

Source: Sajama, Republica de Bolivia  
 Ministerio de Minas y Petroleo,  
 Departamento Nacional de Geologia,  
 Hoja No. 5839 (1963)

**LEGEND**

<b>Qa</b>	Depositos aluviales
<b>Qa</b>	Depositos coluvio-fluviales
<b>Qaa</b>	Abanicos aluviales
<b>Qt</b>	Terrazas
<b>Qm</b>	Morrenas
<b>Qve</b>	Volcanes en escudo
<b>Qcl</b>	Consos de lava
<b>Qh</b>	Hornitos volcanicos
<b>Qbr</b>	Brechas volcanicos
<b>Qev</b>	<b><u>Estratovolcanes [Volcanic stratums]</u></b> Andesite - daciticas associated with clastic rocks [Lavas andesitico - daciticas asociadas con rocas piroclasticas]
<b>Qgp</b>	Glaciales de piedras
<b>Qlt</b>	Form. Taracollo
<b>QI</b>	Intrusiones cuaternarias
<b>Tpe</b>	Form. Perez (Ignimbritas blancas y rosadas de compacion riodiacitica)
<b>Tma</b>	Form. Mauri (Sedimentos tobaceos con lavas intercaladas)

図 6.1 タンボ・ケマード周辺地質図

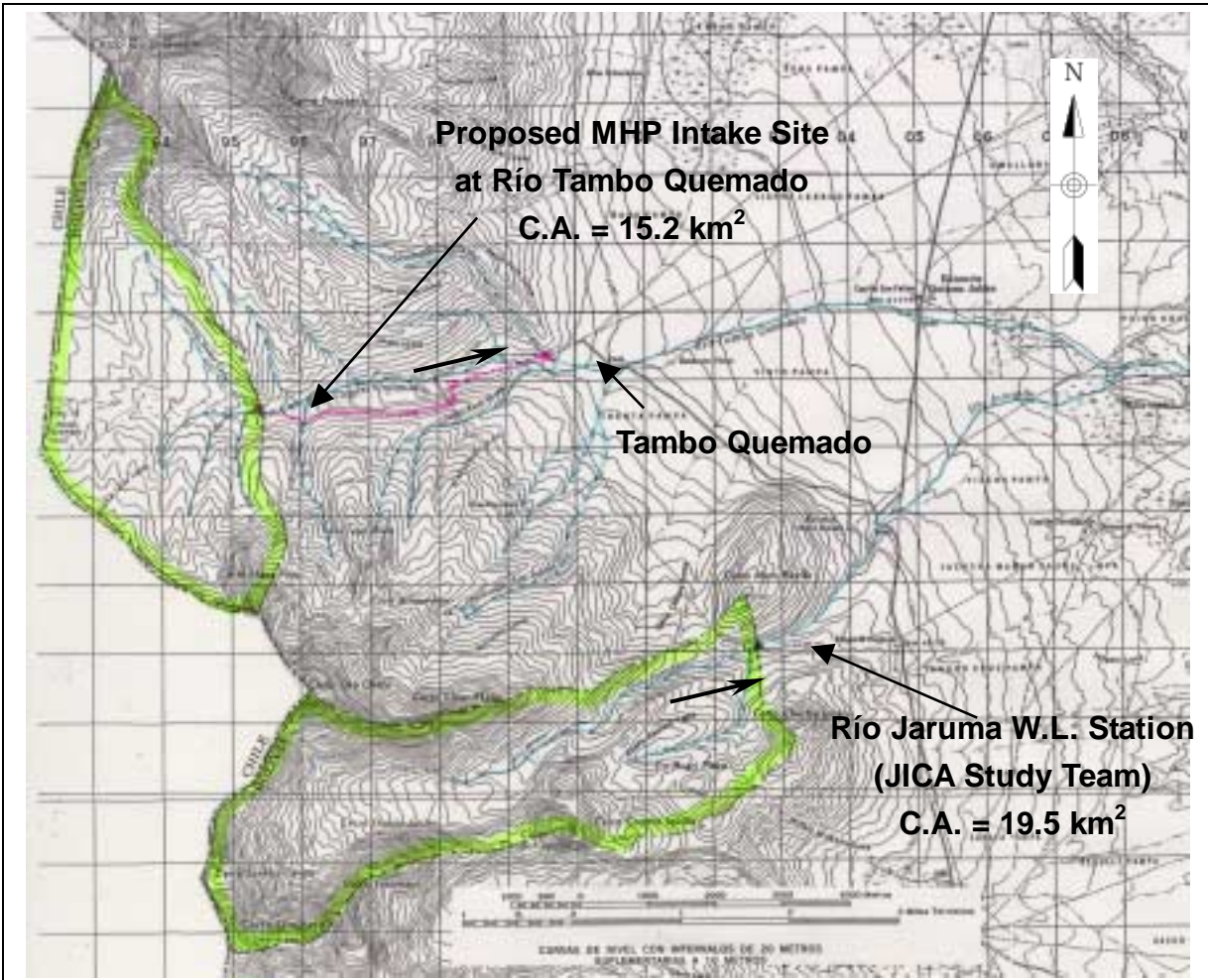


図 6.2 ハルマ川水位観測所およびタンボ・ケマード小水力発電計画  
取水地点集水区域図

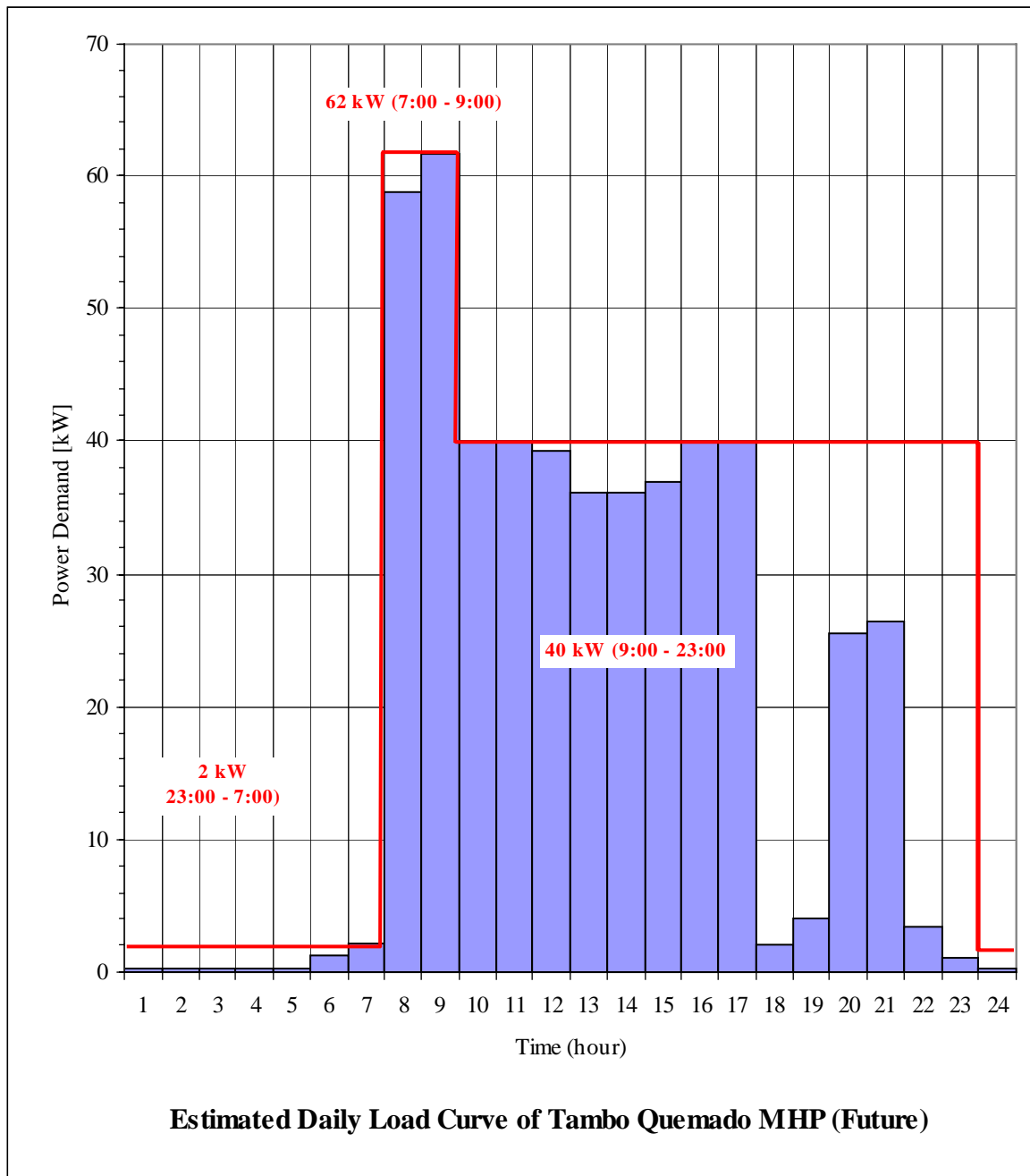
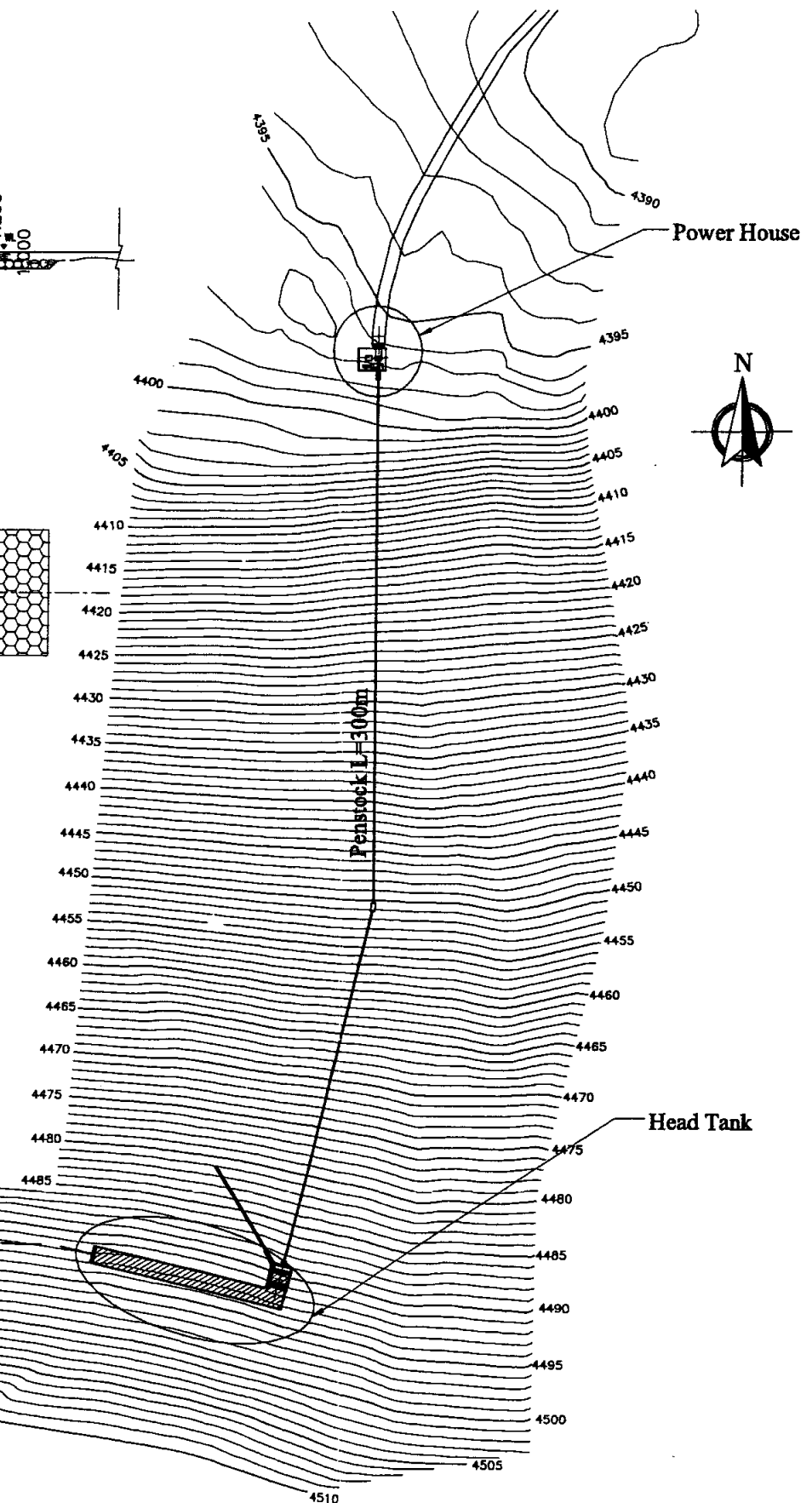
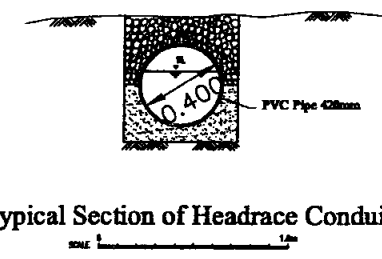
