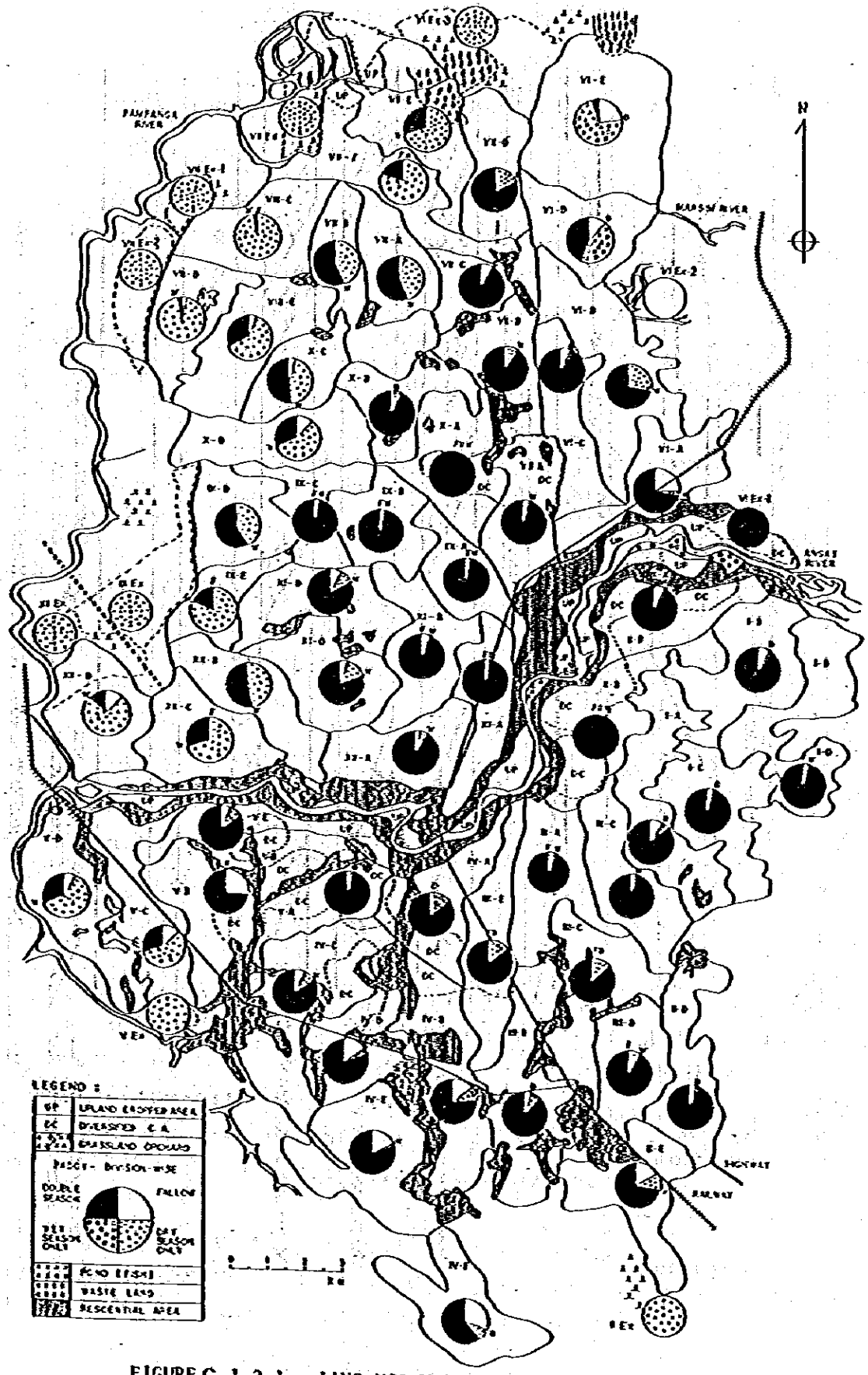

FIGURE C.1.2-1 LAND USE MAP OF AURIS AREA WITH RICE CROPPING INTENSITY (1981)

