

Fig. 5.2 Pond Storage Fluctuation and Spill-out Water (1/3)
1983

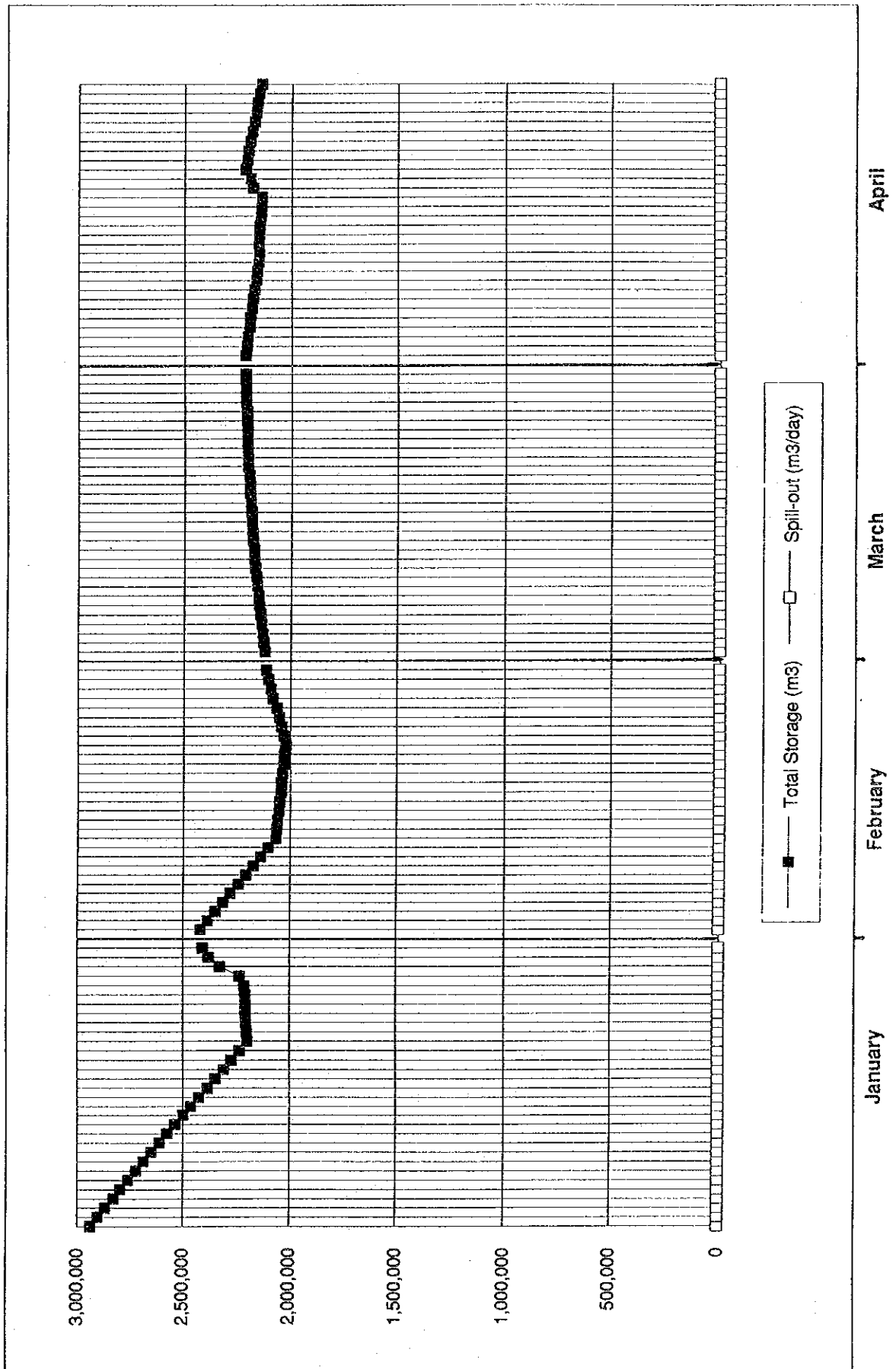


Fig. 5.2 Pond Storage Fluctuation and Spill-out Water (2/3)
1983

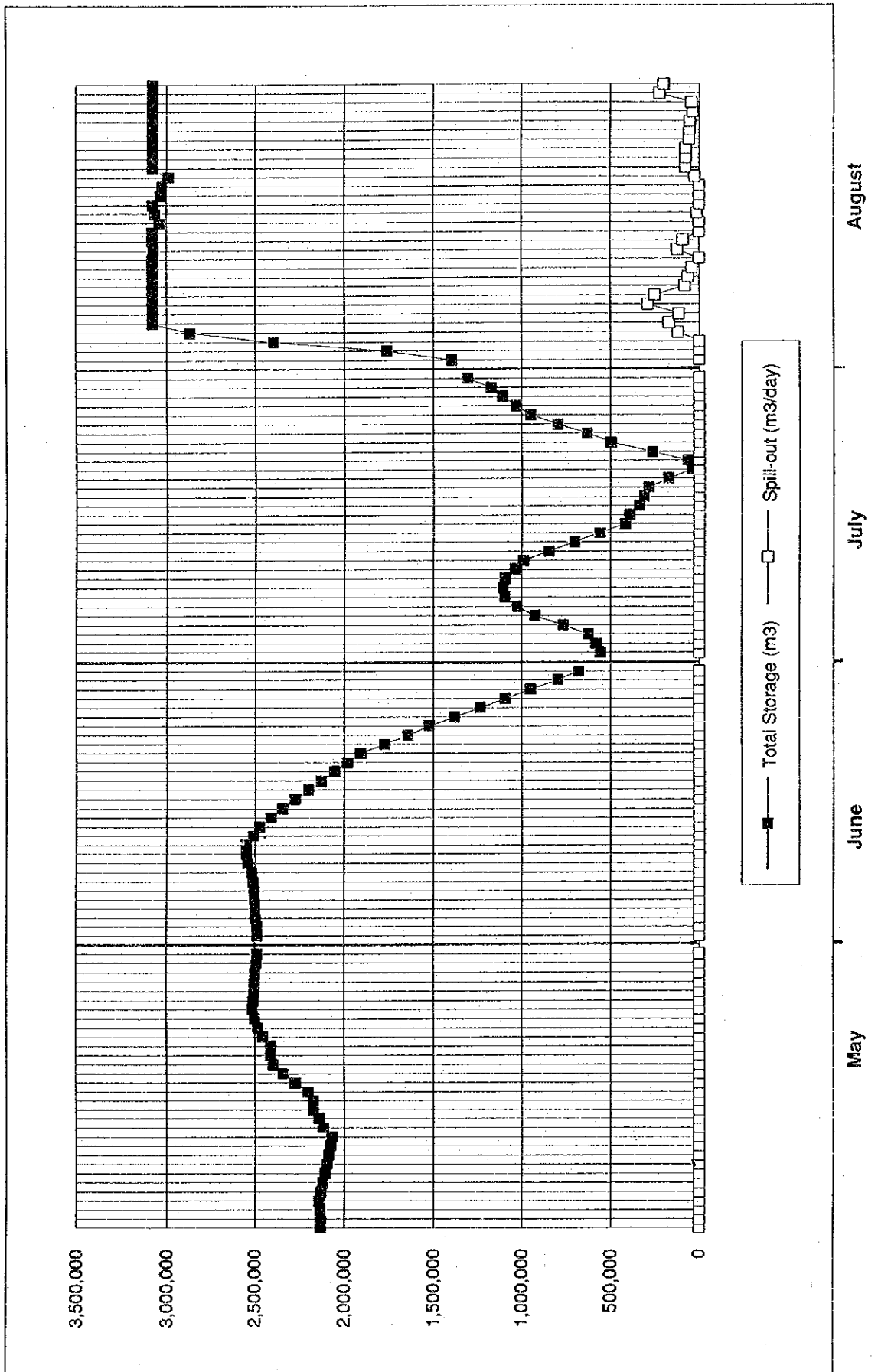
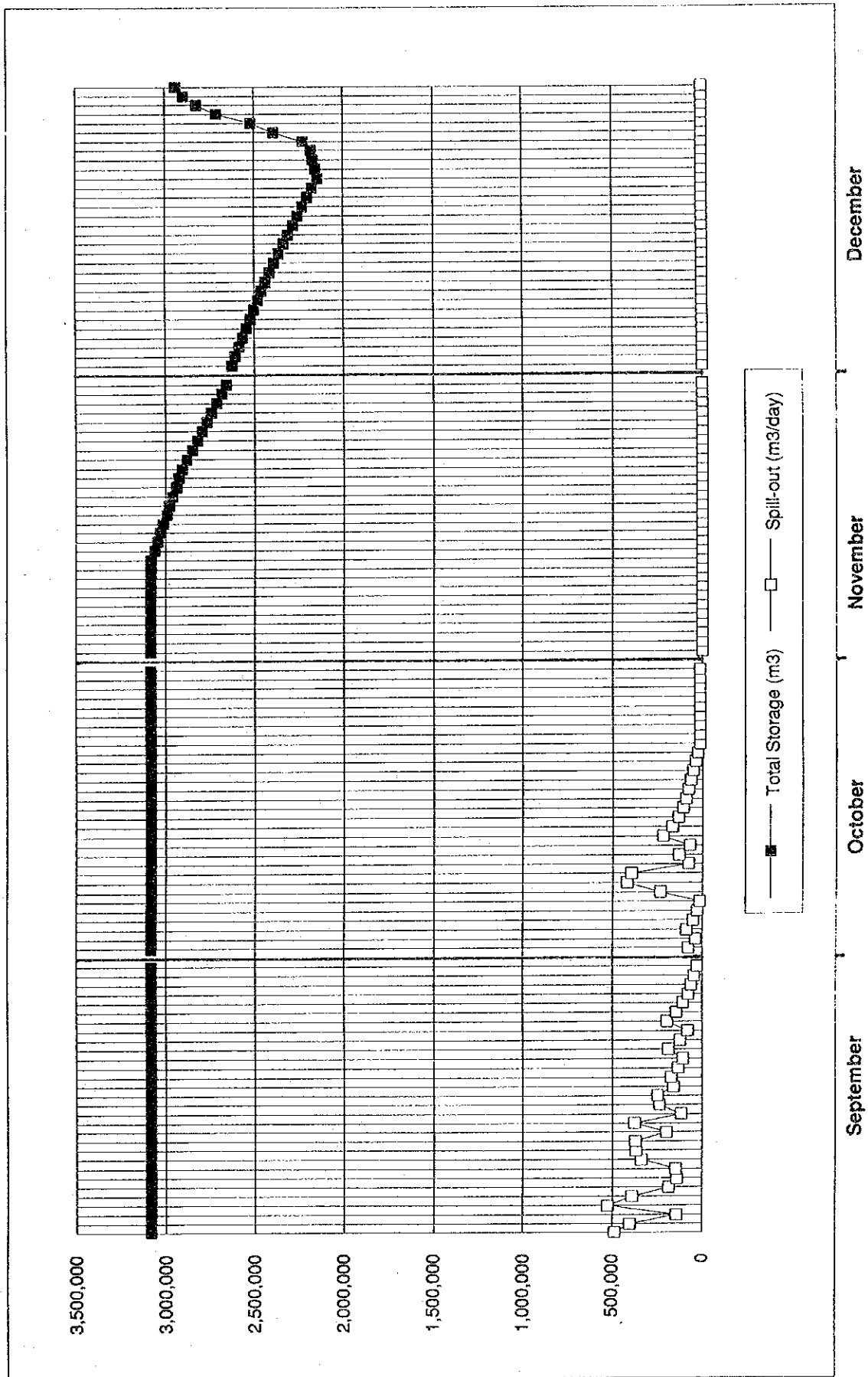


Fig. 5.2 Pond Storage Fluctuation and Spill-out Water (3/3)
1983



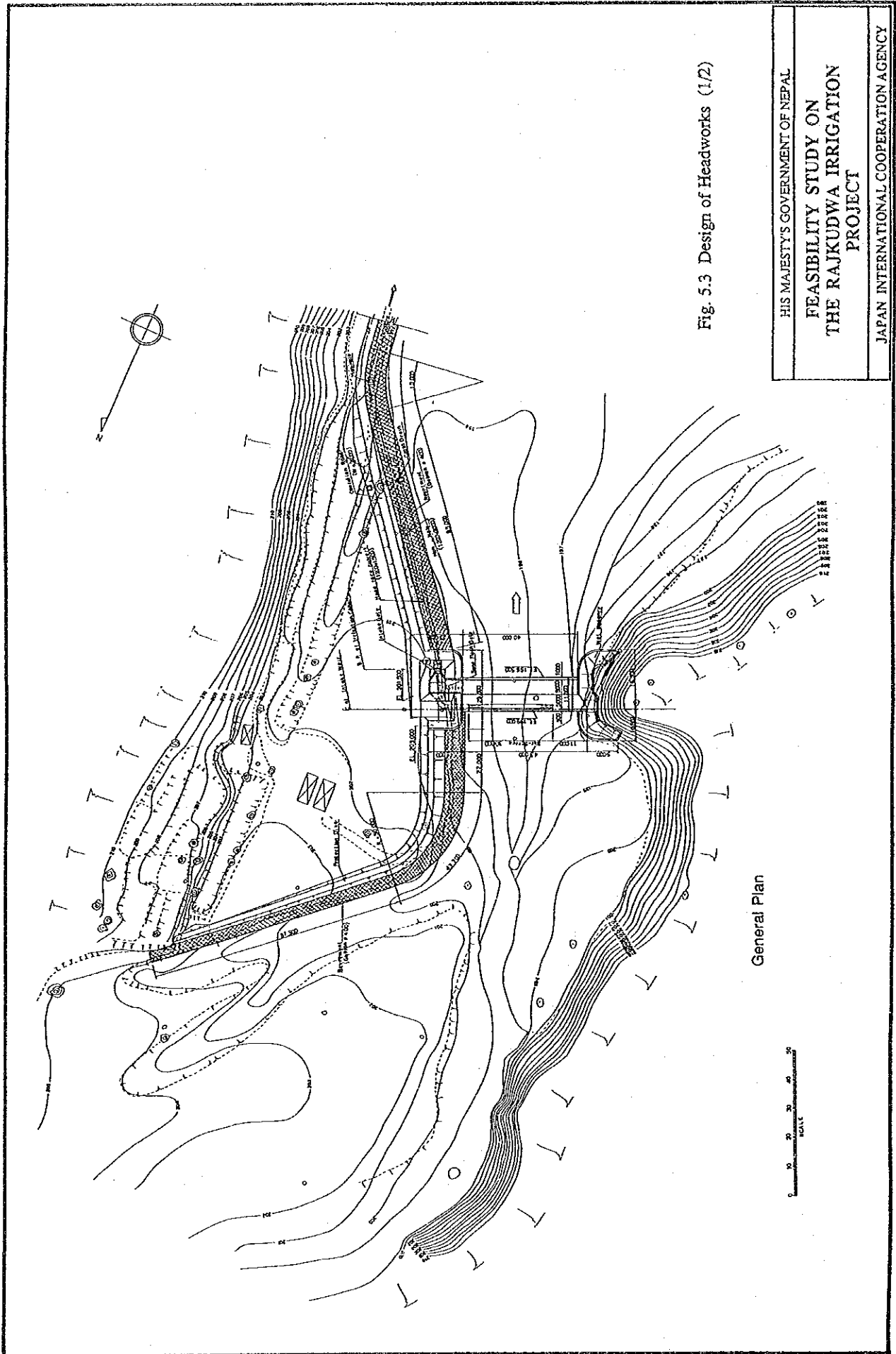


Fig. 5.3 Design of Headworks (1/2)

HIS MAJESTY'S GOVERNMENT OF NEPAL
 FEASIBILITY STUDY ON
 THE RAJKUDWA IRRIGATION
 PROJECT
 JAPAN INTERNATIONAL COOPERATION AGENCY

