This Project Proposal consists of two (2) parts: Part I is the Feasibility Study and Conceptual Design Studies and Part II, the Procurement of Rig Machine, Accessories and Support Vehicles.

I. FEASIBILITY AND CONCEPTUAL DESIGN STUDY

A. GENERAL INFORMATION

Physical Conditions

The province of Cavite is located at the entrance of Manila Bay, across which lies the province of Bataan. It is bounded on the northeast by the province of Laguna and the National Capital Region (Metropolitan Manila), on the southwest by Batangas, China Sea on the west and on the northwest by Manila Bay. The major physiographic features are the Dos Picos Mountains along the Maragondon border between Cavite and Batangas and the wide level plains and shorelines and the rolling terrain in most portions of the province.

The proposed project sites total 15 municipalities and two (2) cities. These municipalities are accessible by land through the coastal road and the Manila South Road and by sea from the Manila Bay. Location of the project site is shown in Figures 1 and 2.

The climate is characterized by two distinctive seasons, dry and rainy, although intermittent rainfall comes at any time during the year.

Socio-Economic Condition

1. Population

Population of the proposed municipalities are tabulated below:

Population of the Proposed Municipalities

Municipality/City	1980 Population
Dasmarinas	51,894
Indang	30,977
Gen. Mariano Alvarez	-----
Mendez	15,044
Silang	52,321
Tanza	43,675
Tagaytay	16,322
Amadeo	16,234
Magallanes	9,691
Maragondon	18,018
Ternate	9,739
Alfonso	21,980
Naic	38,243
Bailen (Gen. E. Aguinaldo)	9,571
Carmona	65,014
Trece Martirez	8,579
General Trias	39,745

2. Economy

Agriculture and fishing are the major economic activities in most of the municipalities. The major crops are rice, coconuts, sugar and other cash crops.

Seven of the municipalities have already formed a Water District as a means to upgrade the water systems in these municipalities. However, the improvement program for some of these municipalities were stalled as a result of the lack of necessary funds.

Some of the deficiencies noted in the existing systems of the said municipalities are the following:

- One of the water system is not operational due to the absence of service connections;
- Insufficient source of water supply;
- Insufficient pump capacity;
- Lack/insufficient disinfection or treatment facility;
- Insufficient transmission or distribution facilities;
- Lack/insufficient storage facilities;
- Low to nil pressure in the system;
- Lack/Insufficient tools and equipment as well as materials for proper operation and maintenance of the system;
- Low water rates which cannot cover even the basic expenses for system operation and maintenance.

3. Health

Health records show that water-borne diseases such as diarrhea and parasitism are prevalent in the area. The high incidence of water-related illness may be attributed to the use of improperly constructed or dilapidated facilities and unsanitary water supply sources.

B. PROPOSED WATER SUPPLY STUDY

Population Projection

The population projection for the proposed municipalities are based on the projections of the National Economic Development Authority (NEDA). Correction factors based on projects with similar conditions were applied.

The design year of the proposed improvements is 1995 taking into consideration the immediate needs (short-term implementation program) and shall initially cover only the urban area of the Poblacion.

Proposed Water Supply Source

Initial comparative study of alternative water supply sources certainly favors groundwater as the more economical source. Proposed water source and requirements for the water system of each municipality are listed below:

Municipality	Proposed Source
Dasmarinas	Deep well
Indang	Spring
Gen. Mariano Alvarez	Deepwells
Mendez	Spring/Deepwells
Silang	Deepwells
Tanza	Deepwells
Tagaytay	Spring/Deepwells
Amadeo	Deepwells
Magallanes	Spring
Maragondon	Deepwells
Ternate	Deepwells
Alfonso	Spring
Naic	Deepwells
Bailen (Gen. E. Aguinaldo)	Deepwells
Carmona	Deepwells
Trece Martirez	Deepwells
Gen. Trias	Deepwells

C. ESTIMATED PROJECT COST

The average cost for each municipality ranges from ₱5 million to ₱10 million for the immediate improvement/development/expansion of the water system in the towns of the province of Cavite.

II. PROCUREMENT OF RIG MACHINES, ACCESSORIES AND SUPPORTING VEHICLES

LWUA owns four (4) units of Rotary Rigs and three (3) units of Percussion Rigs at present. These are capable of drilling up to a depth of 200 meters. However, these machines are no longer effective due to old age and easily break down resulting in the slowing down of LWUA'S implementation schedule.

With about 500 water districts availing of the services being provided by LWUA, said equipment cannot cope with the targets for implementation.

The few private drillers prequalified have also insufficient equipment and therefore not effective.

One (1) unit of rig machine, other accessories and supporting vehicles will therefore be necessary to implement the project and to expedite LWUA'S drilling activities.

Required Equipment

The following equipment will be necessary to implement the project:

- one (1) unit of rotary rig
- one (1) unit of supporting truck
- one (1) unit of pick-up vehicle
- one (1) set of welding machine
- one (1) unit of compressor
- one (1) unit of generating set
- other support accessories

A. IMPLEMENTING SCHEDULE

The proposed project is envisioned to commence in 1992 and expected to be completed in 1994.

Implementing Arrangement

The Philippine Government will be represented herein by the Local Water Utilities Administration (LWUA).

The Japanese Government will be represented by the Japan International Cooperation Agency (JICA).

III. JUSTIFICATION AND CONCLUSION

The water source study and well construction for the Cavite municipalities will have tremendous social, economic and political impact to the recipient areas. Being part of the CALABARZON, these areas are potential growth centers once the necessary facilities and basic necessities are provided.

A detailed study has to be conducted to include information collection and evaluation of existing conditions to serve as inputs for planning and design. The study should focus primarily on the first stage implementation area covering source identification and development.

Facility layouts and design of proposed facilities including cost estimates and capital investment program, financial planning, material and institutional arrangements and determination of benefits derived from the project must follow immediately.

It is recommended that LWUA shall act as the coordinating body in relation with other government and non-governmental organizations concerned for the smooth implementation of the project. Implementing arrangements shall be drawn upon consultation with the agencies involved.

It is hoped that this project proposal shall pave the way to the earliest start of the preparation of the implementation program and thereby bring about its immediate implementation.

FIGURE 1 PROJECT SITE

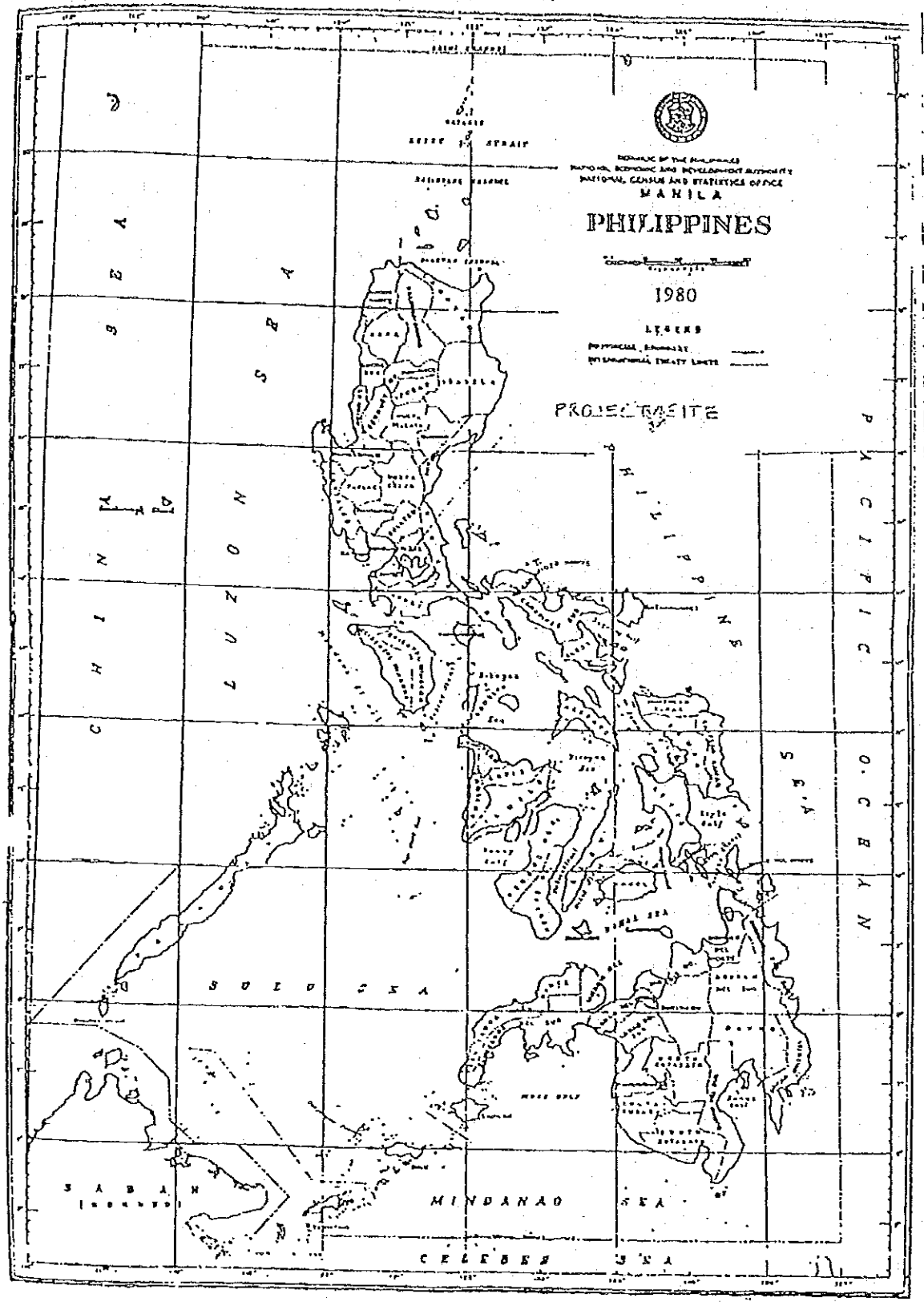
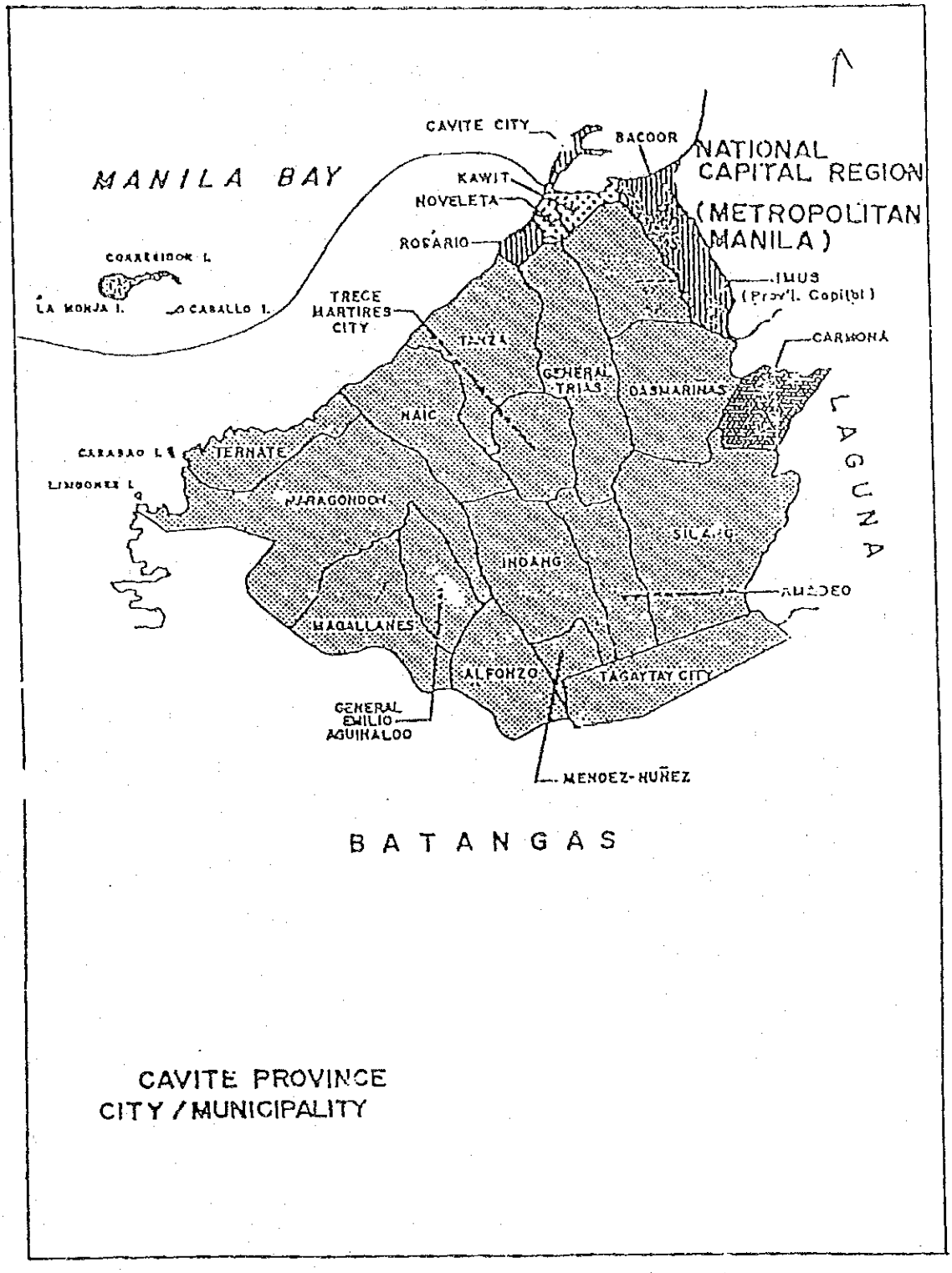