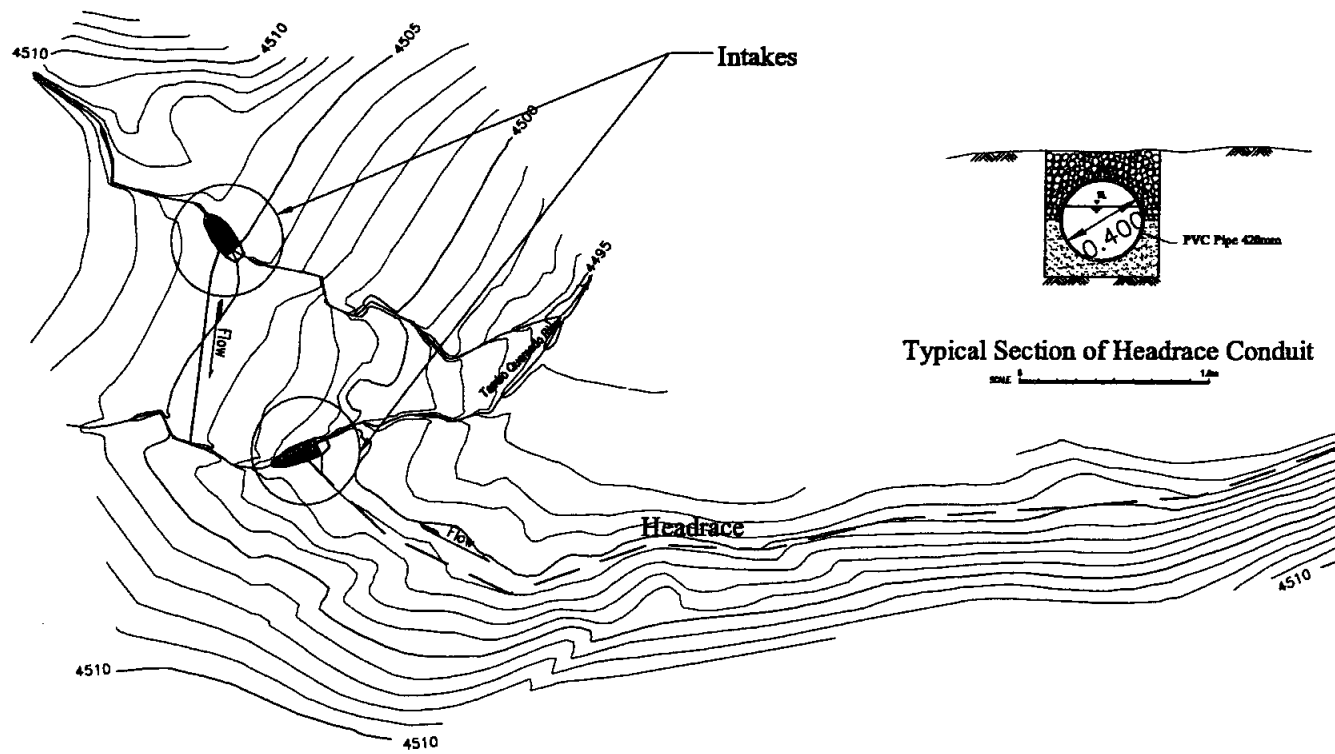
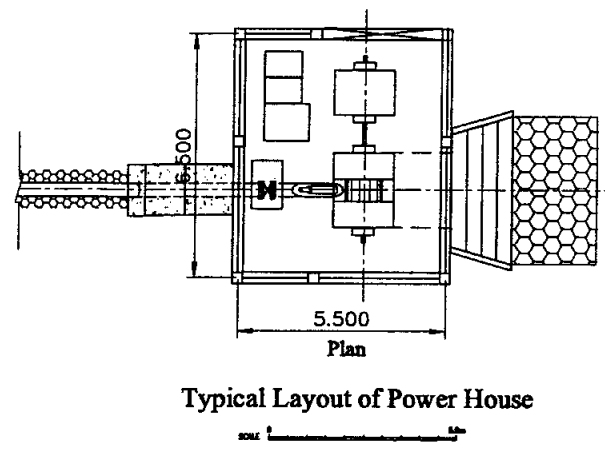
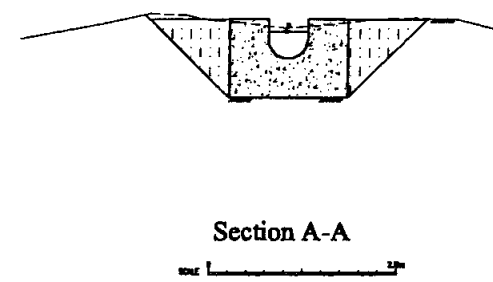
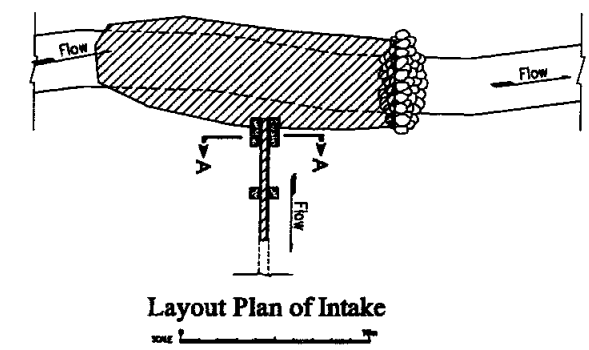
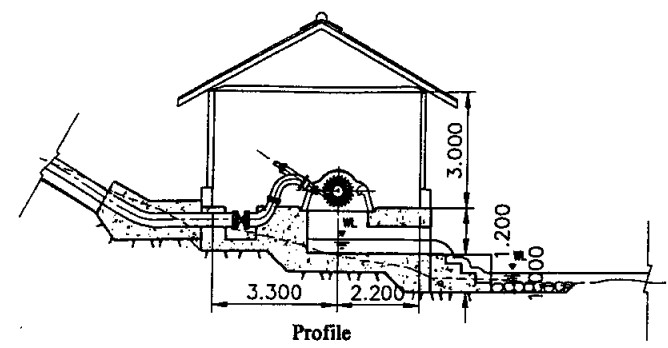
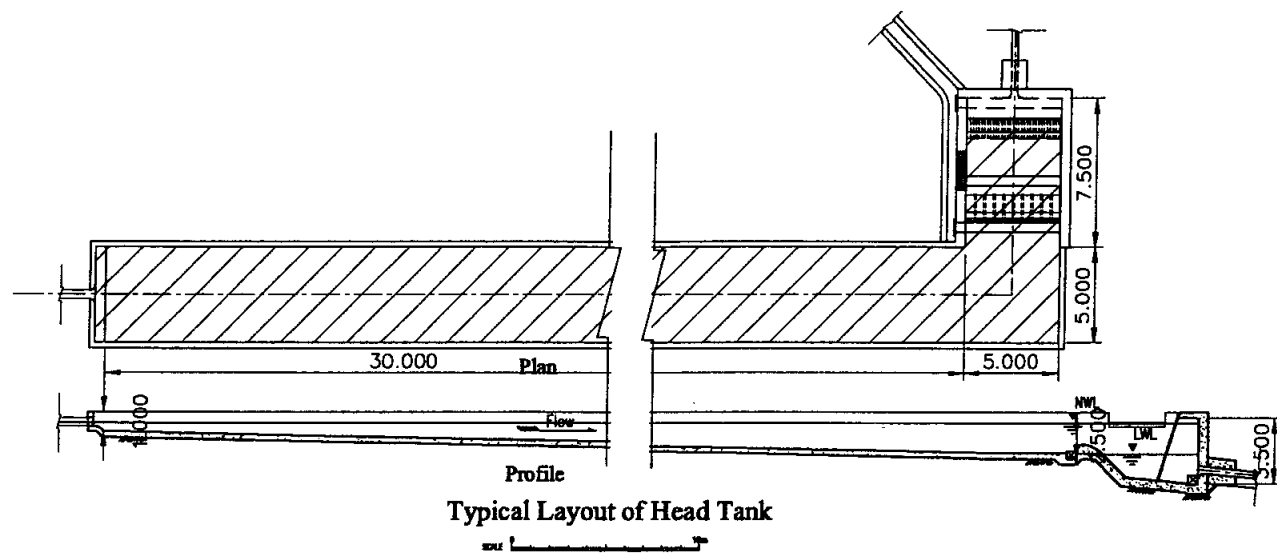