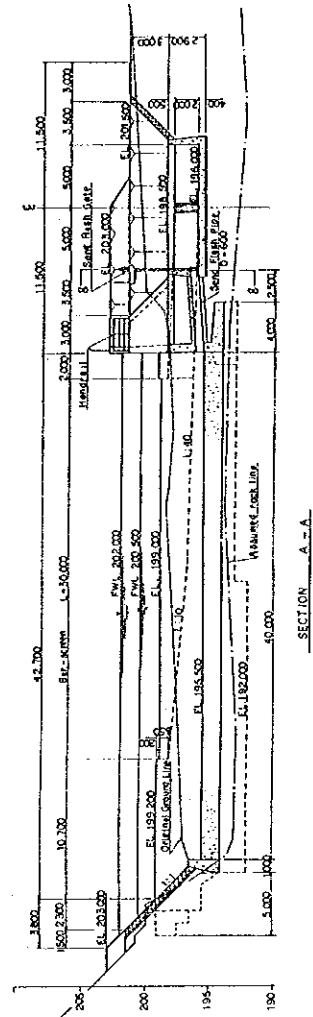
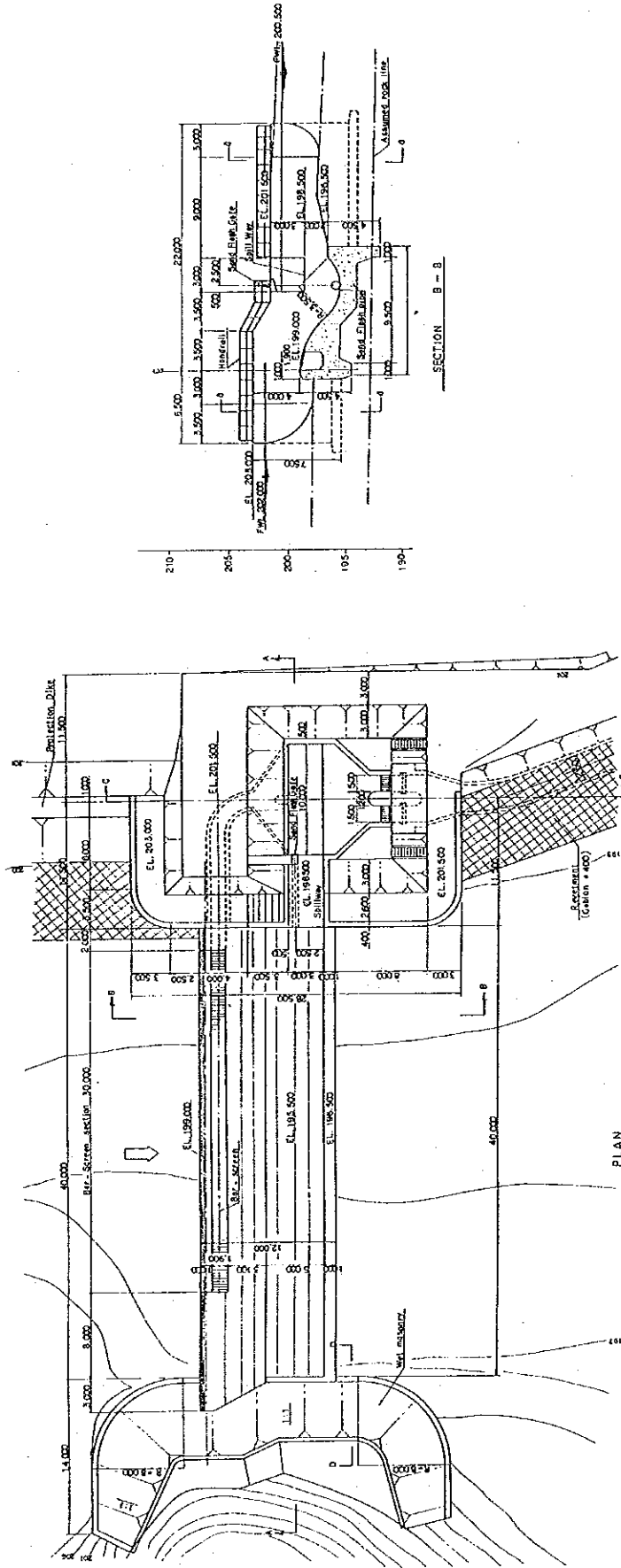


Fig. 5.3 Design of Headworks (2/2)

HIS MAJESTY'S GOVERNMENT OF NEPAL

FEASIBILITY STUDY ON
THE RAJKUDWA IRRIGATION
PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY

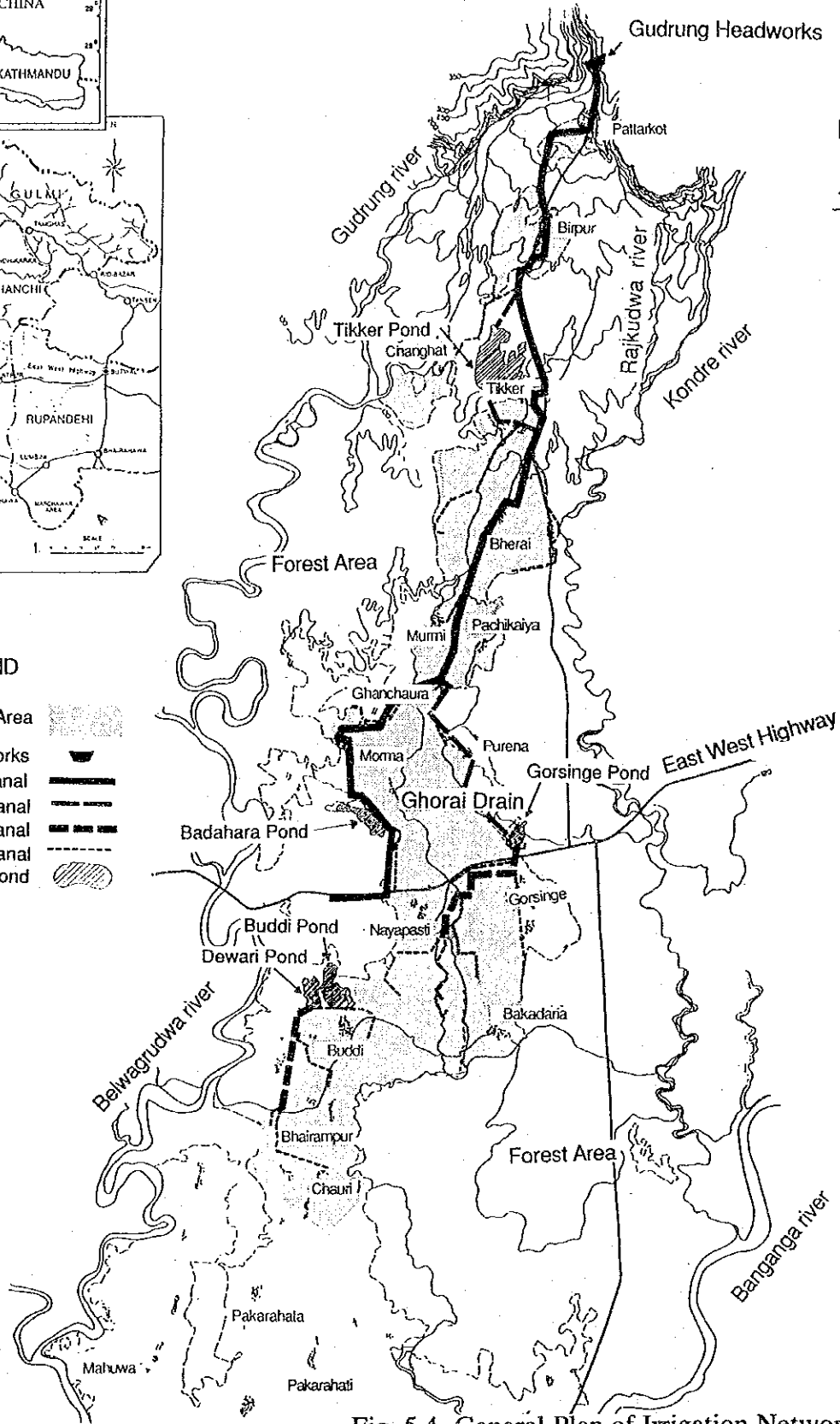
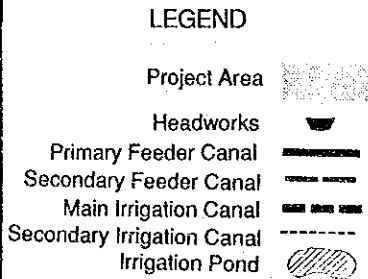
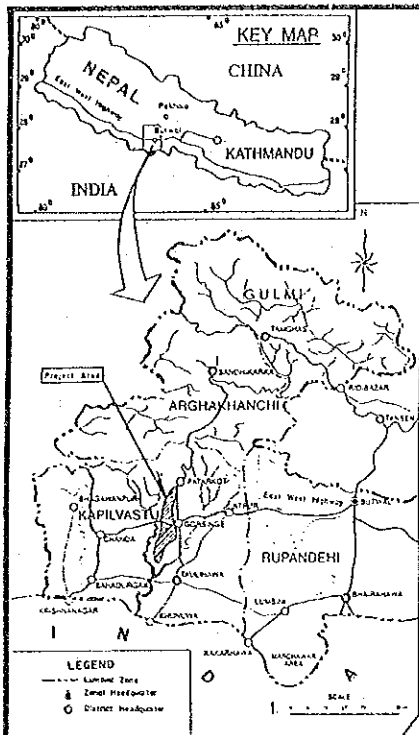
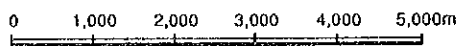


Fig. 5.4 General Plan of Irrigation Network

HIS MAJESTY'S GOVERNMENT OF NEPAL
**FEASIBILITY STUDY ON
 THE RAJKUDWA IRRIGATION
 PROJECT**
 JAPAN INTERNATIONAL COOPERATION AGENCY



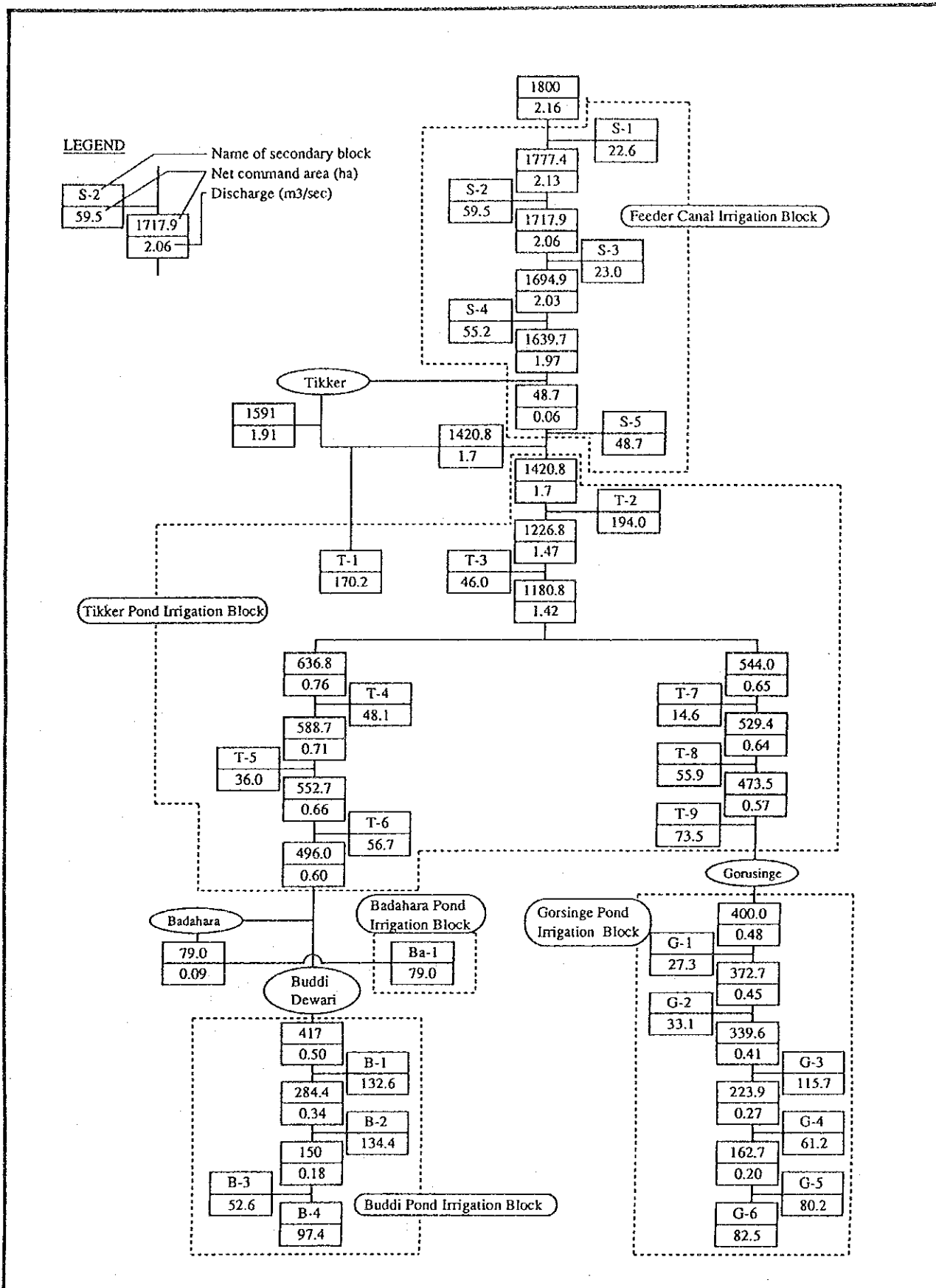
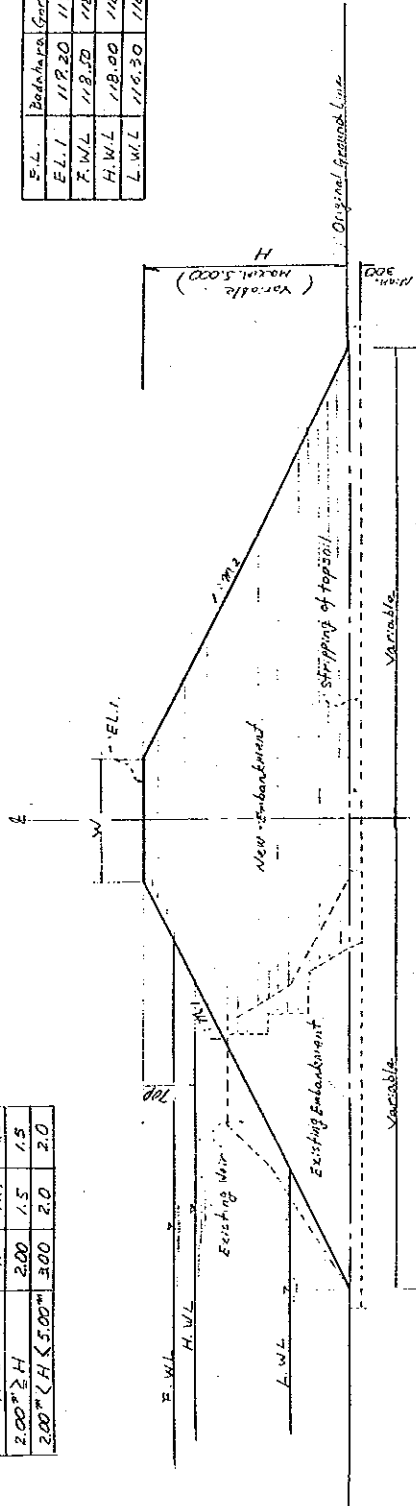


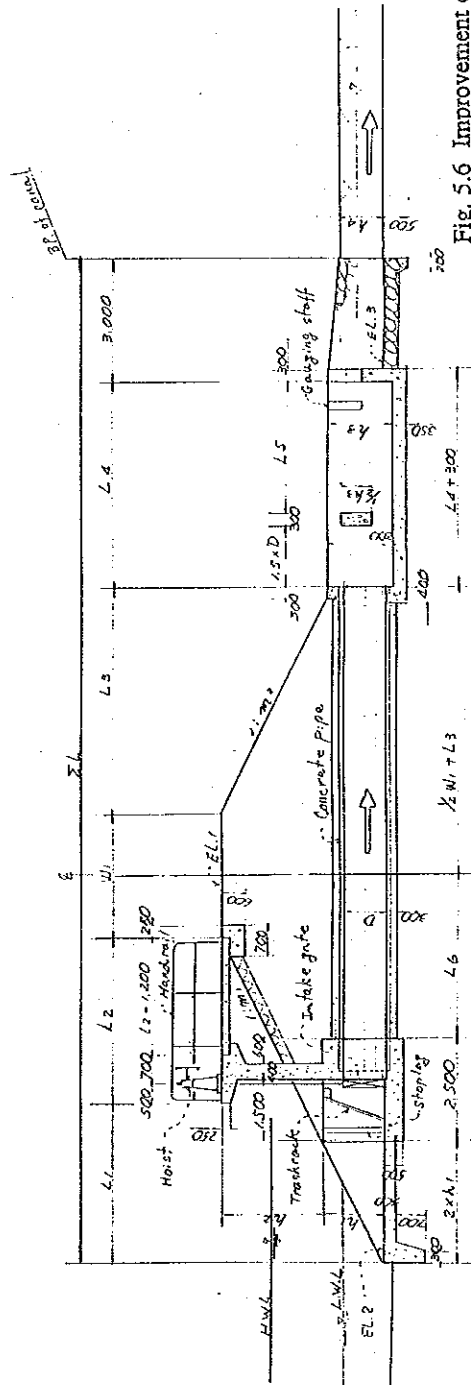
Fig. 5.5 Irrigation Diagram

Type	W	Pr.	Pr.2
2.00" ≥ H	2.00	1.5	1.5
2.00" < H ≤ 5.00"	3.00	2.0	2.0

S.L.	Bedchamra	Consolidated	Deviwar	Budok.
E.L.1	119.20	119.30	115.90	115.90
F.W.L	118.20	118.80	115.20	115.20
H.W.L	118.00	118.10	114.50	114.50
L.W.L	116.30	116.30	112.80	112.80