FIGURE 2 PROPOSED PROJECT SITES



List of the Municipalities in the Province of Cavite

1.	Bacoor	under MWSS water system
2.	Cavite City	-do-
3.	Kawit	-do-
4.	Noveleta	-do-
5.	Rosario	-do-
6.	Imus	-do-
7.	Dasmarinas	under WD water system
8.	Indang	-do-
9.	GMA	-do-
10.	Mendez	-do-
11.	Silang	-do-
12.	Tanza	-do-
13.	Tagaytay	-do-
14.	Amadeo	under RWSA water system
15.	Magallanes	-do-
16.	Maragondon	-do-
17.	Ternate	-do-
18.	Alfonso	-do-
19.	Naic	-do-
20.	Bailen	-do-
21.	Carmona	under WD/RWSA municipality
22.	Trece Martirez	-do-
23.	Gen. Trias	-do-

Municipality Being Served by MWSS Water System

Municipality	1980 Population	Household	No. of Barangays
Bacoor	90,364	16,082	23
Cavite City	87,666	16,804	32
Kawit	39,368	7,209	12
Noveleta	14,460	2,537	9
Rosario	33,321	5,877	10
Imus	59,103	11,029	21

Municipalities Being Served by a Water District

Municipality	CCC No.	1980 Population	No. of Barangay
1. Dasmarinas	083	51,894	10

Findings:

It has an operational water system serving 15,032 service connections utilizing a spring and 18 wells as source.

2. Indang	099	30,753	30

Findings:

It has operational water system serving the whole poblacion and Bgy. Kaytambong through 850 service connections. It derives its supply from a spring utilizing 12 L/s of its 97.8 L/s capacity. Several barangays has their own RWSA water system.

3. GMA	393	48,376	27

Findings:

Existing water system is still to be turned-over to the water district. The system utilizes 5 deepwells as sources.

4. Mendez	424	15,044	13

Findings:

The existing system served the whole poblacion and adjacent barangays through its 685 service connections. It utilized a spring as a source. Barangays not served by the district has their own RWSA water system.

5. Silang	115	52,321	10

Findings:

It has an existing water system serving a total of 2,953 service connections. It derives its supply from 3 wells and a spring.

6. Tanza	358	43,675	23

Findings:

It has an approved ₱10.6 M Program of Work for the construction of a water system. Partial implementation is on-going. The proposed source is a deepwell.

Municipality		CCC No.	1980 Population	No. of Barangay
7.	Tagaytay	037	23,870 (1990 NCSO Census)	20

Findings:

It has an existing water system serving 1,773 service connections utilizing 3 springs as sources.

Assistance Provided to WD's and Current Needs

Water District	Loan Amount	Loan Type	Additional Needs
Dasmarinas	₱ 17.488 M		Source development and pipelines
Indang	1.510		-do-
GMA	0.015		Comprehensive development package
Mendez	0.015		Source development and pipelines
Silang	5.385		Well drilling and pipelines
Tanza	11.394		Comprehensive development
Tagaytay	0.100		Source development and Booster Pumps
	₱ 35.907 M		

Non-Water District Municipalities Having an RWSA Water System

	Municipality	1980 Population	Household No.	No. of Barangay
1.	Amadeo	16,234	2,981	24

Findings:

The municipality has an existing water system serving the whole poblacion constructed by the now defunct NAWASA. the system derives its supply from 2 deepwells and is presently being managed by the local government. Other barangays is being served by RWSA Level II water system utilizing deepwell as source.

2.	Magallanes	9,691	1,742	14

Findings:

The whole poblacion (7 barangays) and several adjacent barangays are being served by the Magallanes RWSA Water System (Level III). The system utilizes a spring as a source.

3.	Maragondon	18,018	3,143	18

Findings:

Maragondon has a Level III water system under RWSA serving the whole poblacion utilizing 2 deepwells as source. Other barangays has their own RWSA water system.

4.	Ternate	9,739	1,479	7

Findings:

The poblacion has no piped water system. Residents rely on shallow/MPW wells for their domestic needs. One of its barangays namely: Barangay Sapang has formed RWSA management, however, the proposed water system was not constructed due to lack of funds. The proposed source is an MPW well.

5.	Alfonso	22,980	4,046	21

Findings:

The municipality of Alfonso has an existing water system serving the poblacion and several barangays. The system utilizes a spring as source and is presently being managed by the local government. Several barangays has their own RWSA water system for their domestic needs.

Municipality	1980 Population	Household No.	No. of Barangay
6. Naic	38,243	6,905	36

Findings:

The municipality has an existing water system serving the poblacion and several barangays. It utilized a deepwell as source. Residents not served by the system depend on MPW wells for their domestic needs while other has their shallow wells equipped with a jet-matic/handpump. Other barangay has a Level II RWSA water system serving their needs.

7. Bailen	9,571	1,759	11

Findings:

The municipality has a community water system serving the poblacion utilizing a deepwell as source. It is being managed by the local government. Barangay not served by the system has their own RWSA water system for their specific needs.

Non-Water District/Non-RWSA Municipalities

	Municipality	1980 Population	Household No.	No. of Barangay
1.	Carmona	65,014	11,428	15

Findings:

The municipality has an existing Level III water system constructed by the new defunct NAWASA utilizing deepwell as source. Residents not served by the system has their own shallow well for their domestic needs usually equipped with a jet-matic pump.

2.	Trece Martirez	8,579	1,468	13

Findings:

The municipality has an existing community water system serving the poblacion and several barangays. It derives its supply from deepwell. Others not served by the system has to depend on MPW wells and small capacity spring for their domestic needs.

3.	Gen. Trias	39,745	7,064	23

Findings:

2. Implementing Arrangement (I / A)

IMPLEMENTING ARRANGEMENT
ON
THE TECHNICAL COOPERATION
FOR
CAVITE WATER SUPPLY DEVELOPMENT STUDY
IN
THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

LOCAL WATER UTILITIES ADMINISTRATION
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

MANILA, NOVEMBER 11, 1993

MR. ANTONIO R. DE VERA
ADMINISTRATOR,
LOCAL WATER UTILITIES
ADMINISTRATION

MR. SEIJI KAIHO
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as " GOP "), the Government of Japan (hereinafter referred to as " GOJ ") has decided to conduct Cavite Water Supply Development Study (hereinafter referred to as " the Study "), and exchanged the Notes Verbale with GOP concerning the implementation of the Study.

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

On the part of GOP, Local Water Utilities Administration (hereinafter referred to as " LWUA ") shall act as a counterpart agency to the Japanese study team and also as a coordinating body in relation with other governmental and nongovernmental organizations concerned for the smooth implementation of the Study.

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

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to evaluate the groundwater (including spring water) development potential and formulate a strategy for water supply development (using groundwater where available), and

2. to conduct a feasibility study on municipal water supply project (s) for selected municipality (ies)/city (ies)

III. STUDY AREA

The study area will cover the following two (2) cities and fifteen (15) municipalities under LWUA's jurisdiction in Cavite province.