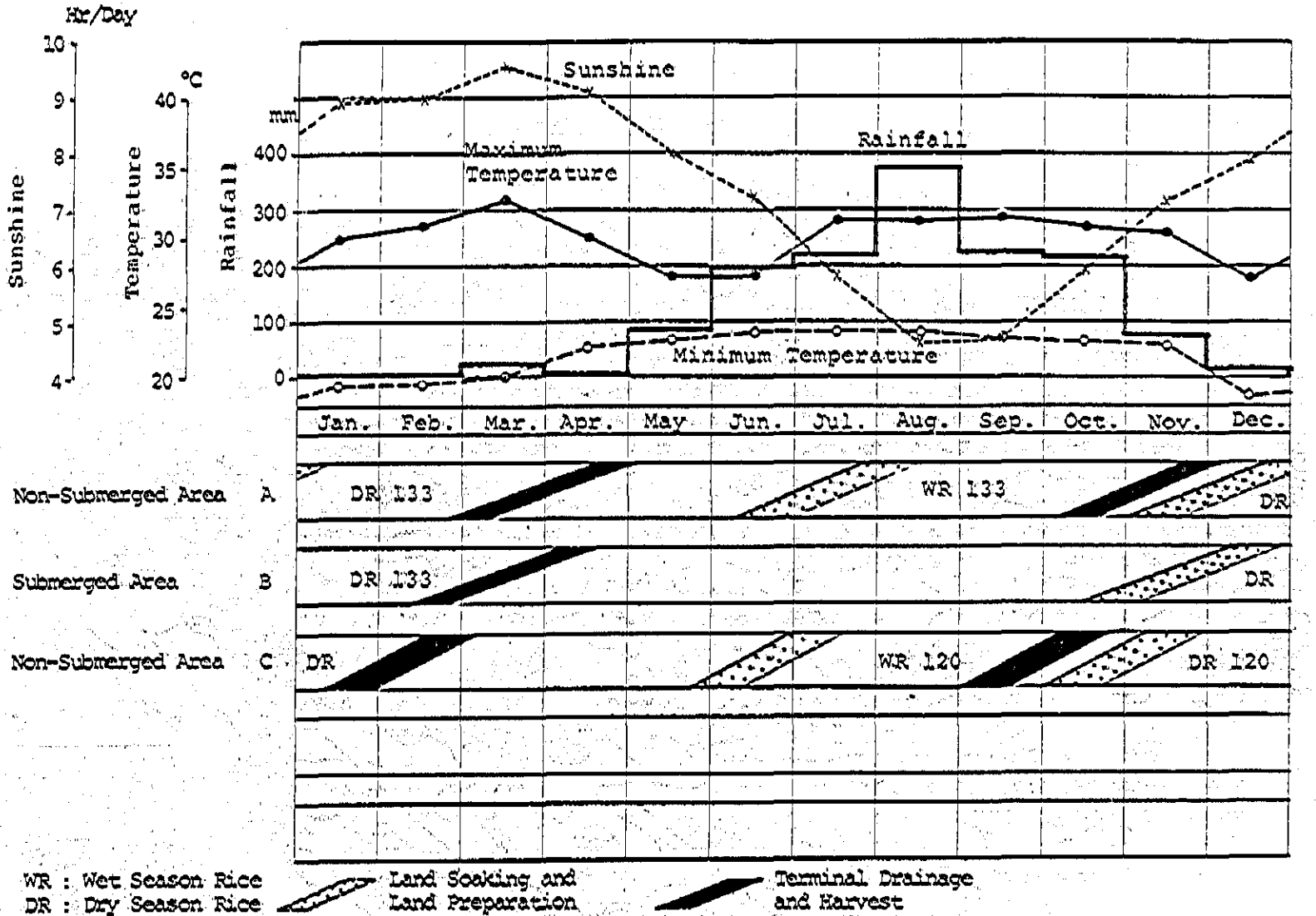

FIGURE C.1.2-2 PRESENT CROPPING PATTERNS FOR RICE IN AMRIS AREA