TYPICAL SECTION OF LEVEE (H ≤ 5.00m)



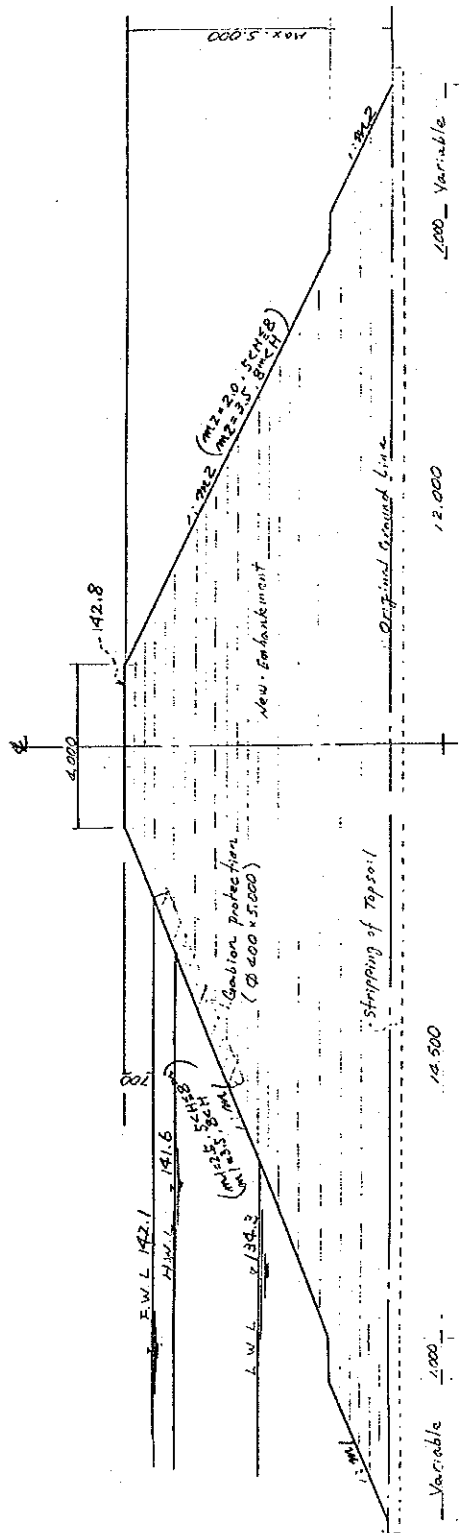
PROFILE OF OUTLET

Fig. 5.6 Improvement of Existing Ponds

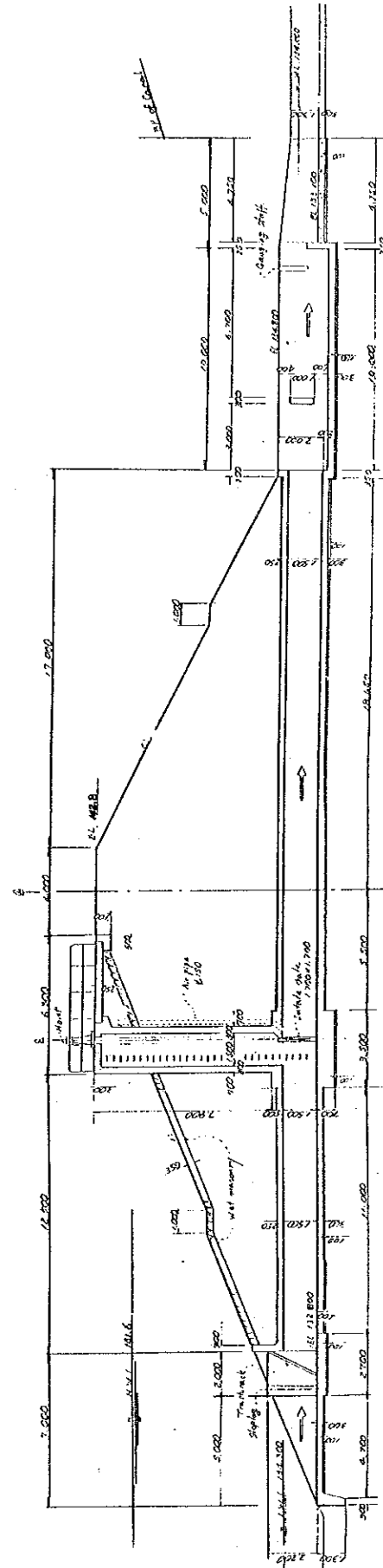
HIS MAJESTY'S GOVERNMENT OF NEPAL

FEASIBILITY STUDY ON
THE RAJKUDWA IRRIGATION
PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY



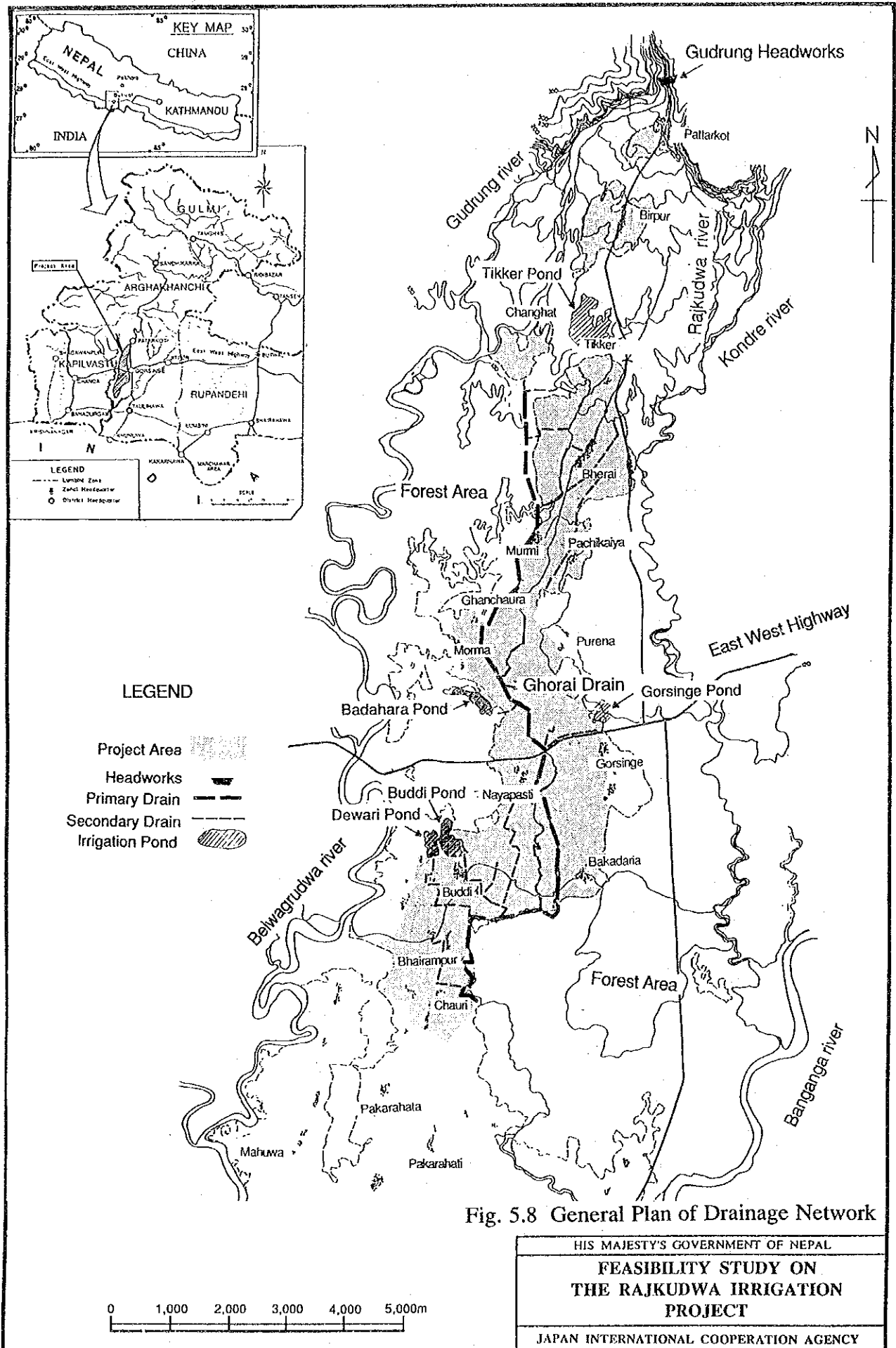
TYPICAL SECTION OF DIKE (H > 5,000 m)



PROFILE OF OUTLET

Fig. 5.7 Construction of New Pond

HIS MAJESTY'S GOVERNMENT OF NEPAL
 FEASIBILITY STUDY ON
 THE RAJKUDWA IRRIGATION
 PROJECT
 JAPAN INTERNATIONAL COOPERATION AGENCY



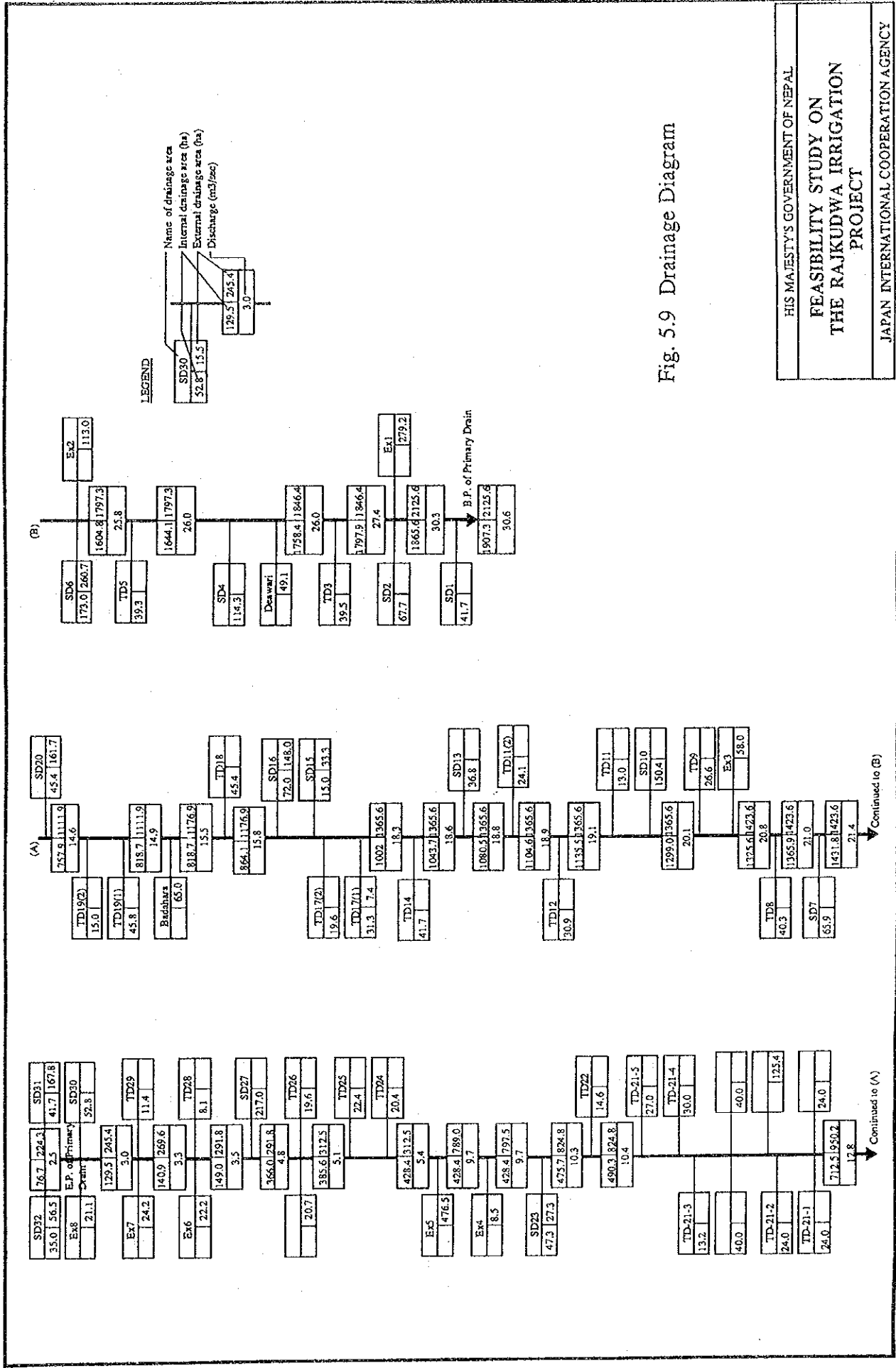


Fig. 5.9 Drainage Diagram

HIS MAJESTY'S GOVERNMENT OF NEPAL
 FEASIBILITY STUDY ON
 THE RAJKUDWA IRRIGATION
 PROJECT
 JAPAN INTERNATIONAL COOPERATION AGENCY

LEGEND

— Village and farm roads to be improved
(Total length= 49.5km)

○ VDC farmers' cooperative office

□ Rajkudwa farmers' association center

(Location of farmers' association center and cooperative offices will be decided finally based on a greement between the government and the farmers before the implementation.)