Municipality/City

Dasmarinas	Maragondon
Indang	Ternate
Gen.Mariano Alvarez	Alfonso
Mendez	Naic
Silang	Gen.E.Aguinaldo
Tanza	Carmona
Tagaytay City	Trece Martirez City
Amadeo	Gen.Trias
Magallanes	

IV. SCOPE OF THE STUDY

Scope of the Study will include the following:

Phase I :Basic Study

1. Data collection and review
   - 1.1 Socio-economic conditions
   - 1.2 Land use
   - 1.3 Relevant ongoing and planned projects
   - 1.4 Physical conditions
     - a. Topography
     - b. Hydrology and meteorology
     - c. Geology and hydrogeology
   - 1.5 Water supply and demand
   - 1.6 Water supply facilities
   - 1.7 Previous studies on groundwater
   - 1.8 Environmental aspects
   - 1.9 Law,regulations and policies
   - 1.10 Organizations and administrations

2. Field survey
   - 2.1 Topographical and geological reconnaissance
   - 2.2 Existing water supply facilities
   - 2.3 Electrical sounding
   - 2.4 Water quality analysis for existing wells
   - 2.5 Well inventory and groundwater level observation
   - 2.6 Preliminary hydrogeological mapping
   - 2.7 Initial environmental examination (IEE)

3. Basic analysis
   3.1 Rough estimate of water demand and groundwater development potential
   3.2 Formulation of strategy for groundwater development and water supply
   3.3 Selection of municipality(ies)/city(ies) for a feasibility study

Phase II : Feasibility Study

1. Detailed Investigation
   1.1 Test well drilling and related investigation for selected municipalities
      a. Electrical logging
      b. Pumping test
      c. Water quality analysis
   1.2 Supplementary survey

2. Analysis and Planning
   2.1 Evaluation of groundwater development potential
      a. Hydrogeological analysis and mapping
      b. Water balance analysis
      c. Estimation of available groundwater resource
   2.2 Water demand projection
   2.3 Planning of water supply system
   2.4 Preliminary design of facilities
   2.5 Estimation of project cost
   2.6 Construction plan
   2.7 Operation and maintenance plan
   2.8 Environmental impact assessment (EIA)
   2.9 Project evaluation
   2.10 Project implementation plan

V. STUDY SCHEDULE

The study will be conducted in accordance with the tentative schedule attached in ANNEX I.

VI. REPORTS

JICA will prepare and submit the following reports to LWUA in English.

1. Inception Reports
   Twenty(20) copies at the commencement of the work in the Philippines.

2. Progress Report(1)
   Ten(10) copies within four(4) months after the commencement of the Study.

3. Interim Report
   Twenty(20) copies within six(6) months after the commencement of the Study.

4. Progress Report(2)
   Ten(10) copies within ten(10) months after the commencement of the Study.

5. Draft Final Report
   Twenty(20) copies within thirteen(13) months after the commencement of the Study. LWUA will submit their comments to JICA within one(1) month after the receipt of the Draft Final Report.

6. Final Report
   Fifty(50) copies within one(1) month after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF GOP

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

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

   (2) GOP shall secure the reasonable safety of the Study Team during the implementation of the Study.

2. LWUA shall, at its own expense, provide the Japanese Study Team with the following, if necessary, in cooperation with other agencies concerned.

(1) Available data and information related to the Study,

(2) Counterpart personnel and support staff necessary for the Study,

(3) Suitable office space with necessary equipment in Metro Manila and respective study areas, and

(4) Credential or identification cards to the members of the Japanese Study Team.

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

(1) To secure the safety of the Japanese Study Team,

(2) To permit the members of the Japanese Study Team to enter, leave and sojourn in the Philippines for the duration of their assignment therein,

(3) To exempt the members of the Japanese Study Team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into the Philippines for the conduct of the Study,

(4) To exempt the members of the Japanese Study Team from income tax and charges of any kind imposed on or in connection with any emolument or allowance 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 remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study,

(6) To secure permission for entry into private properties or restricted areas for the conduct of the Study,

(7) To secure permission to take all data and documents related to the Study out of the Philippines to Japan by the Japanese Study Team, and

(8) To provide medical services as needed and its expenses will be chargeable on members of the Japanese Study Team.

VIII. UNDERTAKINGS OF GOJ

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

(1) To dispatch, at its own expense, the Study Team to the Philippines, and

(2) To pursue technology transfer to the Philippine counterpart personnel in the course of the Study.

IX. CONSULTATION

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

ANNEX I

TENTATIVE WORK SCHEDULE

DESCRIPTION \ MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WORK IN THE PHILIPPINES															
WORK IN JAPAN															
REPORTS		△ IC/R		△ PR/R(1)		△ IT/R					△ PR/R(2)		△ DF/R		△ F/R

IC/R : Inception Report
PR/R : Progress Report
IT/R : Interim Report
DF/R : Draft final Report
F/R : Final Report

3. Minutes of Discussions (M / D)

MINUTES OF DISCUSSIONS

ON

IMPLEMENTING ARRANGEMENT

FOR

CAVITE WATER SUPPLY DEVELOPMENT STUDY

IN

THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

LOCAL WATER UTILITIES ADMINISTRATION

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

MANILA, NOVEMBER 11, 1993

MR. ANTONIO R. DE VERA
Administrator
Local Water Utilities Administration

MR. SEIJI KAIHO
Leader
Preparatory Study Team
Japan International Cooperation Agency

Japan International Cooperation Agency (hereinafter referred to as "JICA", at the official request of the Government of the Republic of the Philippines, dispatched the Preparatory Study Team (hereinafter referred to as "the Team") headed by Mr. SEIJI KAIHO to the Republic of the Philippines from November 2 to November 12, 1993 to discuss and conclude the Implementing Arrangement for Cavite Water Supply Development Study (hereinafter referred to as "the Study").

The Team carried out field surveys and had a series of discussions with authorities concerned of the Government of the Republic of the Philippines in particular with Local Water Utilities Administration (hereinafter referred to as "LWUA") whose officials are named in Annex 1, and agreed on the Implementing Arrangement for the Study, which is also attached hereto as Annex 2.

The following are the major items discussed in connection with the above Implementing Arrangement.

1. Study Area

Although MWSS (Metropolitan Waterworks and Sewerage System) requested to include six (6) municipalities/city in the Province in the Study, the Team replied that the groundwater development of the said municipalities/city under MWSS's jurisdiction had been included in "Study for the Groundwater Development in Metro Manila" in 1992. LWUA and the Team specified the Study area as Annexed 3, leaving the MWSS jurisdiction out of the Study.

2. Scope of the Study

The Team explained the contents of the Study and it will be composed of two (2) phases namely "Phase I: Basic Study" (hereinafter referred to as "the Basic Study") and "Phase II: Feasibility Study" (hereinafter referred to as "the Feasibility Study") as mentioned in the Implementing Arrangement.

Concerning the extent of the Study, both sides agreed on the following:

(1) The Study will cover LEVEL II and III water supply systems. Water distribution design and analysis shall be done by LWUA and will be incorporated in the feasibility study.

(2) The target year of the Study shall be 2000 to meet the existing water supply program "Integral Water Supply Program 1980-2000" in the Philippines.

(3) Although the water supply works for existing and/or planned industrial estates stands outside of LWUA's jurisdiction, both sides recognized the significance of this matter, therefore this shall be incorporated in the strategy for groundwater development and water supply.

(4) The Feasibility Study will be conducted on several municipality(ies)/city(ies) (maximum five (5) selected in the Basic Study.

Criteria for the selection of candidate municipalities/cities will be clarified in the Study and finally determined through the exchange of opinions between both sides.

(5) Design Standards of LWUA are to be adopted as much as possible in the Study wherever applicable.

(6) Project evaluation shall clarify the financial, technical, and environmental aspects of the proposed plan.

3. Others

The following are the points discussed and noted:

(1) As to the counterpart personnel, LWUA will assign enough engineers/technicians as well as other supporting staff (secretaries, etc.) during the conduct of the study.

(2) LWUA will provide office space for the Study in the main office and will make arrangements for the same in some Water Districts.

(3) LWUA will provide one chauffeur-vehicle for the Study, and requested that additional vehicles be provided by JICA.

(4) LWUA proposed the procurement of drilling rig and other study equipment for the Study under JICA's arrangement. The Team replied that some of the necessary equipment would be procured for the effective performance of the Study except drilling equipment.

(5) The Team requested LWUA to carry out water quality analyses in LWUA's laboratory at its own expense throughout the Study. LWUA agreed on this point within the limits of its capability.

(6) LWUA requested the acceptance of the counterpart personnel for training in Japan. The Team stated that they will make every effort to meet the request.

(7) LWUA proposed Tagaytay as one of the priority area for the Feasibility Study owing to the present service level of the water supply, topographic characteristics, and the thrust of the National Government.

(8) The Team requested LWUA to provide the coordination required with other government agencies and non-government organization to ensure the smooth and accurate conduct of the study, LWUA accepted the responsibility.

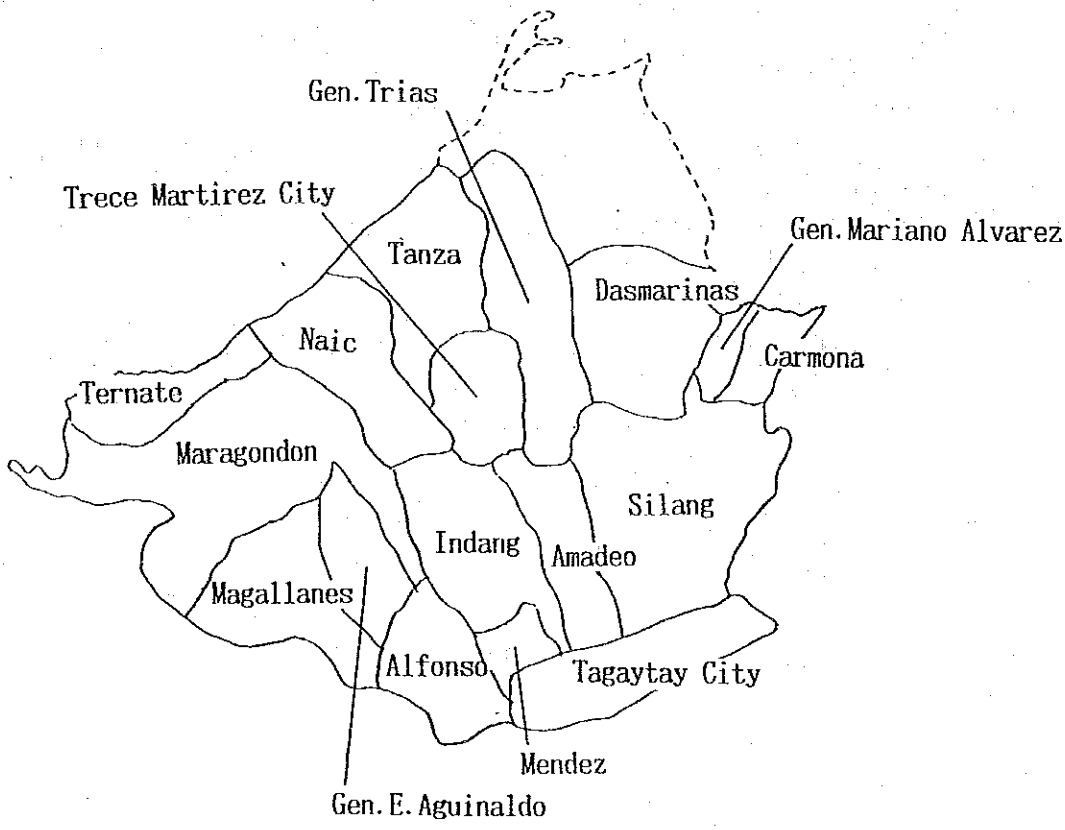
ANNEX 1

CAVITE WATER SUPPLY DEVELOPMENT STUDY (LWUA)