図 6.3 推定日負荷曲線 (タンボ・ケマード小水力発電計画)



SCALE 0 100m

THE STUDY ON RURAL ELECTRIFICATION  
IMPLEMENTATION PLAN  
BY RENEWABLE ENERGY  
IN THE REPUBLIC OF BOLIVIA

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

LOCATION:  
TAMBO QUEMADO / SAJAMA PROVINCE  
ORURO DEPARTAMENT

図 6.4  
タンボ・ケマード小水力発電所  
計画施設配置図

SCALE :  
H = 1 : 2000

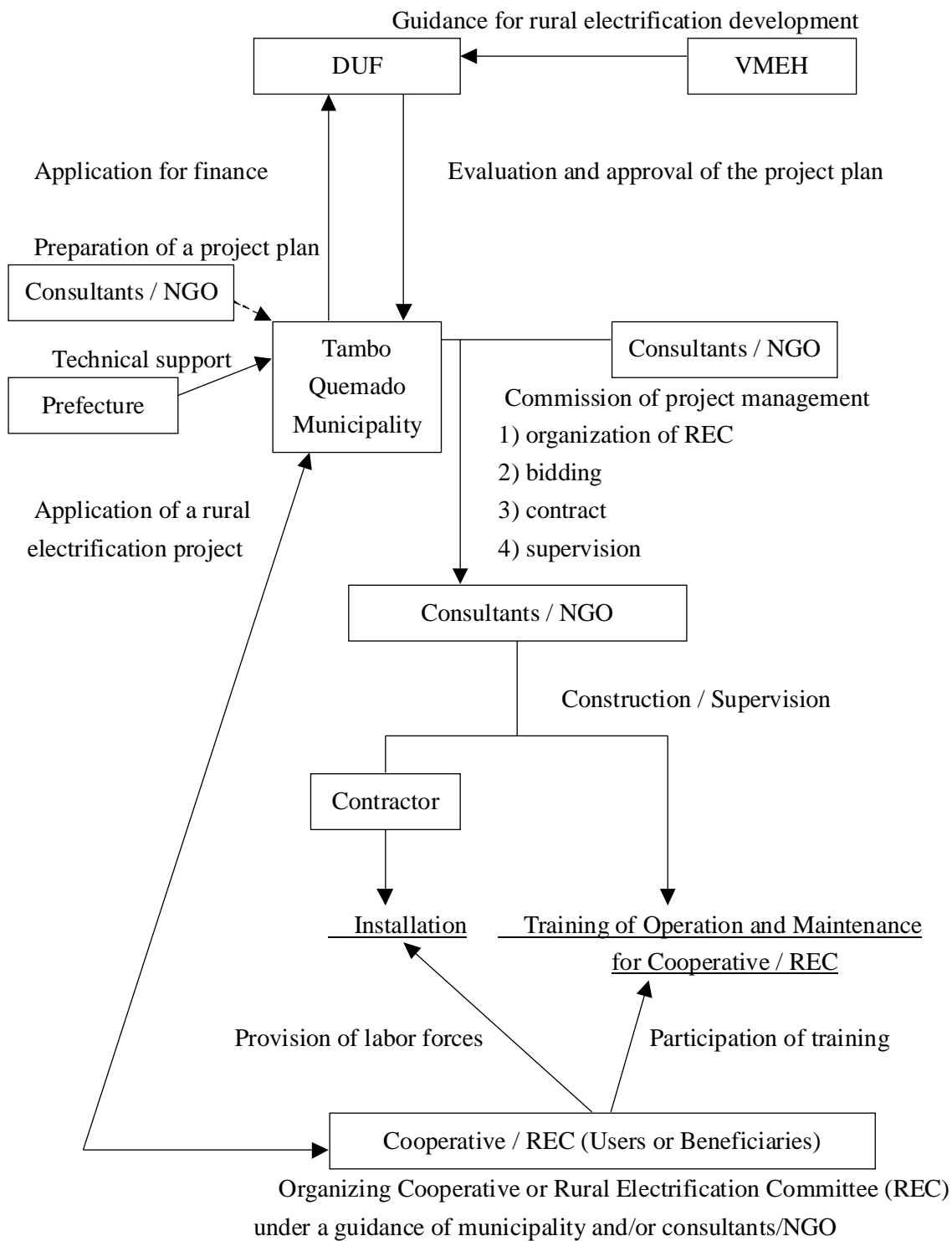
DATE :  
Feubary- 2001

SHEET :

Work Item	Year	1st year											
	Month	1	2	3	4	5	6	7	8	9	10	11	12
	Season	Rainy Season				Dry Season							Rainy Season
	Tot.mon	1	2	3	4	5	6	7	8	9	10	11	12
<b>1. Design</b>													
1.1 Review of Pre F/S	0.5	0.											
1.2 Survey Investigation	0.5	0.											
1.3 Basic Design	1.0		1.0										
1.4 Detailed Design	1.5			1.5									
1.5 Preparation of Tender Document	0.5				0.								
<b>2. Stage-1 Construction</b>													
2.1 Tendering	0.5				0.								
2.2 Evaluation of Tender	0.5				0.								
2.3 Contracting	0.5					0.							
2.4 Construction Work	4.0						4.0						
1) Preparation Works	1.0						↔						
3) Intake	0.5						↔						
4) Headrace Channel (PVC)	3.0						↔	↔	↔				
5) Head Tank & Spilway	1.0						↔						
6) Penstock	1.0							↔					
7) Power House	1.0							↔					
8) Tailrace	0.1								↔				
9) Installation of Turbine & Generator	0.5								↔				
10) Transmission Line	2.0							↔	↔				
11) Distribution Line	0.2									↔			
2.5 Test and Commissioning	0.5										0.		
2.6 Completing											▲		
<b>3. Environmental Study</b>													
3.1 EIA	3.0		3										
3.2 Environmental Monitoring													to be continue →

JICA Study Team

図 6.5 タンボ・ケマード小水力発電計画実施スケジュール



Source: JICA Study Team

図 6.6 タンボ・ケマード小水力発電計画プロジェクト実施組織