○ Project Area

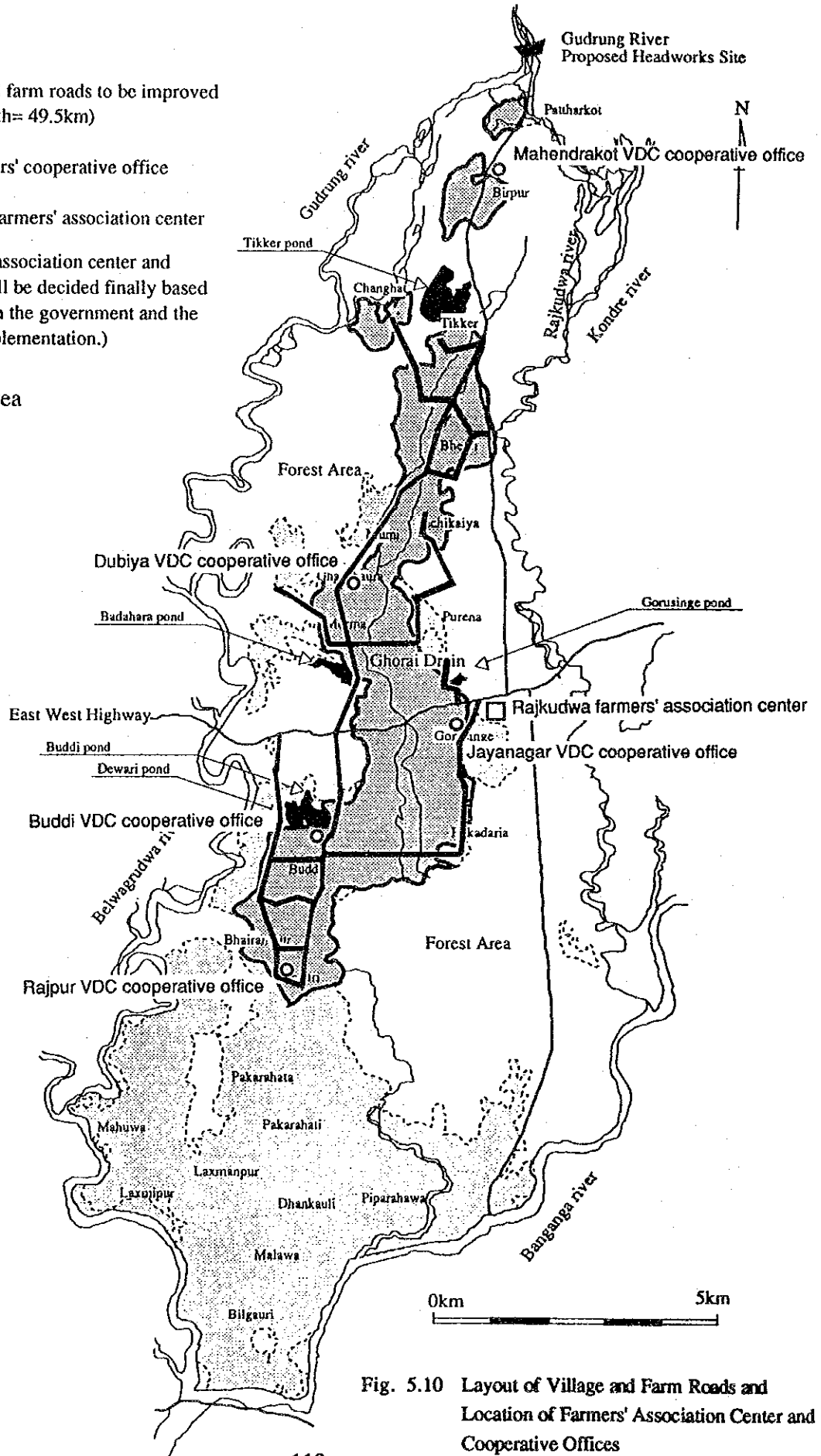
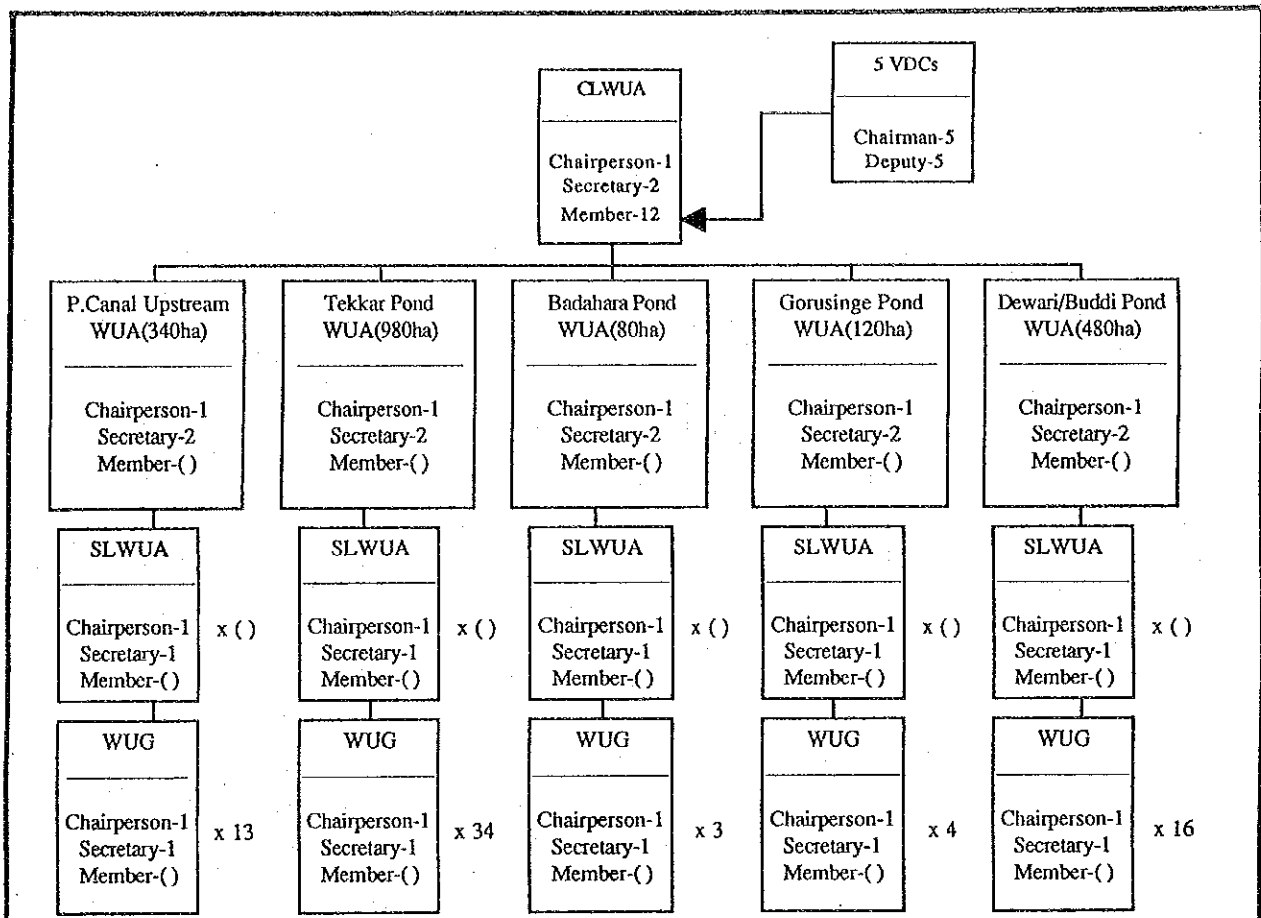


Fig. 5.10 Layout of Village and Farm Roads and Location of Farmers' Association Center and Cooperative Offices



Oblidgation and Responsibility of Each WUA and WUG

- 1, The CLWUA will be responsible for the overall water management and O&M of the entire system including five irrigation ponds, but they will be especially responsible for the O&M of headworks, headrace canal, and primary and secondary feeder canals. Decisions regarding canal discharges, pond operation, rotation mode and rotation shedule also come under the responsibility of CLWUA. The regulation of the proposed WUA, including penalty clauses to violators will be established by the CLWUA.
- 2, The PUWUA or PWUA takes responsibility in the water management and O&M of the concerned pond and its main canal.
- 3, The SLWUA is responsible for the water management and O&M of the concerned secondary canal and equitable distribution of water among the tertiary canals. Supervision to prevent stealing of irrigation water also comes under its responsibility.
- 4, The WUG is responsible for the water management and O&M of the concerned tertiary, quarternary and field channels. It is also responsible for the equitable water distribution among quarternaries and prevention from stealing of water.
- 5, The CLWUA will employ required number of gatemen for the O&M of intake gate, spillway gate and sandflush gate in the headworks, cross regulator gates at primary canal, the turnout gates at secondary canals and offtake gates at irrigation ponds. The required cost including salary of the employees and the repair and maintenance cost of gates and others will be collected from all the beneficiary farmers under the proposed system in propotion to their irrigated area.
- 6, Routine O&M of primary and secondary feeder canals, irrigation ponds, main secondary and tertiary canals such as clearing weeds , desilting , maintaining pond levees and canal sections, etc. will be timely carried out by labor contribution as decided by the CLWUA, the concerned PUWUA, PWUA, SLWUA and WUG, respectively.
- 7, O&M of drainage system will also have to be carried out by the concerned water users' organization at respective level as in the irrigation system. That is, O&M of primary, secondary and tertiary drains will be carried out by the CLWUA, the concerned PUWUA, PWUA, SLWUA and WUG.

**Fig. 5.11
PROPOSED ORGANIZATION CHART OF
WATER USERS' ASSOCIATION**

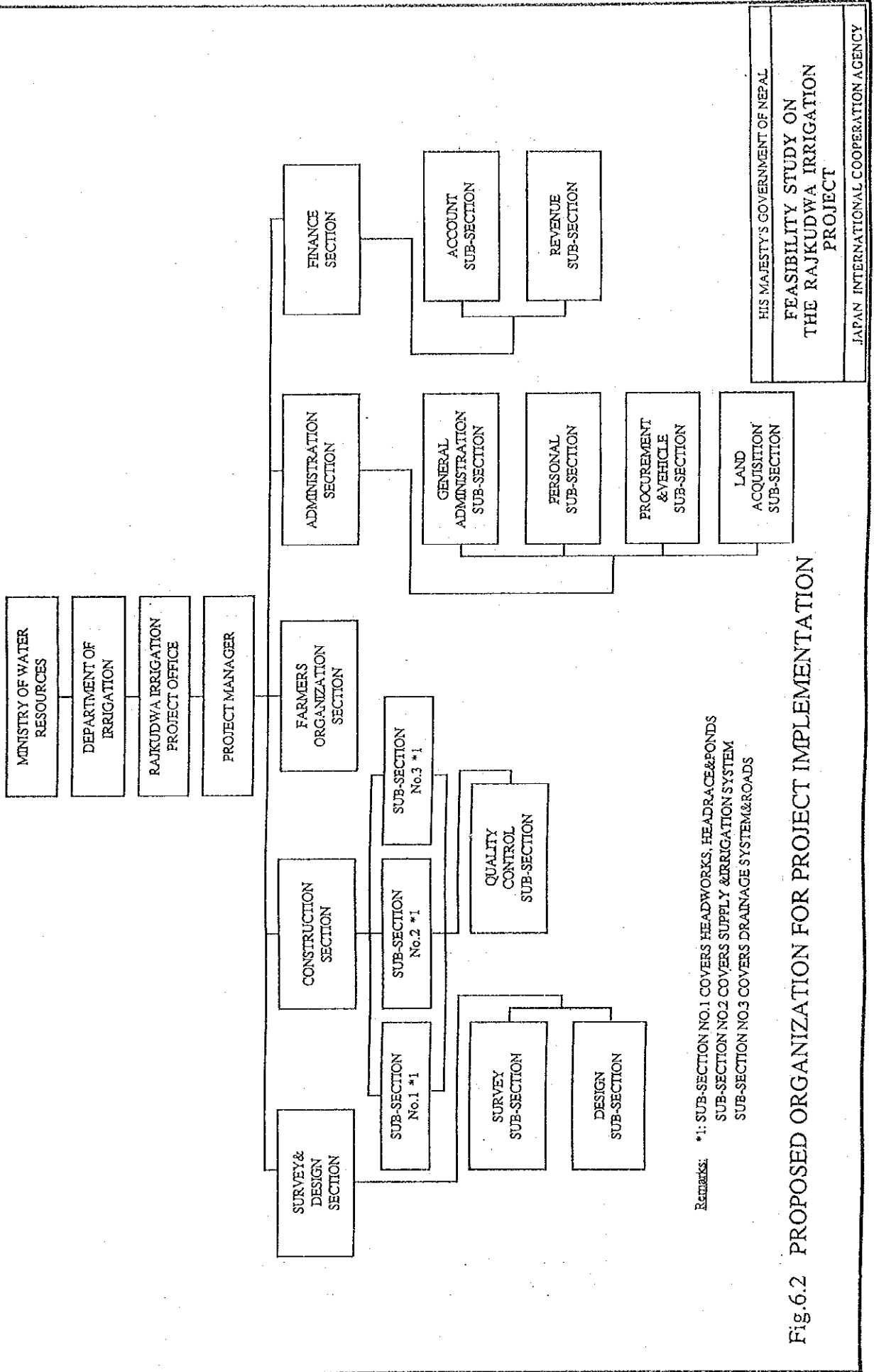


Fig.6.2 PROPOSED ORGANIZATION FOR PROJECT IMPLEMENTATION

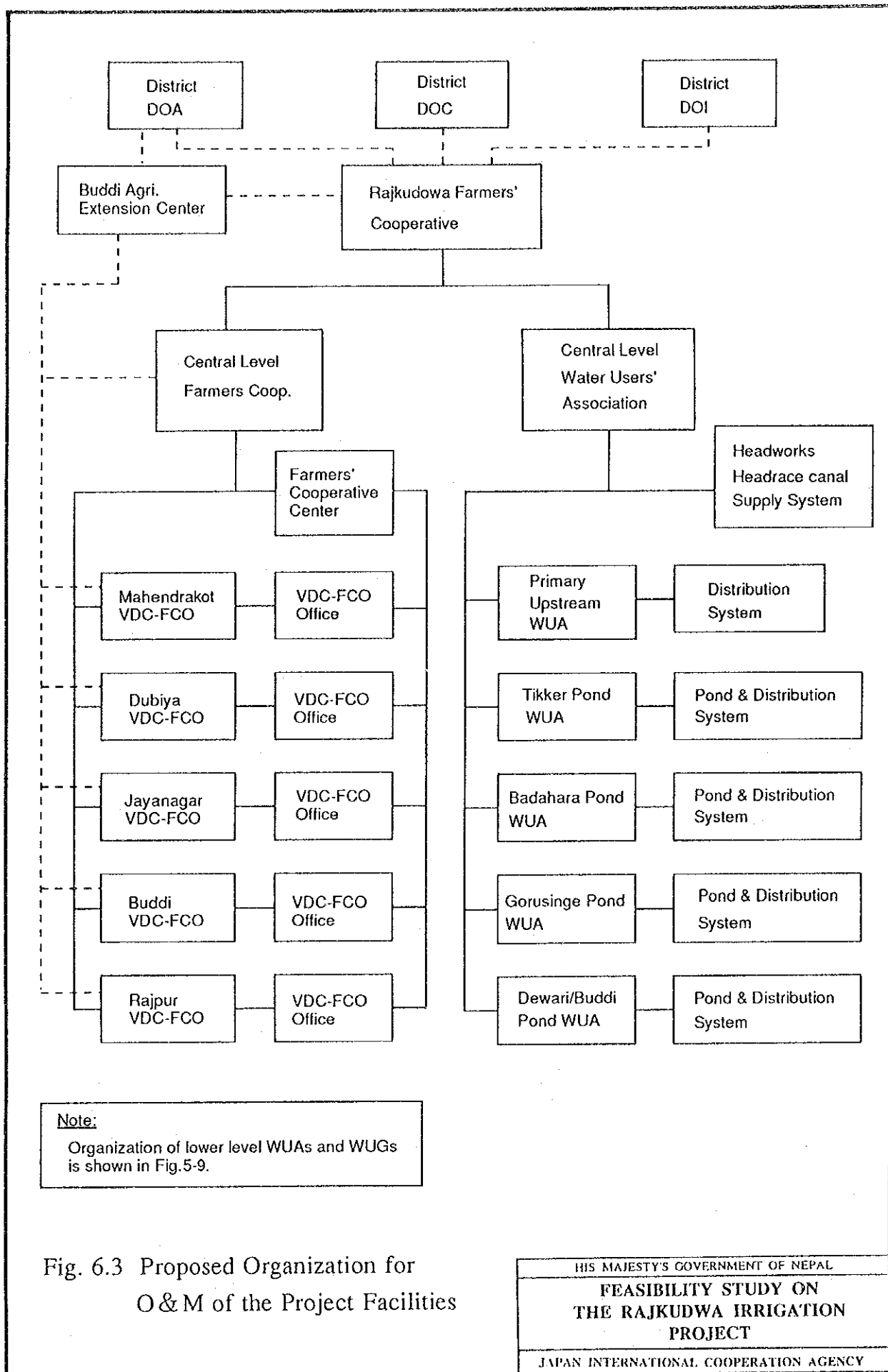


Fig. 6.3 Proposed Organization for O&M of the Project Facilities

ATTACHMENTS

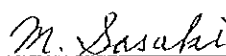
SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT
IN
THE KINGDOM OF NEPAL

AGREED UPON BETWEEN
DEPARTMENT OF IRRIGATION
MINISTRY OF WATER RESOURCES
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

KATHMANDU, FEBRUARY 13, 1992



Mr. S. R. PANT
Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. MASARU SASAKI
Leader,
Preparatory Study Team,
Japan International
Cooperation Agency



I. INTRODUCTION

In response to the request of His Majesty's Government of Nepal (hereinafter referred to as "HMGN"), the Government of Japan (hereinafter referred to as "GOJ") has decided to implement the Feasibility Study for the Rajkudwa Irrigation Project (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of GOJ, will undertake the Study, in close cooperation with the authorities concerned of HMGN.

The Department of Irrigation, Ministry of Water resources (hereinafter referred to as "DOI") shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organization concerned for the smooth implementation of the Study.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

1. To conduct a feasibility study on the Rajkudwa Irrigation Project, and
2. To carry out technology transfer to the Nepalese counterpart personnel in the course of the Study.

III. STUDY AREA

The study covers approximately 2,400ha area in Kapilvastu District.

IV. SCOPE OF THE STUDY

The Study will consist of three (3) works and will cover the following:

1) Work I

To Prepare the topographic map in a scale of 1:5,000 covering the study area:

- conduct topographical surveying necessary for mapping
- preparation of topographic map in a scale of 1:5,000

2) Work II

2)-1 To collect and review existing data and information and to carry out field survey and investigation in the study area:

- natural condition (meteorology, hydrology, vegetation, geology, soil, topography, etc.)
- social and economic condition (population, household, employment, regional agro-economy, farmers' economy, land tenure, etc.)