	JICA	LWUA
1.	SEIJI KAIHO Team Leader Director Second Development Study Div. Social Development Study Dept. Japan International Cooperation Agency (JICA)	MR. ANTONIO R. DE VERA Administrator Local Water Utilities Administration (LWUA)
2.	KOJIRO MATSUMOTO Study Planning Second Development Study Div. Social Development Study Dept.	MR. SIMPLICIO C. BELISARIO, JR. Deputy Administrator for Engineering Services
3.	SEIMI MOCHIZUKI Hydrogeology/Environment WACOS JAPAN CO., LTD.	MR. ALFREDO B. ESPINO Manager - Area II Engineering Services
4.	KOHEI SAIKI Boring Planning KAJITANI ENGINEERING CO. LTD.	MR. CIRIO ERNANI T. CRUZ Professional Engineer Area II - Planning Div. Engineering Services

Annex 3

STUDY AREA



4．面会者リスト

面会者リスト

組織・機関名	面会者氏名	役　職
JICA フィリピン事務所	Mr. Akihiko Hashimoto	所　長
	Mr. Satoshi Machida	次　長
	Mr. Eiji Iwasaki	所　員
日本大使館（フィリピン）	M.D. Etsuro Kashiwagi	一等書記官
LWUA	Mr. Antonio R. de Vera	Administrator
	Mr. Simplicio C. Belisario	Deputy Adiministrator
	Mr. Alfredo B. Espino	Manager, Area II
	Mr. Roberto B. Binag	Manag. Tech. Research Div.
	Mr. Edwin T. Ruiz	Manager, Well Drill. Dept.
（現地同行者）	Mr. Cirio Ernani T. Cruz	Engineer, Planning Div.
（現地同行者）	Mr. Dennis S. Alcantara	ditto
UNDP－LWUA	Dr. Z.B. Haman	Chief Technical Adviser
MWSS	Mr. Luis V.S. Sison	Administrator
NWRB	Mr. Luis M. Sosa	Executive Director
	Mr. Melchor O. Baltazar	Chief, Policy & Program D.
	Ms. Teresa Diang	Sr. Information Analyst
Cavite Provincial Office	Atty. Danilo T. Lara	Vice Governor
	Mr. Meleneio L. de Saguu	Board Member
	Ms. Gloria L. Sarte	Planning Officer IV
	Ms. Eden V. Austria	Proj. Evaluat. Officer IV
	Mr. Efren P. Criman	Planning Officer III
Indang WD	Mr. Heradel B. Ferantil	General Manager
Mendez WD	Mr. Alexander Manalo	General Manager
Silang WD	Mr. Fernand Paredes	General Manager
Dasmarinas WD	Mr. Avelino I. Fauni	General Manager
	Ms. Debra A. Rosete	Secretary

Gen. M. Alvarez WD	Mr. Rosario P. Teatro	General Manager
Maragondon WD	Ms. Petra B. Gerella	General Manager
Gen. Trias Municipality	Mr. Jemie P. Cubillo	Plannning Officer, Engr.
Alfonso Municipality	Mr. Juanite Amore Rosanes	Vice Mayor
Gen. E. Aguinaldo Muni.	Mr. Jaime Loyola	Vice Mayor
	Mr. Reynaldo Golpo	Municipal Secretary
Amadeo Municipality	Mr. Albert A. Ambagan	Mayor
Indang Municipality	Ms. Ilyuminida F. Silao	Mayor
Tagaytay City	Mr. Rogel P. Constante	CPDC, Engr.
Silang Municipality	Ms. Pruscilla R. Tagle	Proj. Develop. Officer
Trece Martirez City	Mr. Francisco B. Luna	CPDC
Naic Municipality	Mr. Guillermo M. Telmo	MPDC, Engr.
Ternate Municipality	Mr. Rocando C. Lindo	Secretary of Mayor
Maragondon Municipality	Ms. Eivie A. Estrada	MPDC
Tanza Municipality	Ms. Corazon C. Tahimie	MPDC
Carmona Municipality	Ms. Mildred M. Purificacion	MPDC
N I A - Cavite FLIS	Ms. Malu D. Olitoquit	Engr.
	Mr. Andy Masiglat	Engr.
P.I. Well Drilling Corp.	Mr. Edgardo San Jose	Project Engineer
ACES Drill, & Equip. Corp.	Mr. Andy M. Gatbonton	Project Engineer

5．収集資料リスト

収集資料リスト

資料番号	資　料　名	発行者	入手先
地形図 -1	1:50,000 NASUGBU　SHT 7171 III	NAMRIA	NAMRIA
地形図 -2	1:50,000 CORREGIDOR ISLAND　SHT 7171 IV	NAMRIA	NAMRIA
地形図 -3	1:50,000 MUNTINGLURA　SHT 7271 IV	NAMRIA	NAMRIA
地形図 -4	1:50,000 SILANG　SHT 3162 I	NAMRIA	NAMRIA
地形図 -5	1:50,000 MENDEZ-NUNEZ　SHT 3262 II	NAMRIA	NAMRIA
地形図 -6	1:50,000 CAVITE　SHT 3163 II	NAMRIA	NAMRIA
地形図 -7	1;50,000 CALAMBA　SHT 3262 IV	NAMRIA	NAMRIA
地質図 -1	GEOLOGICAL MAP OF THE PHILIPPINES	BMGS	BMGS
地質図 -2	1:50,000 SILANG　SHT 3162 I	BMGS	BMGS
地質図 -3	1:50,000 MENDEZ-NUNEZ　SHT 3162 II	BMGS	BMGS
地質図 -4	1:50,000 NASGUB　SHT 3162 III	BMGS	BMGS
地質図 -5	1:50,000 LIMBONES ISLAND　SHT 3162 IV	BMGS	BMGS
地質図 -6	1:50,000 CAVITE　SHT 3163 II	BMGS	BMGS
地質図 -7	1:50,000 SAN PEDRO　SHT 3263 III	BMGS	BMGS
行政図 -1	ADMINISTRATIVE MAP　PROVINCE OF CAVITE 1:50,000　1990	NAMRIA	NAMRIA
行政図 -2	GENERAL LAND USE PLAN　1:75,000 PROVINCE OF CAVITE	PROVINCE OF CAVITE	PROVINCIAL OFFICE
行政図 -3	MAP OF CAVITE PROVINCE　SHOWING ROAD SYSTEM　1:75,000	PROVINCE OF CAVITE	PROVINCIAL OFFICE
法令類 -1	PROVINCIAL WATER UTILITIES ACT OF 1973 (As Amended)　1991	PUB. AFFAIR OFFICE	LWUA
法令類 -2	DENR ADMINISTRATIVE ORDER NO. 34　1990	EMG/DENR	EMG/DENR
法令類 -3	DENR ADMINISTRATIVE ORDER NO. 35　1990	EMG/DENR	EMG/DENR
法令類 -4	DENR ADMINISTRATIVE ORDER NO. 21　1992	EMG/DENR	EMG/DENR
水資源 -1	RAPID ASSESSMENT OF WATER SUPPLY SOURCES PROVINCE OF CAVITE　MAY 1982	NWRC	NWRB
水資源 -2	WATER SUPPLY POTENTIAL OF CAVITE PROVINCE	BMGS (Mr. H. P. Quiazon)	BMGS

資料番号	資　料　名	発行者	入手先
開発計画-1	UNDP FRAMEWORK PLAN JUNE 1983 SOUTHERN TAGALOG TAAL LAKE BASINS	NWRC	NWRB
開発計画-2	UNDP FRAMEWORK PLAN JUNE 1983 SOUTHERN TAGALOG LAGUNA LAKE BASINS	NWRC	NWRB
開発計画-3	WATER SUPPLY, SEWERAGE AND SANITATION DEVELOPMENT PLAN 1990-2000 OCT. 1989	PROVINCE OF CAVITE	RBO(DILG)
開発計画-4	PROVINCIAL DEVELOPMENT PLAN 1990-2000 PRVINCE OF CAVITE	PROVINCE OF CAVITE	PROVINCIAL OFFICE
川流量 -1	RIVER DISCHARGE, DAILY DATA, 1954-1956	BRS	LWUA
川流量 -2	RIVER DISCHARGE, DAILY DATA, 1957-1959	BRS	LWUA
川流量 -3	RIVER DISCHARGE, DAILY DATA, 1960-1961	BRS	LWUA
川流量 -4	RIVER DISCHARGE, DAILY DATA, 1962	BRS	LWUA
川流量 -5	RIVER DISCHARGE, DAILY DATA, 1963	BRS	LWUA
川流量 -6	RIVER DISCHARGE, DAILY DATA, 1964	BRS	LWUA
川流量 -7	RIVER DISCHARGE, DAILY DATA, 1965	BRS	LWUA
川流量 -8	RIVER DISCHARGE, DAILY DATA, 1966	BRS	LWUA
川流量 -9	RIVER DISCHARGE, DAILY DATA, 1967	BRS	LWUA
川流量-10	RIVER DISCHARGE, DAILY DATA, 1968	BRS	LWUA
川流量-11	RIVER DISCHARGE, DAILY DATA, 1969	BRS	LWUA
気 象 -1	MONTHLY CLIMATIC DATA, SANGLEY, '71-'90	PAGASA	PAGASA
気 象 -2	DAILY RAINFALL, SANGLEY POINT, 1974-1992	PAGASA	PAGASA
気 象 -3	DAILY RAINFALL, BACOOR, 1975-1992	PAGASA	PAGASA
気 象 -4	DAILY RAINFALL, AMADEO, 1985-1992	PAGASA	PAGASA
農業灌漑-1	PROFILE OF CAVITE FRIAR LANDS IRRIGATION SYSTEM	NIA(Mr. B. H. Usis)	CAVITE FLIS
農業灌漑-2	CAVITE FRIAR LANDS IRRIGATION STSTEM GENERAL LAYOUT (Drawing)	NIA	CAVITE FLIS
農業灌漑-3	LIST OF EXISTING DAMS, CAVITE FRIAR LANDS IRRIGATION SYSTEM	NIA	CAVITE FLIS
農業灌漑-4	VEGETABLE COMPONENT OF SECOND LAGUNA DE BAY IRRIGATION PROJECT	不明	PROVINCIAL OFFICE