- agricultural condition (land use, cropping pattern, agricultural yield/production, farming practices, marketing, processing, agricultural organizations, agricultural supporting services, irrigation and drainage facilities, etc.)
 - others
- 2)-2 To carry out following surveys:
- hydrological, geological and hydro-geological survey
 - soil survey
 - farmers' household survey
 - others
- 2)-3 To review the basic design of the Rajkudwa Irrigation Project,
- 2)-4 To formulate basic development concept:
- identification of irrigation development area based on land capability, topography, water resources availability, etc.
 - formulation of a plan for water resources development
 - formulation of a plan for agricultural development
 - formulation of a plan for irrigation and drainage
- 3) Work III
- 3)-1 To formulate an agricultural development plan on the basis of the results of the study on data and information collected through field survey and investigation in work II:
- formulation of the following plans;
 - land use plan
 - water resources development plan
 - agricultural development plan (cropping and farming practices development plan; agricultural organization and supporting services development plan, etc.)
 - irrigation and drainage plan
 - others
 - preliminary design of major structures
 - project implementation schedule
 - operation and maintenance plan
 - estimation of project cost and benefit
 - project evaluation

V. STUDY SCHEDULE

The study will be executed in accordance with the attached tentative work schedule.



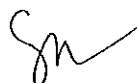
VI. REPORTS

JICA shall prepare and submit following reports in English to HMGN.

- (1) Inception Report
Twenty (20) copies at the commencement of the Study.
- (2) Interim Report
Twenty (20) copies at the end of the work II study.
- (3) Draft Final Report
Twenty (20) copies at the end of the work III study.
HMGN provides JICA with its comments on the Draft Final Report within one (1) month after receipt of the Draft Final Report.
- (4) Final Report
Fifty (50) copies within two (2) months after receiving HMGN's comments on the Draft Final Report.

VII. UNDERTAKING OF HMGN

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



2. HMGN shall bear claims, if any arises, against the members of the Japanese study team, resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or wilful misconduct on the part of the members of the Japanese study team.
3. DOI shall, at own expense, provide the Japanese study team with the followings, in cooperation with the Department of Agriculture and other authorities concerned:
 - 1) available data and information related to the Study,
 - 2) counterpart personnel,
 - 3) suitable office with necessary furniture in Katmandu and project site,
 - 4) credentials or identification cards,
 - 5) permission for use of radio communication (Walkie Talkie), and
 - 6) arrangement for procuring fuel for vehicles and boring machines.

VIII. UNDERTAKING OF JICA

For the conduct of the Study, JICA shall take the following measures;

1. To dispatch study teams, at its own expense, to the Kingdom of Nepal, and
2. To conduct technology transfer to the Nepalese counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and DOI will consult each other in respect of any other matter that is not agreed upon in this document and may arise from or in connection with the Study.



TENTATIVE WORK SCHEDULE

Month Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Work-I			————		=====											
Work-II	————						————									
Work-III										=====			————			
Reports	△ IC/R								△ IT/R			△ DF/R				△ F/R

(Remarks) IC/R: Inception Report IT/R: Interim Report
 DF/R: Draft Final Report F/R : Final Report

———— : Field Work
 ===== : Home Office Work

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(Signature)

MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT
IN
THE KINGDOM OF NEPAL

The preparatory study team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Masaru Sasaki, visited the Kingdom of Nepal from February 7 to February 15, 1992 for the purpose of discussing and confirming the Scope of Work for the Feasibility Study on the Rajkudwa Irrigation Project in the Kingdom of Nepal (hereinafter referred to as "the Study").

The Team had a series of discussions with the officials concerned of the Department of Irrigation, Ministry of Water Resources of His Majesty's Government of Nepal (hereinafter referred to as "DOI") on the Scope of Work for the Study. The list of participants in a series of meetings is shown in the attached paper.

As a result of the discussions, the Team and the DOI agreed on the Scope of Work for the Study

The following are the main issues discussed and agreed upon by both sides in relation to the Scope of Work for the Study.

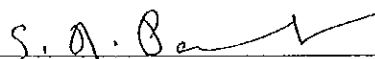
1. The mapping area (approximately 7,200ha) covers the Study area which is surrounded by Belwa Gurudrawa River, Banganga River and Kondre River.
2. The office for the Japanese study team should be equipped with electricity, city water and telephone.

Sm

(Signature)

3. The DOI shall get a permission for using the posi-film of aero-photograph covering the Study area and taking it out of the Kingdom of Nepal from the Survey Department and related authorities.
4. The DOI shall establish a coordinating committee which consists of representatives from the DOI and the Ministry of Agriculture for the Study before the beginning of the Study.
5. The DOI requested that the following equipment necessary for the Study be procured by JICA and be donated to the DOI after the termination of the Study. The Team promised to convey its request to the Government of Japan.
 - a. vehicles,
 - b. computers, and
 - c. photocopy machines
6. The DOI requested the counterpart training in Japan. The team promised to convey its request to the Government of Japan.
7. The DOI shall provide the necessary drilling machines and other equipment for drilling groundwater investigation wells to the Japanese study team.

Kathmandu, February 13, 1992



Mr. S. R. PANT
Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. MASARU SASAKI
Leader,
Preparatory Study Team,
Japan International
Cooperation Agency



MINUTES OF MEETING
ON
THE INCEPTION REPORT FOR THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT
IN
KINGDOM OF NEPAL

In accordance with the Scope of Work signed on February 13, 1992 for the Feasibility Study on the Rajkudwa Irrigation Project, the Japan International Cooperation Agency (JICA) has dispatched a study team headed by Mr. Kensaku TAKEDA to Nepal to conduct the above-mentioned study. Prior to the field investigation in Nepal, the study team presented the Inception Report in twenty (20) copies and explained the outline of the approach to the Project, plan of operation and work schedule for the study described in the Inception Report in the presence of the representatives of His Majesty's Government of Nepal (Nepalese side), of which the member list is attached herewith and in the subsequent discussions Nepalese side accepted the contents of the Report.

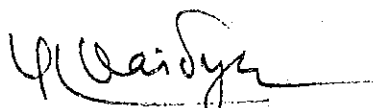
The following four (4) are main items agreed upon by Nepalese side and the study team :

1. The confirmation on the Scope of Work are ;

- 1) The study area covers approximately 7,000 ha of the land excluding some command areas of existing irrigation schemes from the area enclosed by the proposed headworks site, Belwa-gurudwa river, Dhekrahwa river and Banganga river, which includes Rajkudwa, Gorsinge and Rajpur villages and the surrounding area.
- 2) The mapping area is about 5,000 ha in max. covering the proposed headworks site, headrace route and the project area delineated on the existing 1/25,000 aerial photographic map by the field investigation in the rainy season..
- 3) The Works specified in the Scope of Work are divided into two works as follows :
 - Work-I : Feasibility study
 - Work-II : Preparation of the 1/5,000 topographic map covering the project area and the surroundings

2. Nepalese side agreed to the following ;
 - 1) to take twenty (20) soil samples from the test pits to be dug in the points representing the typical soils classified by the soil investigation to be carried out referring to existing soil classification map, land capability map and land use map of the study area.
 - 2) to decide proper water management system and adequate operation and maintenance system for the Project in discussions between Nepalese side and the study team on the systems proposed by the latter after the field investigation.
 - 3) to conduct meetings and discussions with the beneficial farmers four (4) times in the project area and the surroundings in collaboration with Nepalese counterparts and officials concerned in the course of the field investigation to involve such farmers into the Project from the investigation and planning stages of the Project.
 - 4) to explain the findings, studies, project plans and preliminary designs to officials of DOI and DOA in the discussion meetings on the interim and the draft final reports.
 - 5) to carry out the feasibility study taking into consideration the environmental effects by the Project.
3. Nepalese side agreed to provide, at HMGN's expenses, the study team with an office equipped with electricity supply, water supply, telephone set, toilets and office tables and chairs as required in Kathmandu and another office equipped with the similar facilities mentioned above in Taulihawa.
4. Nepalese side accepted to assign six (6) Nepalese officials as counterparts to the study team for the rainy season study in order to cooperate with the study team in the field investigation and also to receive transfer of technologies on the feasibility study, and to increase the numbers of counterpart for the dry season study in line with a request of the study team.. The name and speciality of the six counterparts assigned are shown in the attached sheet.

Kathmandu, July 3, 1992.



Mr. Y. L. Vaidya
Acting Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. Kensaku TAKEDA
Leader,
Study Team for the
Rajkudwa Irrigation
Project

AttachmentList of Nepalese Counterparts Assigned by HMGN

<u>Name</u>	<u>Speciality</u>	<u>Origin</u>
Prakash Poudel	Coordinator	DOI-Kapilvastu
K.D.Adhikari	Irrigation Engineer	DOI-KTM
K.L.Shrestha	Agriculturist	DOA-KTM
P.B.Shah	Hydrologist	T/W-Butwal
S.P.Khan	Geo-hydrologist	B.L.-GWP
B.B.Rawal	Agro-economist	B.L.-GWP

AttachmentList of Participants

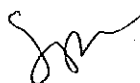
Subject : Inception Report on the F/S of Rajkudwa Irrigation Project
 Date and Time : 02/June/1992, 11pm
 Place : Meeting Room, DOI, Kathmandu

<u>No.</u>	<u>Name</u>	<u>Position</u>
1.	Y. L. Vaidya	Acting Director General, Department of Irrigation
2.	L. R. Bhattarai	Director, Western Region Irrigation Office
3.	S. S. Shrestha	Sr. Agr. Officer, Department of Agriculture
4.	K. D. Adhikari	Civil Engineer, Department of Irrigation
5.	P. N. Bhandari	Civil Engineer, Department of Irrigation
6.	R. Aryal	Civil Engineer, Department of Irrigation
7.	S. Mitoma	JICA (Expert for DOI)
8.	H. Hioki	JICA, Headquarters
9.	K. Takeda	JICA Study Team (Team Leader, O&M Expert)
10.	Y. Mase	JICA Study Team (Irrigation & Drainage Engineer)
11.	F. Nagao	JICA Study Team (Agronomist)
12.	M. Ikeda	JICA Study Team (Hydrogeologist)
13.	N. Sambe	JICA Study Team (Meteo-Hydrologist)
14.	Y. Mizuguchi	JICA Study Team (Pedologist)

MINUTES OF DISCUSSIONS
ON
WATER RESOURCE OF THE PROJECT
IN
THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT

The Study Team and the Department of Irrigation (DOI), HMG/N have held a series of discussions on water resource for the Rajkudwa Irrigation Project in line with the findings on available water resources, topography of the study area and existing farmers' managed Ranikudwa irrigation system clarified by the Study Team through the hydrological investigation, profile survey of the rivers, explanation meetings with farmers, interviews to the farmers and survey of the Ranikudwa system in the study area, and mutually agreed upon to take up the Gudrung river at an intake site of the Ranikudwa system instead of the Kondre river at the confluence with the Rajkudwa as water resource of the Project, taking into consideration the following facts :

1. The Gudrung river is the most promising water resource for the irrigated agriculture development in the study area enclosed by the Kondre, the Gudrung (a tributary of the Belwagurdwa), the Belwagurdwa and the Banganga in comparison with other conceivable two rivers flowing in the study area; the Kondre and the Belwagurdwa, owing to the following findings :
 - 1) The Kondre river is not necessarily a suitable water resource for the irrigated agriculture development in the study area, since the discharge at the proposed headworks site is too small and the river bed elevation at the headworks site is too low in comparison with the field elevation of the study area, resulting in the command area below about GL.123 m, about 500 m south-west of Basantapur village;
 - 2) The Belwagurdwa river is also not necessarily an adequate water resource for the irrigated agriculture development in the study area, because the river bed elevation at the possible headworks site, locating downstream from the confluence of the Gudrung and the Sit (the Jabaiya) is too low, if compared with the field elevation of the study area, and the command area is thereby limited to the far southern part of the study area, below GL.105 m, where the irrigation water will have to be supplied by a headrace of longer than 10 km, though the discharge at the possible headworks site is much bigger than that of the Kondre; and
 - 3) On the contrary, the Gudrung river is the most suitable water resource for the irrigated agriculture development in the study area in the following advantages;



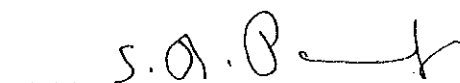
- (1) the river is perennial and the discharge at the intake site of existing Ranikudwa Irrigation System is at least two times bigger than that at the proposed headworks site on the Kondre in the ordinary flow during the rainy season,
 - (2) the river has an existing farmers' managed Ranikudwa Irrigation System commanding some 670 ha in the rainy season and more than two third of the command area will overlap with that of the Rajkudwa Irrigation System, if the latter would be constructed,
 - (3) no water right exists in the Gudrung river downstream from an existing intake of the Ranikudwa system, according to the farmers under the said system,
 - (4) almost all of the farmers under the Ranikudwa Irrigation System expect to improve the Ranikudwa System instead of the construction of the Rajkudwa Irrigation System including a headworks at the confluence of the Kondre and the Rajkudwa,
 - (5) the improvement of the Ranikudwa Irrigation System will include construction of permanent or semi-permanent headworks and intake structure, improvement of existing canals and their related structures, and construction of new canals, drains and their related structures required to extend the command area,
 - (6) the farmers under the Ranikudwa Irrigation System are willing to construct the tertiary and below tertiary canals, drains and their related structures at their own expenses in line with the detailed design drawings prepared by the JICA design team, and
 - (7) almost all of the farmers under the Ranikudwa System agree to take over the improved Ranikudwa Irrigation System and to be responsible to both the water management and the operation and maintenance of the improved system.
2. The groundwater can not be utilized as water resource for the Project, because poor groundwater potentiality in the study area was clarified through the hydro-geological investigation including review of the available groundwater investigation data in the study area, pumping tests to existing one shallow tubewell and one deep tubewell, of which the results were 1.9 l/s and 2.1 l/s, respectively and performance of 4.0 l/s of the deep tubewell constructed under the master plan study on IRDP of the Lumbini Zone by JICA in 1988.

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3. The further pumping tests to remaining four (4) existing tubewells were cancelled in connection with the investigation results mentioned above and in consideration of the fact that almost all of the existing tubewells were more or less damaged already and DOI had no plan to drill new tubewells in the study area.

Kathmandu, August 9, 1992.



Mr. S. R. Pant
Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. Kensaku Takeda
Leader,
Study Team for Rajkudwa
Irrigation Project

MINUTES OF MEETING
ON
THE PROGRESS REPORT FOR THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT

The study team submitted 10 copies of the Progress Report on August 24, 1992 at Kathmandu.

The meeting on the report was held between the officials of the Department of Irrigation(DOI) and the Department of Agriculture(DOA) and the study team.

After explanation on the report by the study team, a series of discussions were held.


As a result of discussion, the following main items have been agreed upon by the Nepalese side and the study team.

1. Nepalese side agreed, in general, with the results of the study presented in the report.
2. Nepalese side also agreed with the programme for the succeeding study works presented in the report.

Kathmandu, August 24, 1992.



Mr. S. R. Pant
Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. Kensaku TAKEDA
Leader,
Study Team for the
Rajkudwa Irrigation
Project

MINUTES OF MEETING
ON
THE START UP OF THE DRY SEASON STUDY
FOR
THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT

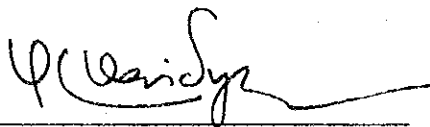
The meeting was held between the officials of the Department of Irrigation(DOI) and the Department of Agriculture(DOA) and the study team.on January 10, 1993.

After explanation on the schedule and works of the dry season study by the study team, a series of discussions were held.

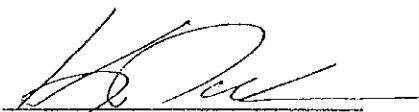
As a result of discussion, the following main items have been agreed upon by the Nepalese side and the study team.

1. Nepalese side agreed with the schedule and works of the dry season study presented by the study team
2. Nepalese side also agreed with the provision of the offices for the study team in Kathmandu and the site.

Kathmandu, January 10, 1993.