資料番号	資 料 名	発行者	入手先
環 境 -1	A Report on PHILIPPINE ENVIRONMENT AND DEVELOPMENT, U.N. Conference 1992	EMG/DENR	EMG/DENR
環 境 -2	ANNOTATED ENVIRONMENTAL IMPACT STATEMENT OUTLINE	EMG/DENR	EMG/DENR
社会経済-1	CAVITE PROVINCIAL PROFILE 1991-1992	PROVINCE OF CAVITE	PROVINCIAL OFFICE
社会経済-2	1990 CENSUS OF POPULATION AND HOUSING; SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACER-ISTICS, CAVITE	NSO	NSO
社会経済-3	1990 CENSUS OF POPULATION AND HOUSING; HOUSING STATISTICS, CAVITE	NSO	NSO
社会経済-4	1992 PHILIPPINE YEARBOOK	NSO	NSO
社会経済-5	1990 CENSUS FACT AND FIGURES, May 1993	NSO	NSO
社会経済-6	1988 FAMILY INCOME & EXPENDITURES SURVEY	NSO	NSO
社会経済-7	SOCIO-ECONOMIC PROFILE & LAND USE PLAN, MUNICIPALITY OF GEN. TRIAS	Office of G.T. MPDC	MPDC OF Gen. Trias
案内書 -1	INFORMATION BRIEF	NWRB	NWRB
案内書 -2	THE LWUA PRIMER	LWUA	LWUA
案内書 -3	Philippine Groundwater Databank; Geographic Information System	GOP, LWUA & UNDESD	UNDESD (LWUA)
案内書 -4	Tagaytay City - Facts and Figures	Tagaytay C	Tagaytay C
案内書 -5	HISTORICAL BACKGROUND OF THE SILANG WD	Silang WD	Silang WD
案内書 -6	FROM RAGS TO RICHES; THE DASMARINAS WD STORY AND THE PROFILE	Dasmari. WD	Dasmari. WD
案内書 -7	PROFILE; GMA WD	GMA WD	GMA WD
WD計画-1	ENGINEERING STUDY, SILANG WD, JULY 1993	LWUA	LWUA
WD計画-2	PROGRAM OF WORK, TAGAYTAY CITY WD, 1992	LWUA	LWUA
WD計画-3	ENGINEERING STUDY, GMA WD, JULY 1992 GEO-RESISTIVITY SURVEY, GMA WD	LWUA	LWUA
WD計画-4	ENGINEERING STUDY, MENDEZ WD, JULY 1992 GEO-RESISTIVITY SURVEY, MENDEZ WD	LWUA	LWUA

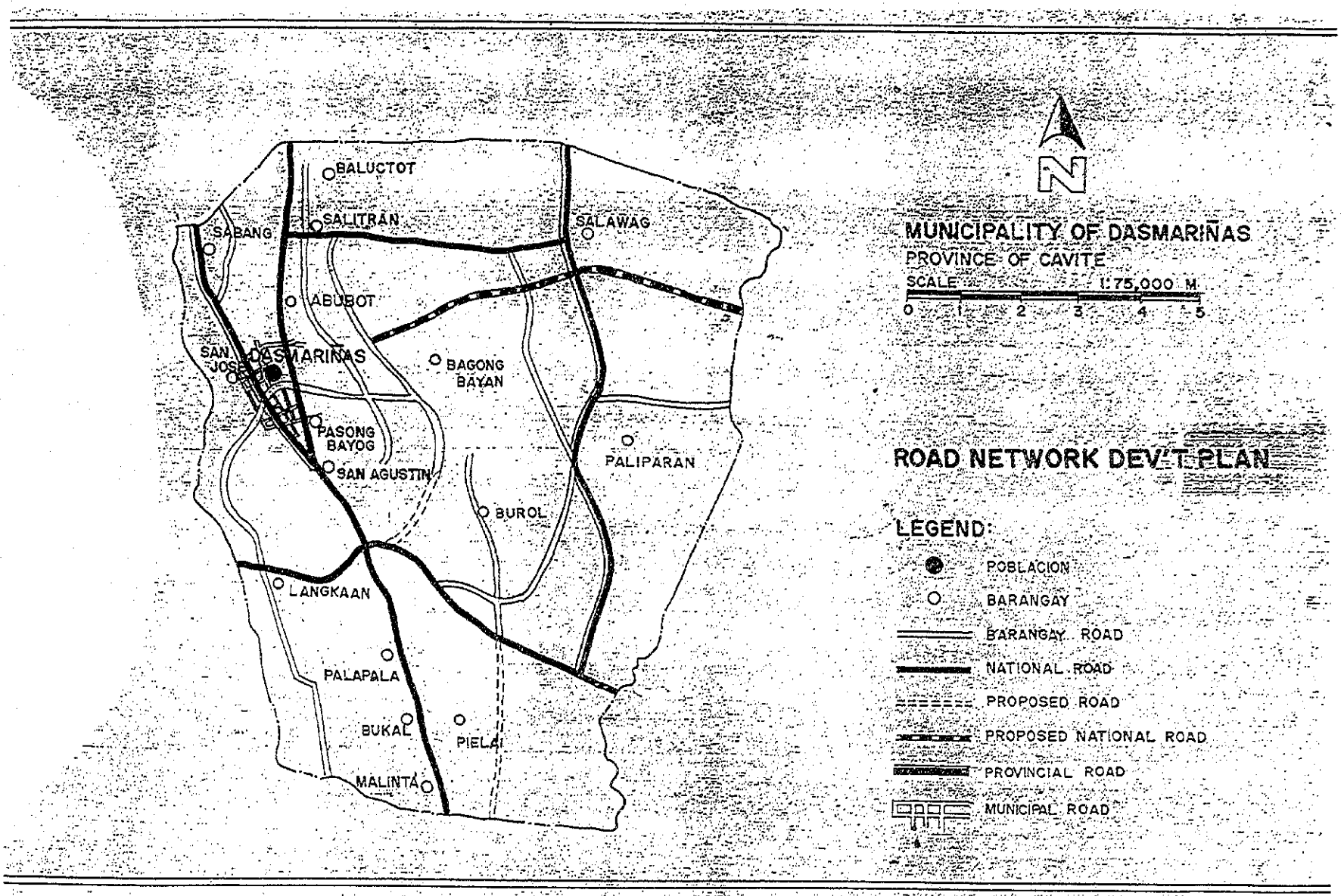
資料番号	資 料 名	発行者	入手先
WD計画-5	PROGRAM OF WORK, INDANG WD, SEP. 1992	LWUA	LWUA
WD計画-6	ENGINEERING STUDY (PHASE II), MARAGONDON WD, SEP. 1992	LWUA	LWUA
WD計画-7	PROGRAM OF WORK, TANZA WD, MAY 1992 GEO-RESISTIVITY SURVEY, TANZA WD	LWUA	LWUA
WD計画-8	TAGAYTAY CITY WATER DISTRICT (PROFILE) & PROPOSED IMPROVEMENT PROGRAM FOR TCWD	TCWD	TCWD
WD財務-1	MONTHLY DATA SHEET, TCWD, Aug.1993	TCWD	TCWD
WD財務-2	MONTHLY DATA SHEET, Silang WD-Main, Aug.	Silang WD	Silang WD
WD財務-3	MONTHLY DATA SHEET, Bulihan Unit, Aug.93	Silang WD	Silang WD
WD財務-4	MONTHLY DATA SHEET, Dasmarinas WD, Aug.	Dasmari.WD	Dasmari.WD
WD財務-5	MONTHLY DATA SHEET, GMA WD, Aug.1993	GMA WD	GMA WD
WD財務-6	MONTHLY DATA SHEET, Indang WD, Aug.1993	Indang WD	Indang WD
WD財務-7	EXISTING WATER RATE	TCWD	TCWD
井 戸 -1	PHILIPPINE GROUNDWATER DATABASE(8 Wells)	Dasmari.WD	Dasmari.WD
井 戸 -2	PUMPING TEST DATA AND RESULTS (3 Wells)	HYDROWELLS	Dasmari.WD
井 戸 -3	WELL LOG AND REPORT; Well Nos. 1 thru 5	SHAMROCK	Dasmari.WD
~~井 戸 -4~~	~~STATUS REPORT OF REGISTERED RWSA PROJECT~~	~~LWUA~~	~~LWUA~~
~~井 戸 -5~~	~~LIST OF EXISTING DAMS, CAVITE FLIS, NIA~~	~~NIA~~	~~CAV. FLIS~~
水 質 -1	NATIONAL STANDARDS FOR DRINKING WATER'78	GOP	DENR
水 質 -2	RESULTS OF WATER QUALITY ANALYSIS(5 Sam)	LWUA	LWUA
RWSA-1	STATUS REPORT OF REGISTERED RWSA PROJECT	LWUA	LWUA
業 者 -1	MEMBER LIST OF WELL DRILLERS ASSOCIATION OF THE PHILIPPINES	WDA	LWUA (Mr. Ruiz)
業 者 -2	LIST OF LOCAL CONSULTANTS	LWUA	LWUA
業 者 -3	BROCHURE OF P.I. WELL DRILLING CORP. W/ LISTS OF EQUIPMENT AND COMP. PROJECTS	P.I. WELL	P.I.WELL
業 者 -4	LISTS OF EQUIPMENT AND COMP. PROJECTS OF ACES DRILLING AND EQUIPMENT CORPORATION	ACES DRILL	ACES DRILL

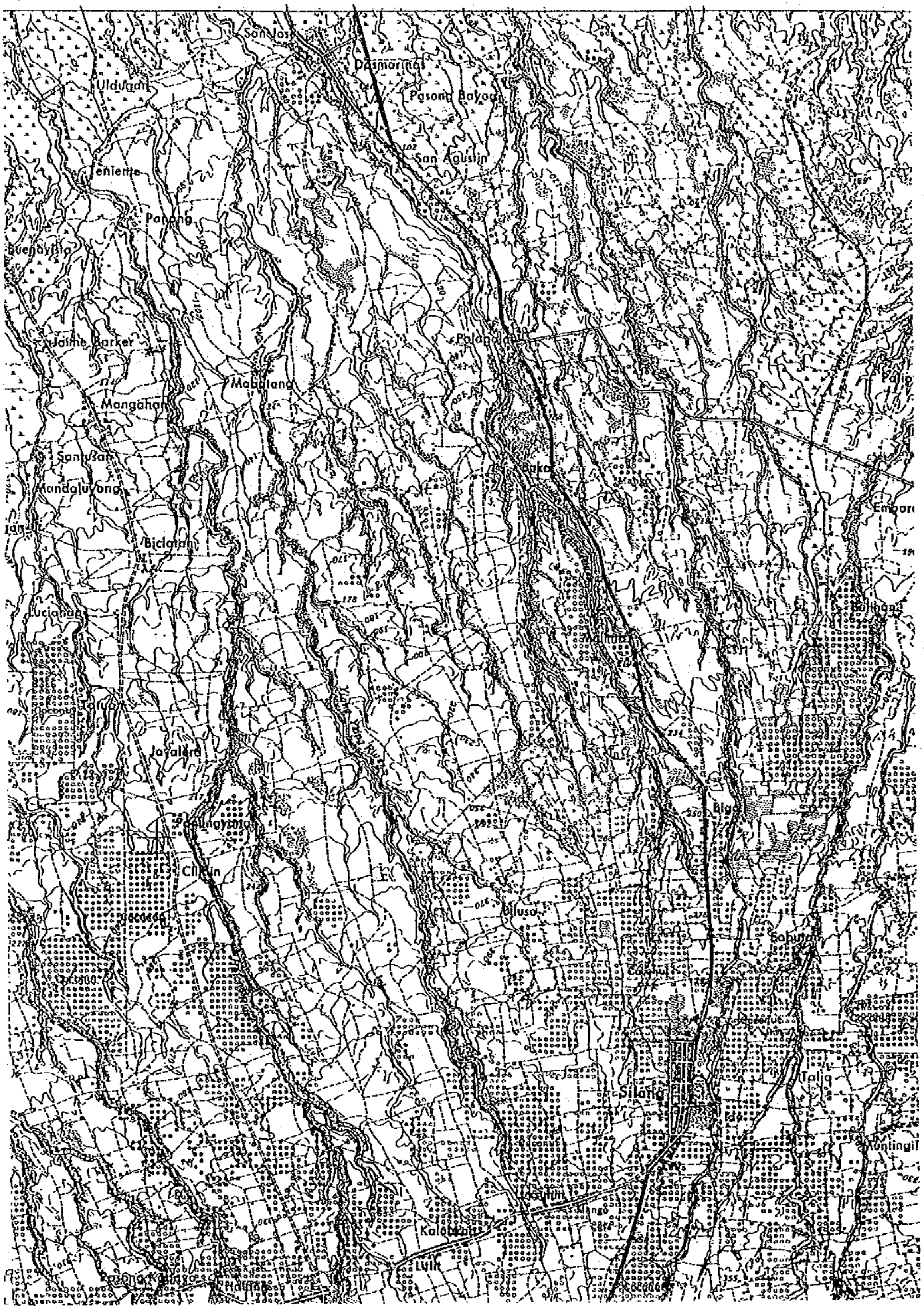
資料番号	資　料　名	発行者	入手先
質問表 -1	QUESTIONNAIRE-A　回答書	JICA	LWUA
質問表 -2	QUESTIONNAIRE-B & -C　回答書	JICA	各自治体

6．地方自治体別整理資料

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No．1

1．地方自治体の名称：　Municipality of Dasmarinas
2．地方自治体の規模 (1) 村落(Barangay)の数：　40　　{内 Poblacionを構成する村落数：　} (2) 世帯数：　25,324　　(3) 面積：　8,234 ha (4) 人　口：a．現在；　136,556　　b．西暦2000年予想；　データなし
3．自然条件 (1) 地　形：標高75~200mの緩やかな斜面をなす台地状平野。Dasmarinas川ほか数条の川が南から北へ流れている。 (2) 気　象：a．平均気温；　データなし，　b．年間降雨量；　データなし (3) 水資源：地下水。域内に約100本の深井戸があると推定されている。地下水位は年間約１mの割合で降下しつつあるという。
4．社会基盤整備状況（水道を除く） (1) 道路舗装率：a．主要道（国道・州道）；100%　b．その他；10% (2) 電力線整備率：　不明　　(3) 電話線整備率：　不明 (4) 学校の数：a．小学校；　?，　b．中高等学校；?，　c．大学；　? (5) 医療機関の数：a．医院・診療所；　b．病院；　（a．b．計；　20） (6) 工場の数：　20
5．生活経済 (1) 生計を立てている主な業種：　農業、工場就労その他被雇用業 (2) １世帯当たりの平均年間収入：　40,000 ペソ
6．既設水道および取水施設の概要　　WDの有無：　有り Dasmarinas WDは、カビテ州内で最も規模が大きく、26の深井戸を取水源として１つの Barangayを除く全域の94%に水を供給している。待機中の井戸も数本ある，また私設井40が近くこのWDの運営管理下に加わる予定になっているという。従業員数は110人。敷設済みの水栓の数は25,000とも言われているが、場所によってはまだレベルⅠやレベルⅡのところもある模様。 数本の井戸データ取得。
7．水道整備計画 Dasmarinasには 200haの工業地帯が含まれており、人口も今後ますます増大することが予想される。現在でも人口密度は高い。WDはAC2000年にはこの地区で24,000 CMDの水が必要になると予想している。
8．備　考 このWDは、ＵＮＤＰの井戸データベース記入作業に協力しており、年内には、私設井を含め、できるかぎり多くの井戸について、情報整理を終えるつもりであると言っていた。


BALUCTOT
SALITRAN
SABANG
SALAWAG
ABUBOT
SAN JOSE
DASMARIÑAS
BAGONG BAYAN
PASONG BAYOG
SAN AGUSTIN
PALIPARAN
BUROL
LANGKAAN
PALAPALA
BUKAL
PIELAGO
MALINTA
N
MUNICIPALITY OF DASMARIÑAS
PROVINCE OF CAVITE
SCALE 1:75,000 M
0 1 2 3 4 5
ROAD NETWORK DEV'T PLAN
LEGEND:
POBLACION
BARANGAY
BARANGAY ROAD
NATIONAL ROAD
PROPOSED ROAD
PROPOSED NATIONAL ROAD
PROVINCIAL ROAD
MUNICIPAL ROAD


Dasmariñas
Pasong Bayog
San Agustin
Uldugan
Jaime Barker
Mangahan
Mandaluyong
Biclatan
Biluso
Silang

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 2

1．地方自治体の名称： Municipality of Indang

2．地方自治体の規模
(1) 村落(Barangay)の数： 36　　{内 Poblacionを構成する村落数： 5 }
(2) 世帯数： 7,488　　(3) 面積： 8,920 ha
(4) 人　口：a．現在； 39,294　　b．西暦2000年予想； ？

3．自然条件
(1) 地　形：緩やかな勾配をなす標高200~350mの高原地帯。
いくつかの浸食谷が南から北に向かい走っており、河川の源泉となる湧き水が多い。
(2) 気　象：a．平均気温；　データなし，　b．年間降雨量；データなし
(3) 水資源：地下水および湧水泉。登録済み湧水泉は域内に28あり、湧き水は既設水道の水源となっている。Ikloy Spring は 97 l/sの湧水量。

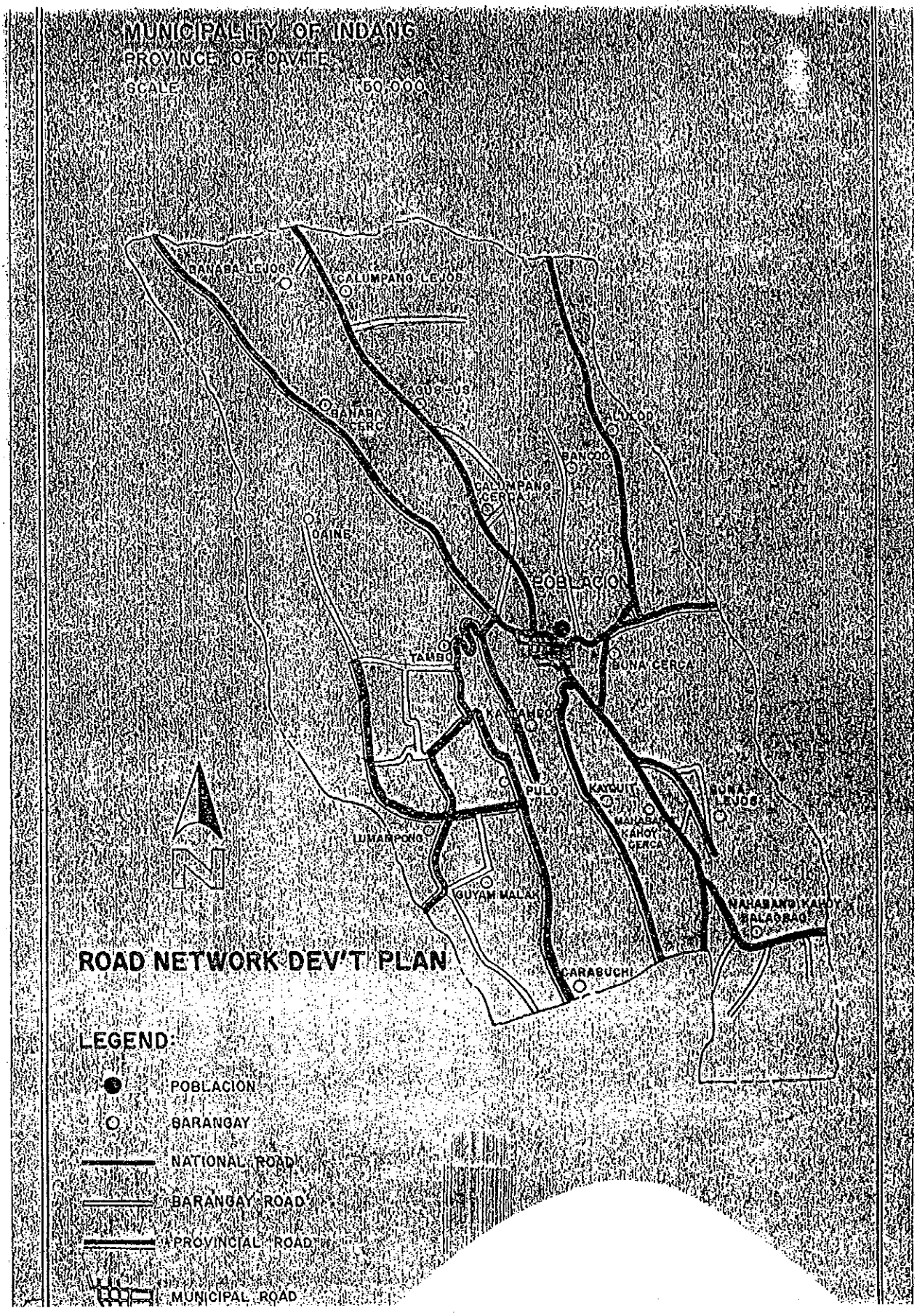
4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）；100％　b．その他；？
(2) 電力線整備率：？　　(3) 電話線整備率：？
(4) 学校の数：a．小学校；23,　b．中高等学校；6,　c．大学；1
(5) 医療機関の数：a．医院・診療所；10,　b．病院；ゼロ
(6) 工場の数： 1