Mr. Y. L. Vaidya
Director General,
Department of Irrigation,
His Majesty's Government
of Nepal



Mr. Kénsaku TAKEDA
Leader,
Study Team for the
Rajkudwa Irrigation
Project

List of Participants

Subject: Start up meeting on the F/S of Rajkudwa Irrigation Project

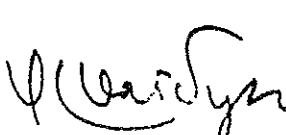
Date : January 10, 1993 ; 11.00 - 12.30 AM

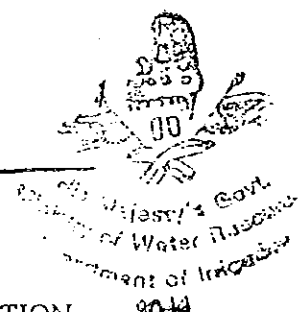
Place : Meeting room, DOI, Kathmandu


No.	Name	Position
1.	Mr.Y.L.Vaidya	Director General,DOI
2.	Mr.C.P.Rauniyar	Deputy Director General, DOI (Planning Division)
3.	Mr.S.P.Sharma	Senior Division Engineer
4.	Mr.M.Poudel	Senior Division Engineer
5.	Mr.B.Rayamajhi	Irrigation Engineer(Project Manager)
6.	Mr.K.D.Adhikari	Irrigation Engineer
7.	Mr.N.Naito	JICA, Kathmandu Office
8.	Mr.K.Takeda	JICA Study team,(Team leader, O & M)
9.	Mr.Y.Mase	JICA Study team (Irrigation & Drainage)
10.	Mr.F.Nagao	JICA Study team (Agronomy)
11.	Mr.M.Ikeda	JICA Study team (Hydrogeology)
12.	Mr.N.Sanbe	JICA Study team (Meteo-Hydrology)
13.	Mr.H.Ishikawa	JICA Study team (Agro-Economy)
14.	Mr.Y.Mizukuchi	JICA Study team (Pedology)

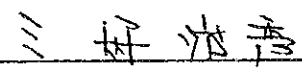
MINUTES OF MEETING
ON
THE INTERIM REPORT
FOR
THE FEASIBILITY STUDY
ON
THE RAJKUDWA IRRIGATION PROJECT
AGREED UPON
BETWEEN
OFFICIALS OF THE DEPARTMENT OF IRRIGATION (DOI)
AND
THE STUDY TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

KATHMANDU, MARCH 23, 1993


MR. Y.L. VAIDYA
DIRECTOR GENERAL,
DEPARTMENT OF IRRIGATION,
HIS MAJESTY'S GOVERNMENT OF NEPAL
Director General




MR. KENSAKU TAKEDA
TEAM LEADER OF THE
STUDY TEAM


MR. HARUHIDE MIYOSHI
OBSERVER, JICA

In accordance with the Scope of Work for the Feasibility Study on the Rajkudwa Irrigation Project (hereinafter referred to as "the study") agreed upon between His Majesty's Government of Nepal and Japan International Cooperation Agency (JICA), the Study Team headed by Mr. Kensaku TAKEDA submitted officially twenty (20) copies of the Interim Report to His Majesty's Government of Nepal, through the Department of Irrigation (DOI) at the completion of the Field Work of the Study in Nepal.

On March 23, 1993, at the presence of representatives of DOI and DOAD, the Study Team explained the Interim Report, consisting of Five Chapters including objectives of the study, activities of the Study Team, present condition of the study area, basic development concept, formulation of basic development plan and programme for the future study works. Following the said explanation, the Nepalese side headed by Mr. Y.L.Vaidya, Director General of DOI, made comments on the Interim Report.

As a consequence of the explanation and presentation of comments in connection with the Interim Report, the following has been accorded upon by both sides.

1. The Nepalese side confirmed that the Interim Report has been prepared in compliance with the scope of the study, methodology and schedule set forth in the Inception Report.
2. The development concept and formulation of the development plan are based on both the development potential and the development constraints of the study area and are acceptable to the Nepalese side, accordingly.
3. Comments presented by the Nepalese side are as summarized in Annex 1.
4. In response to the pertaining comments, the Japanese side manifested that they would duly take them into account in formulating the irrigated agriculture development plan and preparing the feasibility report in Japan.

H.M.

Y.L.V.

K.T.

ANNEX 1
COMMENTS ON THE INTERIM REPORT
FOR THE FEASIBILITY STUDY
ON THE RAJKUDWA IRRIGATION PROJECT

GENERAL ASPECT

The Nepalese side accepts that the Interim Report submitted by the Study Team of Japan International Cooperation Agency (JICA), headed by Mr. Kensaku TAKEDA, satisfies requirements of technical quality and the basic development plan accords with the present irrigation and agriculture development policy of HMG/N.

SPECIFIC ASPECT

DOI representatives inquired the Study Team about rather low value of irrigation duty adopted for paddy in the formulation of basic development plan. The concern of the DOI personnel was that it could be possible to formulate and design irrigation project theoretically, but it would be difficult to manage the project after implementation practically, and it was also low compared to the duties adopted in other projects in the country. The study team explained that the adopted irrigation duty of 0.4 l/sec/ha would be sufficient if the precipitation, concentrated during the growing season of paddy, were used effectively. The Study Team, however, agreed to review the irrigation duty during their office work in Japan.

H.M.

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ANNEX 2

LIST OF ATTENDANTS OF THE MEETING

NEPALESE SIDE

1. Mr. Y.L. Vaidya, Director General, DOI
2. Mr. C.P. Rauniyar, Deputy Director General, DOI
3. Mr. B.K. Aryal, Deputy Director General, DOI
4. Mr. S.P. Sharma, Senior Divisional Engineer, DOI
5. Mr. S.B. Regmee, Chief Counterpart Personnel, DOI
6. Mr. N.M. Joshi, Divisional Engineer, DOI
7. Mr. B. Rayamajhi, Project Manager, Rajkudwa Irrigation Project
8. Mr. K.D. Adhikari, Counterpart Irrigation Engineer
9. Mr. K.L. Shrestha, Counterpart Agronomist, DOAD

JAPANESE SIDE

Mr. Haruhide MIYOSHI	Member of Advisory Team, JICA Headquarters
Mr. Norio NAITO	Assistant Resident Representative, JICA-Nepal
Mr. Kensaku TAKEDA	Team Leader/O&M
Mr. Yoshimitsu MASE	Irrigation and Drainage/Water Management (Deputy Team Leader)
Mr. Mitsuyoshi IKEDA	Geology/Geohydrology
Mr. Nobuo SAMBE	Hydrology/Meteorology
Mr. Kozo YAMADA	Design/Cost Estimate for Civil Works
Mr. Fumihiko NAGAO	Agriculture/Farmers' Organization/Agricultural Support System
Mr. Hisashi ISHIKAWA	Agro-economy/Project Evaluation
Mr. Yoji MIZUGUCHI	Soil/Landuse




MINUTES OF THE MEETING

ON

THE DRAFT FINAL REPORT

FOR

THE FEASIBILITY STUDY

ON

THE RAJKUDWA IRRIGATION PROJECT

AGREED UPON


BETWEEN

OFFICIALS OF THE DEPARTMENT OF IRRIGATION (DOI)

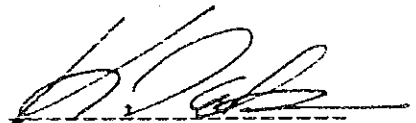
AND

THE STUDY TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

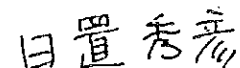
KATHMANDU, JULY 25, 1993



MR C.P. RAUNIYAR
DEPUTY DIRECTOR GENERAL
DEPARTMENT OF IRRIGATION
HIS MAJESTY'S GOVERNMENT OF NEPAL



MR. KENSAKU TAKEDA
TEAM LEADER OF THE
STUDY TEAM



MR. HIDEHIKO HIOKI
STAFF,
JICA HEADQUARTERS

In accordance with the Scope of Work for the Feasibility Study on the Rajkudwa Irrigation Project (hereinafter referred to as "the study"), the Study Team headed by Mr. kensaku TAKEDA submitted officially twenty (20) copies of the Draft Final Report to the Department of Irrigation (DOI) at the completion of the Home Work in Japan. The Draft Final Report consists of two volumes: Main Report and the Annexes containing eight and nine chapters respectively. On July 22, 1993, at the presence of the representatives of DOI, the Study Team explained the contents of the Draft Final Report.

In the next meeting held on July 25, 1993 the DOI representatives made general comments on the Draft Final Report and most of the comments were answered by the Study Team verbally. The main points of the discussion have been provided in Attachment - 1.

As a consequence of the explanation and presentation of comments in connection with the Draft Final Report, the followings have been accorded upon by both sides.

1. The Nepalese side confirmed that the Draft Final Report has been prepared in compliance with the scope of the study, methodology and schedule set forth in the Scope of work agreed upon between DOI and JICA on February 13, 1992.
2. The formulated irrigated agricultural development plan is based on both the development potential and the development constraints of the study area and are acceptable to the Nepalese side, accordingly.
3. Additional geo-technical investigation for the proposed irrigation pond and four existing ponds to be enlarged, has been planned to estimate the seepage/leakage loss in these ponds.
4. In response to the pertaining comments, the Japanese side manifested that they would duly take them into account in preparing the Final Feasibility Report in Japan.
5. Any further comments will be presented in written form, from the DOI side within coming one month and the Study Team agreed to incorporate them in the Final Report as far as possible.

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ATTACHMENT - 1
COMMENTS ON THE DRAFT FINAL REPORT
FOR THE FEASIBILITY STUDY
ON THE RAJKUDWA IRRIGATION PROJECT

GENERAL ASPECT

The DRAFT FINAL REPORT submitted by the Study Team of Japan International Cooperation Agency (JICA), headed by Mr. Kensaku TAKEDA, satisfies requirements of technical quality and the development plans accords with the present irrigation and agriculture development policy of HMG/N.

SPECIFIC ASPECT

1. The DOAD representative expressed that the anticipated crop yield and the proposed cropping intensity were attainable.
2. The DOI side enquired about the possibility of silting up of the irrigation ponds while storing flood water. The Study Team explained that the three silt excluders proposed upstream from each of the ponds would solve the problem.
3. The DOI side made comments on the absence of fish ladder in the headworks for environmental consideration. The Study Team explained that no fish ladder would be needed as the diversion weir in the river is only 1.5 metre high from the general river bed level.
4. Since the planned ponds are in the forest area the DOI enquired about the existing as well as proposed surface area of each pond and the Study Team agreed to provide one in the Final Report.
5. The DOI side requested to consider Alternative - 8 for increasing irrigation area and the Study Team explained that the alternative was not economically feasible though it was feasible technically.

Ed

K.T.

HH

ANNEX 2

LIST OF ATTENDANTS OF THE MEETING

NEPALESE SIDE

1. Mr. Y.L. Vaidya, Director General, DOI
2. Mr. C.P. Rauniyar, Deputy Director General, DOI
3. Mr. S.S. Shrestha, Division Chief, DOAD
4. Mr. S.P. Sharma, Senior Divisional Engineer, DOI
5. Mr. M.S. Paudel, Senior Divisional Engineer, DOI
6. Mr. S.B. Regmee, Chief Counterpart Personnel, DOI
7. Mr. S.M. Shrestha, Irrigation Engineer, DOI
8. Mr. K.D. Adhikari, Counterpart Irrigation Engineer, DOI
9. Mr. Nobuharu SASANO, JICA Expert

JAPANESE SIDE

1. Mr. Hisaki INDOU, Secretary of EOJ
2. Mr. Norio NAITO, Assistant Resident Representative,
JICA-Nepal
3. Mr. Hidehiko HIOKI, Staff, JICA Headquarters
4. Mr. Kensaku TAKEDA, Team Leader/O & M
5. Mr. Yoshimitsu MASE, Irrigation and Drainage/ Water
Management (Deputy Team Leader)

cd

K.?

MINUTES OF MEETING
ON
THE FEASIBILITY STUDY
FOR
THE RAJKUDWA IRRIGATION PROJECT

1. Date : November 18, 1993
2. Place : Meeting Room at DOI
3. Attending Personnel : As per attached Annex-2

Summary of Discussion

JICA study team submitted the technical paper for the captioned project, i.e. "Results of Additional Geotechnical and Soil Mechanical Surveys and Seepage Loss of the proposed Tikker Pond" to DOI. On behalf of the JICA Study Team, General Manager, Kathmandu Office, Nippon Koei Co., Ltd., Mr. J. Saito explained it to the attending DOI personnel. On behalf of the DOI, S. DE, Mr. S. P. Sharma expressed DOI's acceptance on the technical paper on which discussions were made between DOI personnel and the JICA Study Team, and both sides confirmed the following:

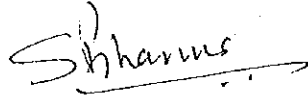
1. According to the technical paper, the overall seepage loss of the Tikker pond, computed by the seepage analysis based on the results of the additional geotechnical and soil mechanical surveys is 1.5 mm/day on an average which is less than 3.0 mm/day as was estimated in the Draft Final Report on the feasibility study. Therefore, no protection work needs to be proposed for the Tikker pond so far as the seepage loss is concerned. The Tikker pond can storage 2.07 million tons of water against 2.00 million tons proposed in the Draft Final Report.
2. In addition to the above, the following matters were verbally explained by the Study Team and agreed by DOI.
 - 1) To avoid the expansion of Gorusinge pond to the army area, it is suggested that the area of Gorusinge pond be reduced to the storage capacity of 135 thousand tons from 200 thousand tons proposed in the Draft Final Report. The reduced effective water storage in the Gorusinge pond i.e. 65,000 tons will be covered in the Tikker pond as the seepage loss of Tikker pond is very low and the capacity would be 2.07 million tons.
 - 2) The Study Team proposed to construct an east side levee of the Gorusinge pond along the west boundary of the army camp area so that there would not be water intrusion to the army camp area. (refer to Annex-1). The construction cost remains almost the same as estimated in the Draft Final Report, because the south side levee was cancelled.

S. P. Sharma

[Signature]


3. In view to the above, DOI and the JICA Study Team reconfirmed that the pond irrigation plan formulated in the Draft Final Report, which aims at irrigating about 1,800 ha of arable lands by the canal systems mostly branching from the proposed five irrigation ponds, is technically feasible.

For on behalf of
Department of Irrigation

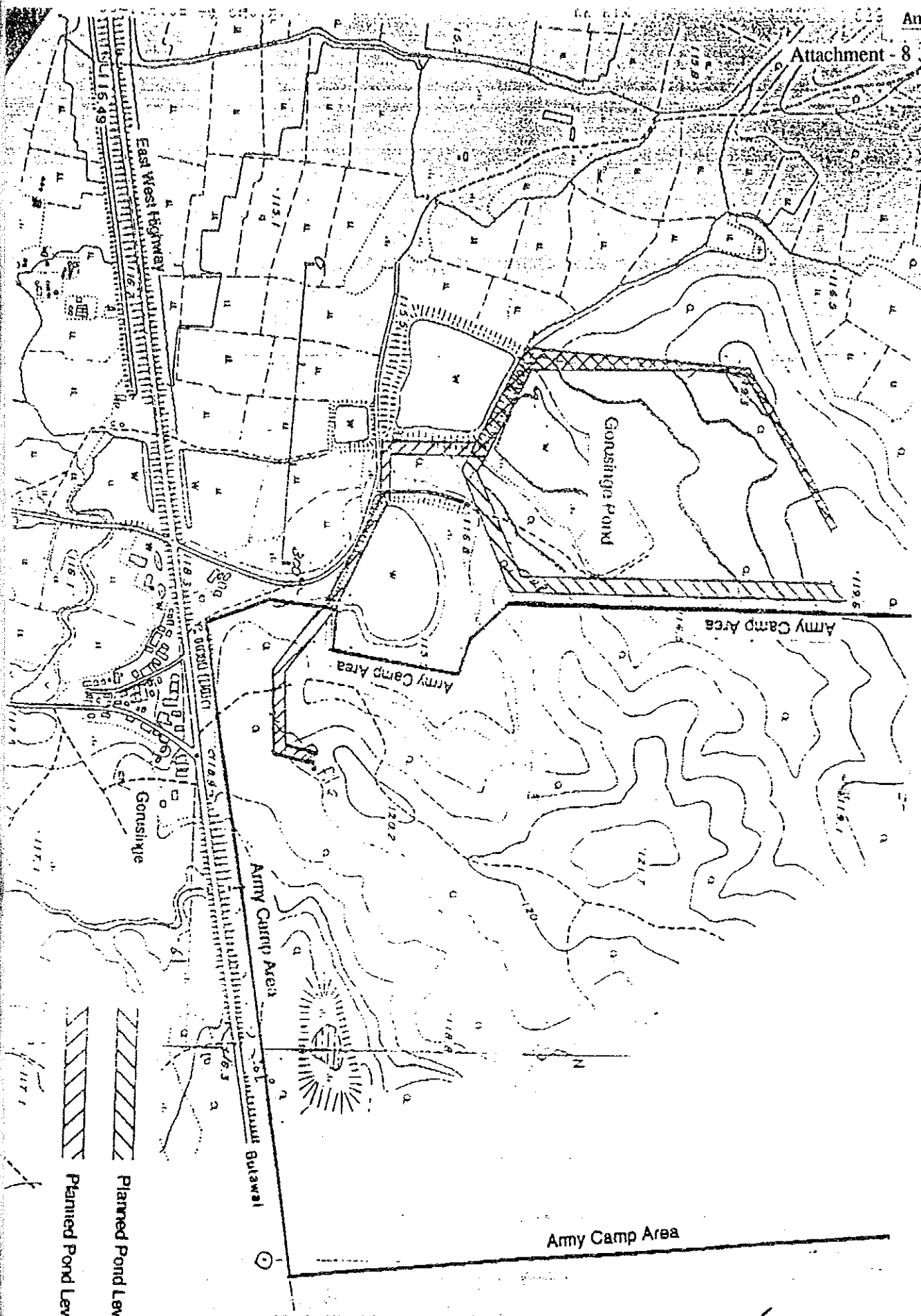


S. P. Sharma
For: Deputy Director General
Department of Irrigation
Ministry of Water Resources

For and on behalf of
JICA Study Team for
Rajkudwa Irrigation Project



J. Saito
General Manager
Kathmandu Office
Nippon Koei Co.,Ltd.



A - 29

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LIST OF ATTENDING PERSONNEL

HMG/N

1. Department of Irrigation

Mr. S. P. Sharma, S. DE.