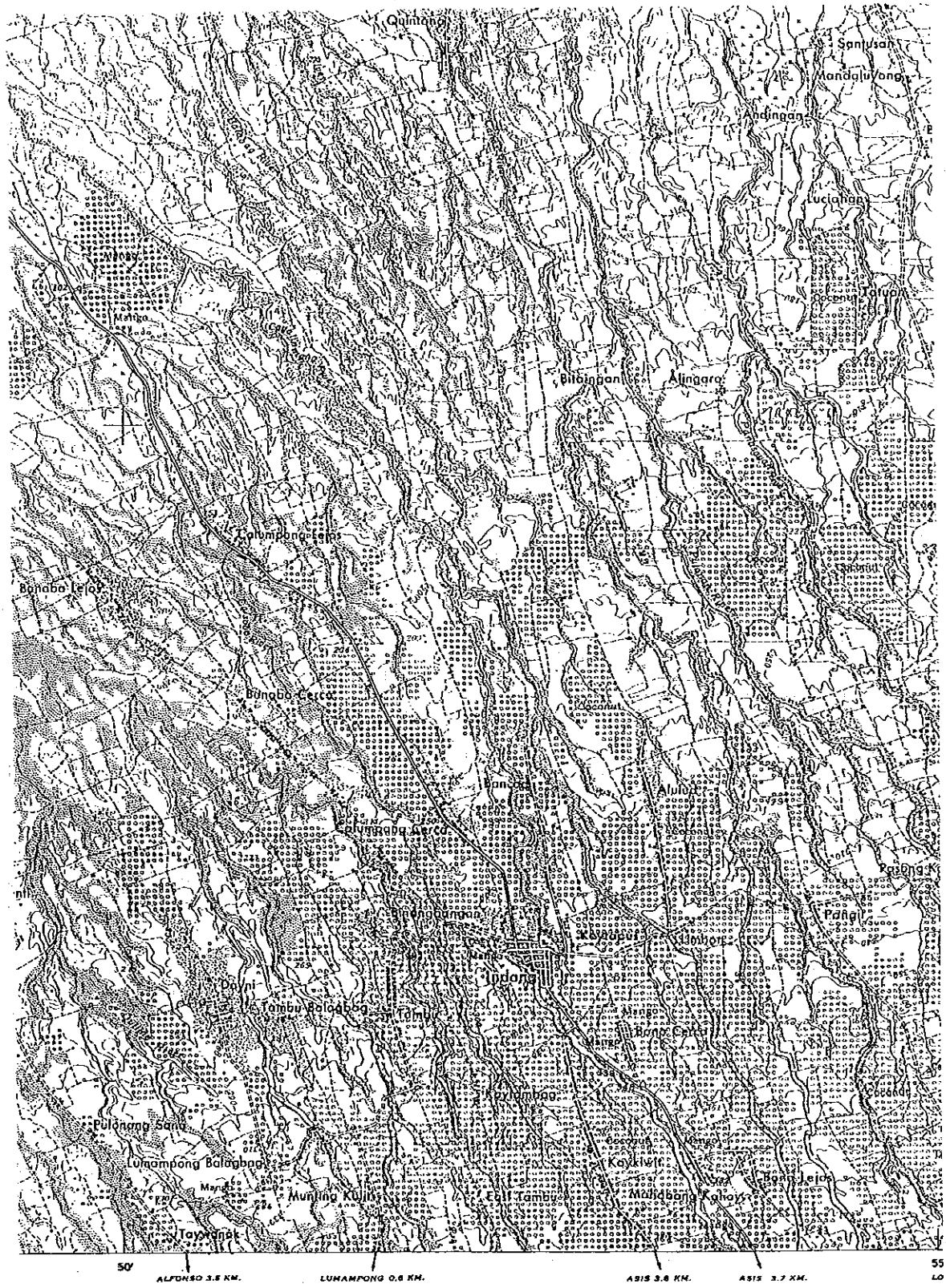
5．生活経済
(1) 生計を立てている主な業種：　農業
(2) １世帯当たりの平均年間収入：不明

6．既設水道および取水施設の概要　　WDの有無：　あり
Indang WDは、深井戸を取水源として、Poblacion地区を対象に、25 ｶﾛﾝ/人/日を設計基準としてレベルⅢの給水を行なっている。1920年代米国が建設した施設で現在の漏水率は約40％。夜間に揚水・貯留し、昼間に重力方式で給配水している。
Poblacion以外の地区では、ＲＷＳＡを組織しているbrgyが３つ、他のbrgyはＬＧＵによるレベルⅡまたはレベルⅢの水道を整備しており、最低基本料金は３ﾍﾟｿ/m³である。水源はいずれも湧き水。

7．水道整備計画
BarangayⅡ（世帯数 211、人口 1,053、平均月収 5,000 ﾍﾟｿ）が既設水道の改善と機能向上を希望している。

8．備　考
湧き水が多いので、この地区の人たちは水に不自由していない様子。ダムを造って他の地区に水を売りたいとのこと。


MUNICIPALITY OF INDANG
PROVINCE OF CAVITE
SCALE 1:50,000
BANABA LEJOS
CALUMPANG LEJOS
BANABA CERCA
AGUS-US
PANCOD
CALUMPANG CERCA
DAINE
POBLACION
TAMBO
BUNA CERCA
PULO
KAYQUIT
BUNA LEJOS
MAHABANG KAHOY CERCA
LUMAPONG
GUYAM MALAKI
MAHABANG KAHOY BALADRAO
CARABUCHI
N
ROAD NETWORK DEV'T PLAN
LEGEND:
POBLACION
BARANGAY
NATIONAL ROAD
BARANGAY ROAD
PROVINCIAL ROAD
MUNICIPAL ROAD



Scale 1:50, 000

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 3

1．地方自治体の名称：　Municipality of Gen. M. Alvarez

2．地方自治体の規模
(1) 村落(Barangay)の数：　27　　{内 Poblacionを構成する村落数：　}
(2) 世帯数：　(20,000?)　　(3) 面積：　938 ha
(4) 人　口：a．現在；86,000(120,000?)　　b．西暦2000年予想；　150,000

3．自然条件
(1) 地　形：標高100~200mの平原状丘陵地域。東側は崖面となっていて、Laguna de Bay に注ぐ多くの谷沢が刻まれている。

(2) 気　象：a．平均気温；　?　　b．年間降雨量；　?
(3) 水資源：地下水。表流水および湧き水はなし。

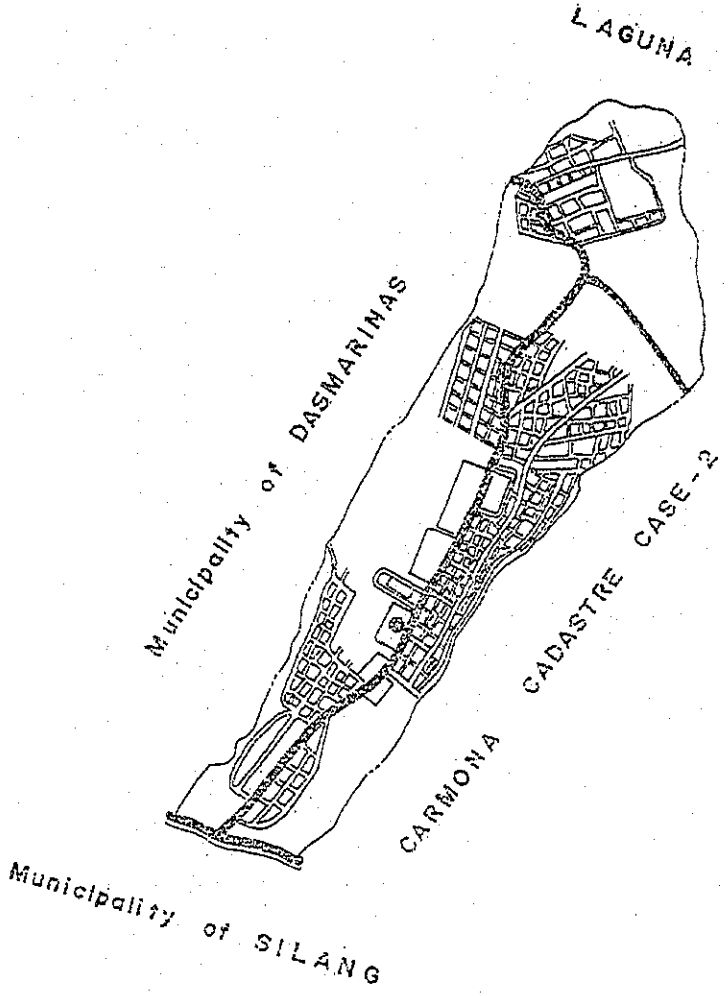
4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）；100%　b．その他；
(2) 電力線整備率：　98%　　(3) 電話線整備率：　不明
(4) 学校の数：a．小学校；　1,　b．中高等学校；　1,　c．大学；　〃
(5) 医療機関の数：a．医院・診療所；　1　　b．病院；　〃
(6) 工場の数：　?