Mr. M. S. Paudel, S. DE.

Mr. K. D. Adhikari, Counterpart Irrigation Engineer

Mr. M. Belbase, Irrigation Engineer

2. Nippon Koei Co.,Ltd.

Mr. J. Saito, General Manager

Mr. R. Sharma, Assistant Manager

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**Record of the 1st Meeting Between the JICA Study Team
and the Beneficiary Farmers of Rajkudwa Irrigation Project**

Date: July 26, 1992

Location: Gorusinghe

In connection with the feasibility study of Rajkudwa Irrigation Project, the first meeting between the JICA Study Team and the beneficiaries was held at the lower secondary school of Gorusinghe, Kapilvastu District at 11.30 AM on July 26, 1992. Fifty-two representative farmers from Mahendrakot, Jayanagar and Buddi Village Development Committees attended the meeting (the list is annexed). The details of the proceeding of the meeting and the itemwise discussions and conclusions of different issues were as follows:

First of all, DOI Engineer Mr. K. D. Adhikari introduced all JICA Study Team members, counterpart personnel and members of the local consultant to the farmers, and he briefly explained the context of the present study program.

Mr. Mase, the Irrigation Engineer and the Deputy Team Leader, on behalf of the study team, extended his sincere thanks to the farmers for attending the meeting and explained the findings of the project area and the tentative development plan conceived up to the time. Going on details, he mentioned that the headworks for the proposed irrigation scheme would be constructed somewhere downstream from the confluence of Rajkudwa and Kondre Rivers. Besides the headworks, the main canals, the branch canals, the major drains and the related structures would be constructed under the project. The size of the command area would depend on the availability of water in the source river.

Mr. Mase also explained about the plan to conserve the high rainy season discharge of the river(s). He explained that the excess rainy season discharge would be stored in the existing ponds of the project area with further rehabilitation of them, or new sites for constructing ponds would also be identified if they were available. In the course of explanation, he informed the farmers that the proposed Kondre Scheme could irrigate the area extending southward from 500 to 600 metres south of Basantapur Village, for topographical reason.

Explaining about the other possible alternate sources of irrigation for the project area (surrounded by Kondre River on the east, Belwagurdawa River on the west, Patharkot Village on the north and Banganga River on the south), Mr. Mase mentioned that a headwork site could be located downstream from the confluence of Sit Khola (Jabaiya Khola) and Gudrung River, but the source, being at low elevation, could irrigate only the area far south of the East-West Highway. He further mentioned that there could be one more alternative, offtaking canal from the existing intake site of Ranikudw Irrigation System (Gudrung river), but the study team was reluctant to intervene in the existing well managed farmers' irrigation scheme.

The meeting was then opened for general discussions for the both sides (study team and the farmers). The discussions and conclusions made on different issues were as follows:

Item No. 1: Request from the Farmers

Rehabilitation of the existing Ranikudwa Irrigation System was requested by the farmers of the system. In reply, Mr. Mase, on behalf of the study team, explained that there was no definite plan for rehabilitating the system, yet construction of a semi-permanent type of headworks and only a permanent conveyance system could be considered, but a definite plan could be formulated only after discussing the matter with HMG/N and the JICA. However, he promised to convey the request of the farmers to the concerned agencies.

Item No. 2: Tentative Schedule

Tentative schedule of the feasibility study as well as implementation of the irrigated agriculture development plan was discussed in the meeting. Mr. Mase, on behalf of the study team, explained that the feasibility study team would remain in the field till the end of the third week of August, 1992 for the investigation in the rainy season. The dry season study would commence from the second week of January, 1993 and would continue for about three months. The draft feasibility study report would be prepared by the end of June, 1993 and the final version of it would be made available by the end of August, 1993. If a Japanese Grant is provided for the project, the basic design of the project would be carried out in the following year, providing that the project is technically feasible and economically sound in the final report. Then the implementation of the scheme would take place in the next year of completion of the basic design and would be completed within one or two years of period.

Item No. 3: Farmers' Contribution

The study team explained about the existing Irrigation Policy of HMG, in which farmers' participation and contribution in the irrigation planning and implementation has been emphasized. The team also proposed that the headworks, main canal, secondary canals, main drains, secondary drains and all the related structures would be constructed under the Japanese Grant Aid, whereas the farmers should take the responsibility of constructing all tertiary and below tertiary canals and drains at their own expenses. The team also asked the farmers to take the responsibility of rehabilitating the existing pond. The farmers agreed with the proposal except the pond rehabilitation. Finally, it was concluded that the farmers would construct all the tertiary and below tertiary canals and drains at their own expenses.

Item No. 4: Turnover of the Completed Facilities

The study team proposed that all the constructed facilities would be turned over to the farmers for the effective operation and maintenance. They were informed that they should organize a Water Users' Association from the planning stage according to the existing HMG's Irrigation Policy and the same association would later take the responsibility of O & M. The farmers agreed on all the above proposal.

Item No. 5: Land Contribution

The study team informed the farmers that they should provide land free of cost for all canals, drains and related structures and they should not ask for any compensation for the loss of their land due to the construction of the irrigation system. In general, the proposal was accepted, but a few questions were raised what if some farmers lost all of their land in the canal. The team explained that it was the responsibility of the Water Users' Association to settle the issue by compensating the land from other beneficiaries who would not lose any land. Then the farmers agreed to settle the issue by themselves if any arise later. The farmers were also informed in the meeting that the alignments of various canals, once finalized, would not alter on some farmers' request.

The meeting ended after informing the farmers that the next meeting would take place in the beginning of the dry season study.

List of Farmers Attending the First Meeting

S. No.	Name	VDC	Ward No.	Village	Lnad Holding	Unit
1.	Khadga Bahadur Bista	Mahendrakot	2	Basantapur	1.0	Bigha
2.	Tilak Bahadur Thapa	Mahendrakot	2	Basantapur	1.0	Bigha
3.	Bal Krishna Ghimire	Mahendrakot	2	Basantapur	6.5	Bigha
4.	Dhundi Raj Acharya	Mahendrakot	2	Basantapur	5.0	Bigha
5.	Yagya Bahadur Oli	Mahendrakot	6	Birpur	2.5	Bigha
6.	Bala Ram Bhusal	Mahendrakot	7	Patharkot	1.0	Bigha
7.	Narayan Prasad Bhusal	Jayanagar	7	Gorusinghe	7.5	Bigha
8.	Jhalak Bikram Shah	Jayanagar	8	Gorusinghe	9.0	Bigha
9.	Nathu Prasad Tharu	Jayanagar	9	Baragara	5.8	Bigha
10.	Dambar Ghimire	Jayanagar	6	Gorusinghe	7.0	Bigha
11.	Ganja Bahadur Rahu Magar (VDC Chairman)	Mahendrakot	7	Patharkot	Housing Only	
12.	Tilak Ram Bhusal	Mahendrakot	8	Patharkot	2.0	Katha
13.	Ram Prasad Bhusal	Mahendrakot	7	Patharkot	8.0	Katha
14.	Bhim Raj Pokhrel	Mahendrakot	7	Patharkot	2.0	Katha
15.	Kallu Tharu	Jayanagar	6	Gorusinghe	6.5	Bigha
16.	Ishwari Prasad Upadhaya	Jayanagar	1	Bakdriya	1.5	Bigha
17.	Toar Tharu	Jayanagar	2	Bakdriya	3.0	Bigha
18.	Bhawanishwor Bhattarai	Jayanagar	2	Bakdriya	3.0	Bigha
19.	Lochan Tharu	Jayanagar	9	Barahara	3.0	Bigha
20.	Dharma Raj Acharya	Mahendrakot	6	Birpur	1.5	Bigha
21.	Tek Lal Belbase	Mahendrakot	6	Birpur	1.3	Bigha
22.	Huta Kant Panthi	Mahendrakot	6	Birpur	17.0	Katha
23.	Meghe Tharu	Jayanagar	9	Barahara	5.0	Bigha
24.	Jageshwar Tharu	Jayanagar	9	Barahara	2.5	Katha
25.	Makhan Tharu	Jayanagar	4	Gorusinghe	5.5	Bigha
26.	Yhoraku Tharu	Jayanagar	5	Gorusinghe	4.0	Bigha
27.	Palar Tharu	Jayanagar	9	Barahara	3.0	Bigha
28.	Hallan Tharu	Jayanagar	9	Barahara	4.0	Bigha
29.	Top Pahadur Acharya	Buddi	7	Chauraha	3.0	Bigha
30.	Om Prasad Neoupane	Buddi	7	Chauraha	1.5	Bigha
31.	Budh Ram Tharu	Jayanagar	5	Gorusinghe	5.5	Bigha
32.	Ram Lakhnan Tharu	Jayanagar	4	Gorusinghe	5.0	Bigha
33.	Yam Bahadur Malla	Buddi	9	Morma	12.0	Bigha
34.	Chudamani Panthi	Mahendrakot	7	Patharkot	1.0	Bigha
35.	Bhim Bahadur Magar	Mahendrakot	7	Patharkot	0.5	Bigha
36.	Gopal Prasad Tharu (VDC Chariman)	Buddi	1	Buddi	8.0	Bigha
37.	Til Bahadur Sen Oli	Buddi	4	Jodhpur	2.0	Katha
38.	Keshab Prasad Tharu	Buddi	3	Buddi	2.0	Bigha
39.	Khim Bahadur Sen Oli	Buddi	2	Kilauli	18.0	Katha
40.	R. L. Banjare	Buddi	5	Karnauliya	2.0	Katha
41.	N. P. Ghimire	Buddi	4	Jodhpur	12.0	Katha
42.	P. B. Sunuwar	Buddi	4	Jodhpur	18.0	Katha
43.	Dilli Raj Bhushal	Buddi	5	Karnauliya	18.0	Katha
44.	B. P. Biharya	Buddi	5	Chauraha	2.0	Katha
45.	Thage Prasad Tharu	Mahendrakot	1	Kapase	10.0	Bigha
46.	Mahato Tharu	Mahendrakot	1	Kapase	17.0	Katha
47.	N. P. Khanal	Mahendrakot	1	Kapase	2.0	Bigha
48.	Chirkuti Tharu	Mahendrakot	1	Kapase	5.0	Bigha
49.	H. R. Chaudhary	Mahendrakot	5	Tikker	4.5	Bigha
50.	Nirar Tharu	Jayanagar	9	Barahara	6.0	Bigha
51.	Bimal Khal	Jayanagar	9	Barahara	10.0	Bigha
52.	Ram Prasad Tharu	Mahendrakot	1	Kapase	5.0	Bigha

Record of the 2nd Meeting Between the JICA Study Team and Canal Chiefs/Secretaries/Farmers of the Ranikudwa Irrigation System

Date: August 4, 1992
 Location: Patharkot Village
 Time: 1300 hrs.

Context of the Meeting

In consideration of such factors as request from the farmers under the Ranikudwa Irrigation System for taking up their system for major rehabilitation, availability of relatively high discharge in the Gudrung River at existing intake site and the source being in the best command position for irrigating the entire project area by gravity, the study team concentrated its attention of the system after the first meeting with the farmers held on 26th July 1992. During the course of several field investigations made and informal meeting held with the farmers, it was learnt that twelve villages (moujas) were being supplied with water from the existing Ranikudwa Irrigation System and each village had one elected canal chief and one canal secretary together with one paid canal chaukidar. Finally, it was decided by the study team to call a meeting of all the canal chiefs and secretaries for obtaining detailed information of the system as well as the attitude of the farmers. The following is the record of the meeting in which not only the canal chiefs and the secretaries were present but also 114 farmers (34 from Patharkot, 39 from Birpur, 13 from Tikar, 20 from Basantapur, 6 from Bhelai and 2 from Changhat) attended the meeting.

After introducing all JICA Study Team members and the DOI counterpart personnel, the study team again explained the tentative schedule of the feasibility study as well as the implementation of the irrigated agriculture development plan [Re. Item No. 2 of 1st Meeting].

Following the introduction, Mr. Mase, the Irrigation Engineer and the Deputy Team Leader, on behalf of the study team, thanked all the farmers for participating in the meeting. The different items of issues, which were discussed and concluded in the meeting were as follows:-

Item No. 1: Findings of the Study

The study team explained that three water sources had been identified for the surface irrigation purpose and in order of abundance of water they were;-

1. Belwagurdawa river, downstream from the confluence of Gudrung River and Sit Khola,
2. Gudrung river at Ranikudwa and
3. Kondre River, downstream from the confluence with Rajkudwa River.

Similarly, they in order of the size of the command area based on the elevation of headwork sites were;-

- (1) Gudrung River, at Ranikudwa
- (2) Kondre River, downstream from the confluence of Rajkudwa River and
- (3) Belwagurdawa River, downstream from the confluence of Gudrung River and Sit Khola.

Apart from the above, construction cost of the system would also be a basis for selecting the best alternative.

Item No. 2: Most Promising System

The farmers were informed that major rehabilitation of Ranikudwa Irrigation System with permanent headwork structures and conveyance system including the plan for extension of the command area and storage of excess rainy season river flow in the rehabilitated existing ponds seemed best solution for irrigating the cultivated field in the project area. They, however, were informed that final selection of the alternatives was yet to be carried out and definite plan was yet to be formulated. The farmers were also informed that finalization of plan would depend much on their demand and willingness to share the construction cost and take over the operation and maintenance work of the constructed system.

Item No. 3: Water Sharing

The farmers were informed in the meeting that water should be shared uniformly over the existing as well as extended command area regardless of one part being in the headreach or tailreach. The farmers agreed on the water sharing proposal.

Item No. 4: Farmers' Contribution

The study team reiterated HMG's cost sharing policy on irrigation and put forward the proposal as in the 1st meeting, at Gorusinghe on 26th July 1992. The farmers agreed on the proposal (Re: Item No. 3 of 1st meeting)

Item No. 5: Turnover of the Completed Facilities

The study team proposed that all the constructed facilities would be turned over to the farmers for the effective operation and maintenance. They were informed that they should organize a Water Users' Association from the planning stage according to the existing HMG's Irrigation Policy and the same association would later take the responsibility of O & M. The farmers agreed on all the above proposal

Item No. 6: Land Contribution

The study team informed the farmers that they should provide land free of cost for all canals, drains and related structures and they should not ask for any compensation for the loss of their land due to the construction of the irrigation system. In general, the proposal was accepted, but a few questions were raised what if some farmers lost all of their land in the canal. The team explained that it was the responsibility of the Water Users' Association to settle the issue by compensating the land from other beneficiaries who would not lose any land. Then the farmers agreed to settle the issue by themselves if any arisen later. The farmers were also informed in the meeting that the alignments of various canals, once finalized, would not alter on some farmers' request.

The meeting ended after informing the farmers that the next meeting would take place in the beginning of the dry season study.

**Minutes of the 3rd Meeting Between the IICA Study Team
and the Beneficiary Farmers of Rajkudwa Irrigation Project
(Translated to English by K. D. Adhikari, DOD)**

Date: January 22, 1993
Location: Gorusinghe School

Today on 22nd January 1993, the meeting, between the Rajkudwa Irrigation Project feasibility study team members and the beneficiary farmers, attended by the heads of line agencies, peoples representatives including the honorable Member of Parliament Mr. B.R. Acharya has made the following decisions in connection with the future development of the irrigation project.

Decisions

1. The farmers put forward their strong demands for the rehabilitation, and extension of the existing Ranikudwa Irrigation Project. The improvement works would include the construction of a permanent headworks together with a permanent canal system.
2. The farmers committed their full cooperation, on their behalf, for the irrigation development.
3. Regarding the land in the canal line, that would be lost by the farmers during the implementation, they were ready to contribute according to the prevailing rules and regulations of HMGN and the existing Irrigation policy of the government.
4. The farmers were ready to construct the irrigation canals as well as drainage canals below tertiary level, at their own expense according to the lines and grades shown by the concerned technical personnel of the system with their full participation.
5. The operation and maintenance of the entire system after the completion of implementation would be taken over by the farmers themselves through an organized Water User's Association.

Attendance

1. Mr. B. R. Acharya, Honorable Parliament Member.
2. Mr. M. R. Pokhrel, Regional Member
3. Mr. G. B. Rau Magar, Chairman, Mahendrakot VDC
4. Mr. K. B. Bist, Ward Member
5. Mr. M. Tharu, Ward Member
6. Mr. P. B. Pun, Ward Member
7. Mr. H. R. Chaudhary, Ward Member
8. Mr. B. R. Bhusal, Ward Member
9. Mr. T. R. Bhusal, Ward Member
10. Mr. B. Tharu, Ward Member
11. Mr. B. K. Ghimire, School Teacher
12. Mr. R. B. Tharu, School Teacher
13. Mrs. D. K. Shrestha, Farmer
14. Mr. G. P. Giri, Farmer
15. Mr. J. B. Chhetri, Farmer
16. Mr. C. M. Panthi, Farmer
17. Capt T. S. Rana, Farmer
18. Mr. S. B. Pun, Farmer
19. Mr. N. S. Nepali, Farmer
20. Mr. J. Tharu, Vice Chairman, Dubiya VDC
21. Mr. M. Tharu, Exchairman, Dubiya VDC
22. Mr. L. Panthi, Farmer
23. Mr. I. P. Poudel, Farmer
24. Mr. M. Chaudhary, Teacher
25. Mr. N. Tharu, Vice Chairman, Jayanagar VDC
26. Mr. H. D. P. Chaudhary, Teacher
27. Mr. R. P. Tharu, Chairman, Jayanagar VDC
28. Mr. R. P. Basyal, Farmer
29. Mr. K. P. Rana, Farmer
30. Mr. K. B. Shah, Ward Member
31. Mr. N. P. Bhusal, Farmer
32. Mr. H. P. Ghimire, Farmer
33. Mr. P. Banjadi, Farmer
34. Mr. H. R. Subedi, Farmer
35. Mr. L. Bahadur, Head Master

36. Mr. Top Bahadur Shrestha, Teacher
37. Mr. R. P. Aryal, Teacher
38. Mr. D. P. Chaudhary, Farmer
39. Mr. N. P. Rana, Head, Cooperative organization
40. Mr. B. R. Poudel, Farmer
41. Mr. K. P. Bhattari, Farmer
42. Mr. G. K. Kunwar, Farmer
43. Mr. J. N. Banjadi, Farmer
44. Mr. B. P. Poudel, Farmer
45. Mr. M. R. Sigdel, Farmer
46. Mr. L. Pokhrel, Farmer
47. Mr. H. N. Rajauriya, Ex Minister for Agriculture
48. Mr. P. Chaudhary, Farmer
49. Mr. K. Chaudhary, Farmer
50. Mr. C. Chaudhary, Farmer
51. Mr. D. R. Khanal, Farmer
52. Mr. G. P. Tharu, chairman, Buddi VDC
53. Mr. P Acharya, Vice chairman, Buddi VDC
54. Mr. T. R. Ghimire, Member, Buddi VDC
55. Mr. K. B. Pandey, Farmer
56. Mr. B. P. Poudel, Farmer
57. Mr. B. P. Poudel, Farmer
58. Mr. R. Chaudhary, Vice chairman, Baskarpur VDC
59. Mr. A. B. Rayamajhi, Farmer
60. Mr. H. Musalnan, Chairman, Rajpur VDC
61. Mr. R. Shresta, Farmer
62. Mr. J. Tharu, Farmer
63. Mr. H. L. Neupane, Farmer
64. Mr. K. Neupane, Farmer
65. Mr. Nepu Chaudhary, Farmer
66. Mr. R. C. Chaudhary, Farmer
67. Mr. D. Kurmi, Farmer
68. Mr. R. S. Kurmi, Farmer
69. Mr. R. G. Gupta, Farmer
70. Mr. P. R. Tharu, Farmer
71. Mr. Tulendra K. C, Farmer
72. Mr. J. P. Khanal, Farmer
73. Mr. C. Tharu, Farmer
74. Mr. T. B. L. Srivastav, Representative, District Cooperatives
75. Mr. S. Adhikary, Chief, District Agriculture Development Office
76. Mr. D. R. Pandey, Head, Agriculture Dev. Bank, Taulihawa
77. Mr. K. Jha, Acting Chief, Agriculture Input Corporation, Taulihawa
78. Mr. K. P. Sitaula, Agri-Engineer, DOI, Kapilvastu
79. Mr. H. B. Thapa, Farmer
80. Mr. L. B. KC, Farmer
81. Mr. G. R. Aryal, Farmer
82. Mr. H. P. Neupane, Farmer
83. Mr. K. Neupane, Farmer
84. Mr. H. B. Nagarkoti, Farmer
85. Mr. S. L. Kurmi, Chairman, Mahuwa VDC
86. Mr. J. Pudasaini, Farmer
87. Mr. Mahoto Tharu, Farmer
88. Dr. G. P. Rajauriya, Chairman, District Dev. Cmmittee
89. Mr. K. D. Adhikari, Counterpart Irrigation Engineer, DOI
90. Mr. B. Rayamajhi, Project-in-charge, DOI
91. Mr. K. Yamada, JICA
92. Mr. K. Takeda, JICA
93. Mr. F. Nagao, JICA
94. Mr. Y. Mizuguchi, JICA
95. Mr. M. Ikeda, JICA
96. Mr. N. Sambe, JICA
97. Mr. H. Ishikawa, JICA
98. Mr. Y. Mase, JICA
99. Mr. K. L. Shrestha, Counterpart Agronomist, DOAD
100. Mr. B. B Rawal, Counterpart, Agri-Economist, DOI
101. Mr. R. C. P. Agrahari, Counterpart, Agri-Economist, DOAD

**Minutes of the 4th Meeting Between the JICA Study Team
and the Beneficiary Farmers of Rajkudwa Irrigation Project**

Date: February 14, 1993
Location: Gorusinge

A meeting on agricultural services was held at Gorusinge between the co-operative members, farmers representatives, officials from line agencies, and Rajkudwa study team members on February 14, 1993. The meeting was presided by village committee chairman Mr. R.P. Tharu and conducted by the Project Incharge. Prior to discussion a welcome speech covering the purpose of the meeting was given by Mr. B.Rayamajhi. District agriculture officer Mr. S.R. Adhikari and district co-operative officer Mr. L.N. Ghimire gave a briefing on their new approach in Rajkuduwa Irrigation Project area. The meeting was attended by about 300 farmers representatives. The attendance of the officials is as follows.

S.No.	Name	Designation	Office
1.	Mr. P. Poudel	Incharge	District Irrigation office
2.	Mr. S.R. Adhikari	Incharge	District Agriculture Dev.office
3.	Mr. L.N. Ghimire	Incharge	District co-operative office
4.	Mr. T.B.L. Shrivastav	Inspector	District co-operative office
5.	Mr. G.B. Rana	Officer	District co-operative office
6.	Mr. K.L. Shrestha	Agronomist	Dept. of Agriculture
7.	Mr. B. Rayamajhi	Project incharge	Rajkuduwa I. Project
8.	Mr. F. Nagao	Agronomist	F/S Team JICA
9.	Mr. K. Takeda	Team leader	F/S Team JICA

Minutes: After hectic discussion, following requests were made by all the farmers representatives.

1. There is much difficulty for purchasing fertilizers, insecticides etc on time by farmer without farmers co-operative in each VDC area. So it is requested by all of them to have 100 MT capacity godown with office room for farmers co-operative in each VDC area.
2. The farmers of Dhankauli, Mahuwa, Rajpur and Hariharpur are facing problem to transport their production to the market place viz. Taulihawa and Bahadurgunj. The farmers representatives suggested to establish a Rice Mill in the project area.
3. Most of the farmers representatives complained their grievances of not having agro-technical services. Therefore, a decision was made for proposing one agricultural sub-centre with permanent technicians in North on highway. They were in the opinion that the sub-centre can be used for training the farmers on new technology.
4. The farmers representatives proposed for constructing one cold storage for storing seeds, food grains, and cash crops at Kodanliya or Buddi or Badaharra or Gorusinge under the management of farmers co-operative.

Lastly the chairman of the meeting Mr. R.P. Tharu gave vote of thanks and closed the meeting.

Raikudwa Irrigation Project

Minutes of the 5th Meeting Between JICA Study Team & Farmers

Date: February 25, 1993
 Location: Gorusinghe Lower Secondary School field

As a part of explaining the findings of field survey and tentative irrigation and drainage plan to the farmers and involving them in the planning process, the fifth meeting between the JICA F/S team members and the beneficiary farmers was held in Gorusinghe Lower Secondary School field at 14:00hrs on 25th February 1993. The meeting was chaired by Mr. Ram Pyare Tharu, the Chairman of Jayanagar VDC. The list of other attendants of the meeting has been annexed. The discussions and decisions made in the meeting were as follows:-

1. At first, Mr. R.P. Ghimire, the Ex-Chairman of Kapilvastu District Development Committee and a local farmer addressed the meeting welcoming all and the team members in particular. In his address, he, on behalf of all the beneficiary farmers, thanked the team members and the Government of Japan for showing interest in uplifting the standard of living of the local farmers. He also expressed his commitment that the farmers would extend all the necessary cooperation on their behalf.

2. After the welcome speech, Mr. Y. Mase, the Dy. Team Leader and Irrigation Engineer explained, with the help of maps, the findings of field work and the tentative irrigation and drainage plan conceived so far. In his explanation, he told the farmers that the existing Ranikudwa System, after improvement, would be utilized for irrigating most of the cultivated area north of East-West Highway and the system might also feed Badahara and Dewari or Buddi ponds. The main canal alignment of the Ranikudwa system was also explained to the farmers with the help of the map. Mr. Mase further explained about the location of proposed Kondre River Headwork and the canal system under it. He made it clear that the Kondre river bed level, being at low elevation, could irrigate only southern part of the project area.

During his explanation, he informed the farmers that six or seven of the existing ponds in the project area would be rehabilitated and two to three new ponds would be constructed. The existing command area of the ponds and the cultivated area of higher elevation would come under the pond irrigation systems.

Mr. Mase explained to the farmers that the total command area of the irrigation project would be approximately 2000ha. He also informed them that the project would consist of 70 to 80 tertiary units each with average size of 30ha. He requested them to organize a water users' group in each tertiary unit from which they would elect two representatives (one Chairperson and one Secretary) for the respective water users' organization at secondary canal level. Similarly, two representatives elected from the secondary canal level would form a central Water Users' Association. He informed the farmers that pre-establishment of Water Users' Association was the prerequisite for Japanese grant aid. Mr. Mase reiterated, as in the previous meetings, the necessity of farmers' responsibility for constructing the canals, drains and related structures at and beyond tertiary level at their own expense. He also explained that the Water Users Association would have to take over completely the completed project for operation and maintenance.

In his explanation, Mr. Mase informed the farmers that the existing village roads would be improved instead of constructing new service roads. The reason for that kind of proposal was that the farmers would not have to lose much land in the road construction.

The farmers generally agreed on the irrigation and drainage development plan. The only request from the farmers' side was that the existing Gorusinghe pond be rehabilitated and included in the irrigation development plan.

3. In the meeting the other team members, Mr. Sambe, hydrologist; Mr. Ikeda, geophysicist; and Mr. Yamada, irrigation engineer were also introduced and they had briefly explained field findings on their parts.

4. At last, Mr. K.P. Rana, a leading farmer of the project area thanked the team members and reassured on behalf of the farmers that they would fulfill all the pre-requisites.

Attendance:

1. R.P.Tharu	Chairman	Jainagar	2. G.B.Run Magar	Chairman	Mahendrakot VDC
3. D.Rana	Chairman	Dubiya VDC	4. G.Chevdlay	Chairman	Buddi VDC
5. P.Khanal		Jainagar.-3	6. K.B.Bista		Mahendrakot-2
7. B.L.Khanal		Buddi-6	8. B.Khanal		Dubiya-5
9. D.B.Malla		Buddi-9	10. K.P.Rana		Jainagar-4
11. R.P.Chimire		Jainagar-6	12. C.Khanal		Buddi-5
13. B.Pondel		Jainagar-9	14. U.M.Povdel		Dubiya-3
15. G.B.Rama		Dubiya-3	16. P.Acherya	Deputy Chairman	Dubiya VDC
17. B.Yhimire		School Teacher	18. B.P.Tharu		Mahendrakot-9
19. B.Bhattarai		Mahendrakot-2	20. T.B.Kunwar		Buddi-3
21. Sita Reudel		Jainagar-7	22. Kamala Yanlam		Mahendrakot-7
23. Ninkala Bhet		Dubiya-3	24. Sita D.Rau Magar		Dubiya-3
25. R.M Rokhrat		Dubiya-5	26. Shyam Yurong		Dubiya-5
27. Pyseri Darji		Dubiya-3	28. Yamuna KL.		Buddi-7
29. Savitri Belbase		Buddi-7	30. Uuma Chhetri		Buddi-7
31. Laxmi Belbose		Buddi-5	32. D.K.Rayamajhi		Mahendrakot-8
33. Bishnu Bhattari		Mahendrakot-8	34. Kamala Thapa		Mahendrakot-7
35. Ujeli Chhemi		Mahendrakot-8	36. V.P Mishra		Mahendrakot-3
37. J.B.Shah		Jayanager-8	38. H.P.Yhimire		Jayanager-6
39. I.P.Adhikari		Jayanager-6	40. R.P.Yhimire		
41. T.P.Khanal		Buddi-7	42. M.Malla		Buddi-9
43. Roshari Saugam		Buddi-9	44. Thakur Prasad		Buddi-9
45. S.R.Aryal		Buddi-7	46. B.L.Chudali		Buddi-5
47. Bahadur Sharma		Buddi-5	48. Buddhi Bahadur		Buddi-5
49. Shobhakar Pondel		Yhanchausa-5	50. Top Lal Khanal		Dubiya-5
51. Tek hal Pokhrel		Dubiya-5	52. Dila Ram Khanal		Dubiya-5
53. Shiva B.Kunwar		Dubiya-5	54. Lok Halth Khanal		Dubiya-5
55. Himanda pokhrel		Dubiya-5	56. Ram Chandra Tharu		Dubiya-5
57. Bahadur Tharu		Dubiya-5	58. H.B Kunwar		Dubiya-3
59. Prem Lal Tharu		Dubiya-4	60. Ram Shanker Tharu		Dubiya-3
61. Kanchha Tharu		Buddi-2	62. L.M Subidi		Buddi-5
63. H.P Bhusal		Buddi-7	64. Bhikhari Tharu		Buddi-1
65. C.M Banjade		Mahendrakot-7	66. B.B Kunwar		Tikker
67. Yam KL		Mahendrakot-7	68. B.R.Pokhrel		Mahendrakot-7
69. Kishori Kurmi		Mahendrakot-2	70. Diwakar Yhimire		Jainagar-3
71. B.P.Subedi		Jainagar-3	72. N.P.Khanal		Mahendrakot
73. Dipendra Poudel		Jainagar-3	74. Jeer Harayan Belbek		Mahendrakot-5
75. R.B.BC		Mahendrakot-4	76. Sankata Prusad Chaudhar		Dhankanli-1
77. R.Shresta		Dhankanli-1	78. Yhanshyam		
79. Shiv Bahadur			80. B.P.Shresta		
81. Jeev Lal Kharal			82. J.L.Poudel		
83. H.K.Rana			84. D.R.Baharai		
85. Him Lal Heupane			86. Tek Raj Yhimire		
87. Khanba B.Shah			88. Nareyan Prasad Bhousal		
89. Nareyan Prasad Poudel			90. Hum Kant Belban		
91. Hut Kant Pantti			92. Sop Bahadur Roon		
93. Ishusari Prasad Roudel			94. Krishna Prasad		
95. Durga Bahadur Adhikari			96. Liladhar Panthi		
97. Bhoj Bahadur			98. Khadananda		
99. S.B.Regmee	Project in charge	Kapilvastu Tubewell Project			
100. Kumar Yautam	Section officer	Kapilvastu Tubewell Project			
101. B.Rayamajhi	Project Manager	Counter part, DOI			
102. K.D.Adhikari	Irrigation Engineer	Counter part, DOI			
103. Yoshimitsu Mase	Co-Team Leader	JICA Study Team			
104. Mitsuyoshi Ikeda	Geologist	JICA Study Team			
105. Nobuo Sanbe	Hydrologist	JICA Study Team			
106. Kozo Yamada	Design Engineer	JICA Study Team			