5．生活経済
(1) 生計を立てている主な業種：　工業、工場就労など
(2) 1世帯当たりの平均年間収入：　不明

6．既設水道および取水施設の概要　　WDの有無：　あり
WDは、1988年に設立された比較的新しい組織で、現在 2,800戸に戸別給水を行なっていると共に公共水栓も整備している。整備率は40%？　取水源として6本の深井戸を持ち、4本を稼働させている。それらの揚水能力は、6~8 l/s のものが主体であるが、1 l/s および 20 l/s のものがそれぞれ1本づつある。漏水率は約50%で、設備の故障も多い。
WDの運営地区外は、それぞれ私有井戸をもっている。

7．水道整備計画
具体的計画はないが、ＬＷＵＡは将来計画についての技術検討書を提出している。

8．備　考
この地区は、再定住地区に指定されており、ピナツボ火山その他の被災者達が既にこの地区に移住してきているが、再定住地区は今のところWDの給水義務地区となっていない。再定住地区には独自の井戸が掘られている。　高人口密度地区。



MUNICIPALITY OF GEN. M. ALVAREZ

PROVINCE OF CAVITE

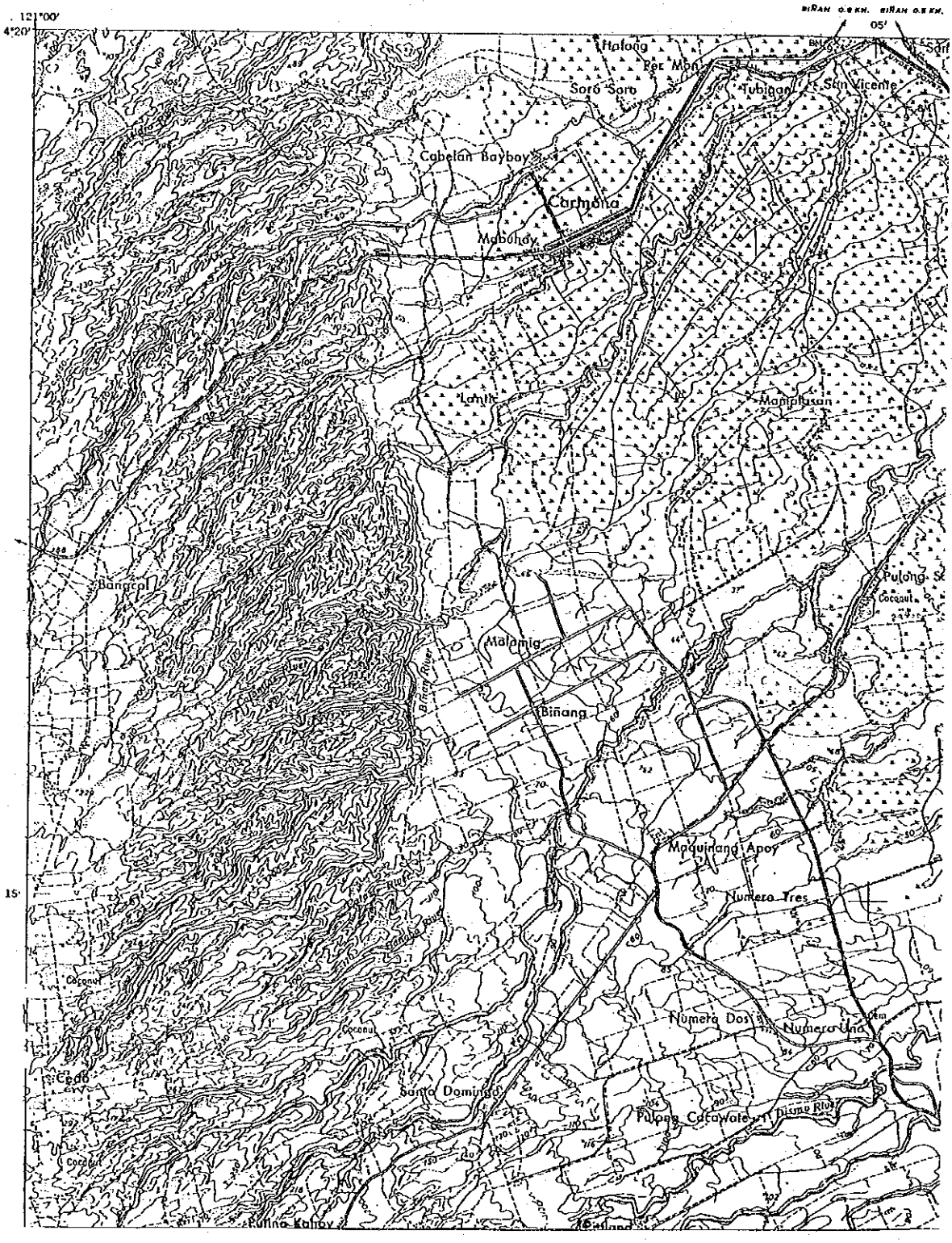
SCALE 1:50,000

ROAD NETWORK DEV'T PLAN

LEGEND :

- POBLACION
- NATIONAL ROAD
- MUNICIPAL ROAD
- BARANGAY ROAD
- BRIDGE

LUZON 1:50,000

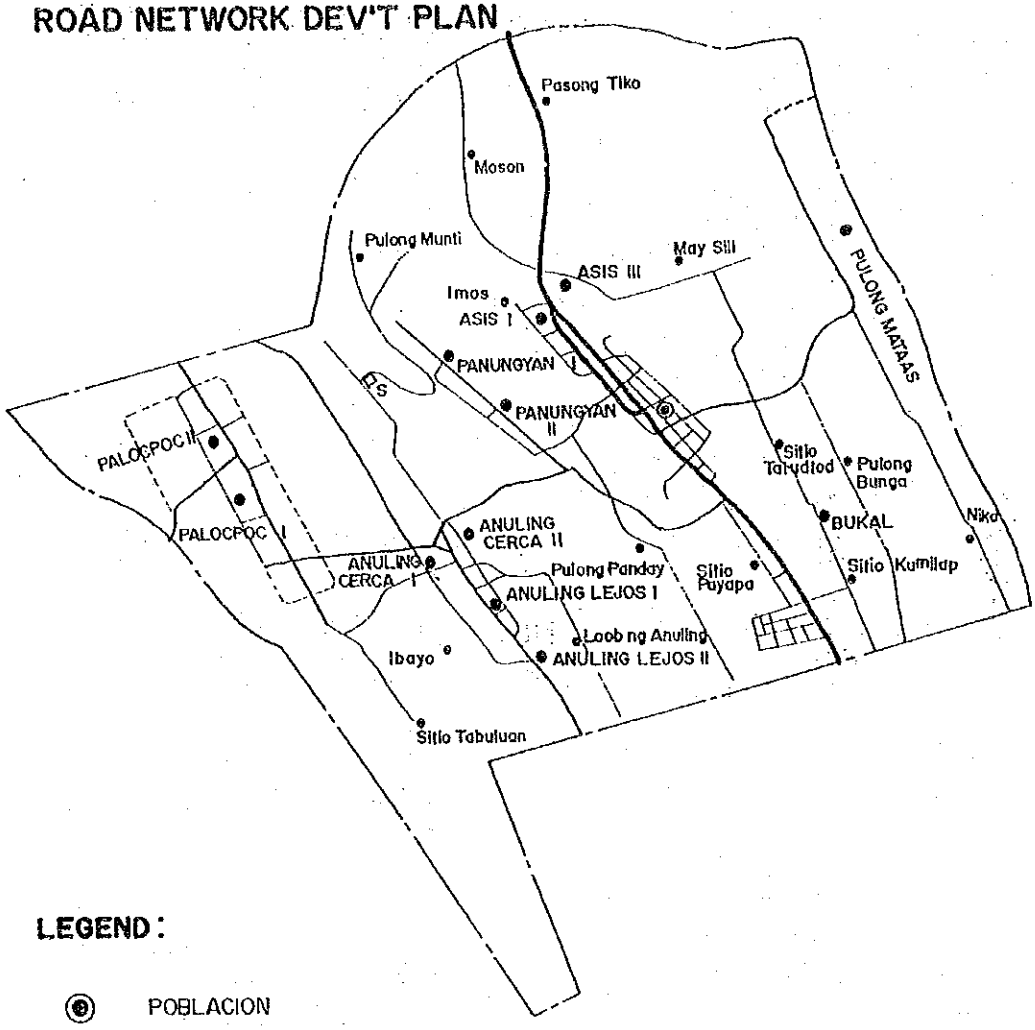


フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 4

1．地方自治体の名称： Municipality of Mendez
2．地方自治体の規模 (1) 村落(Barangay)の数： 25　　{内 Poblacionを構成する村落数：　　} (2) 世帯数： 3,378　　(3) 面積： 1,667 ha (4) 人　口：a．現在； 18,518　　b．西暦2000年予想； 20,709
3．自然条件 (1) 地　形：標高500~550mの緩やかな勾配をなす高原地帯。 Habuling川その他数本の川の源流地帯。 (2) 気　象：a．気温；　データなし，　　b．年間降雨量；　データなし (3) 水資源：地下水および湧水泉。
4．社会基盤整備状況（水道を除く） (1) 道路舗装率：a．主要道（国道・州道）；85%　b．その他；80% (2) 電力線整備率： 84%　　(3) 電話線整備率： ゼロ (4) 学校の数：a．小学校； 8,　b．中高等学校； 5,　c．大学； ゼロ (5) 医療機関の数：a．医院・診療所；？　　b．病院；？ (6) 工場の数： ゼロ
5．生活経済 (1) 生計を立てている主な業種：　農業 (2) 1世帯当たりの平均年間収入： 18,000 ペソ（月収 1,500 ペソ）？
6．既設水道および取水施設の概要　　WDの有無：　あり WDは、1989年に設立された比較的新しい組織で従業員は10人。Poblacion地区を対象に、1つの湧水泉と1本の深井戸（深さ244m、揚水量150GPM）を取水源とし、700戸への戸別給水と10の商店給水を行なっている。流量計はまだ完備してない。 最低基本料金は家庭用は 80 ペソ/10m³、商業用は 90 ペソ/10m³としている。 RWSAはレベルIIとレベルIIIの2方式が整備されており、前者の場合は400の公共水栓を整備。後者のレベルIIIシステムは2つの brgys が取り入れている。 上記以外の地区はレベルIの状態。
7．水道整備計画 LWUAのローンで整備を進めている段階。1996年には商店、教会、学校を含め計1712の家屋に給水が必要になるとしている（このための費用は9.7 ミリオンペソと試算している）。
8．備　考 MPDCは、森林保護や水資源保護が環境保全に重要な武器になると述べている。

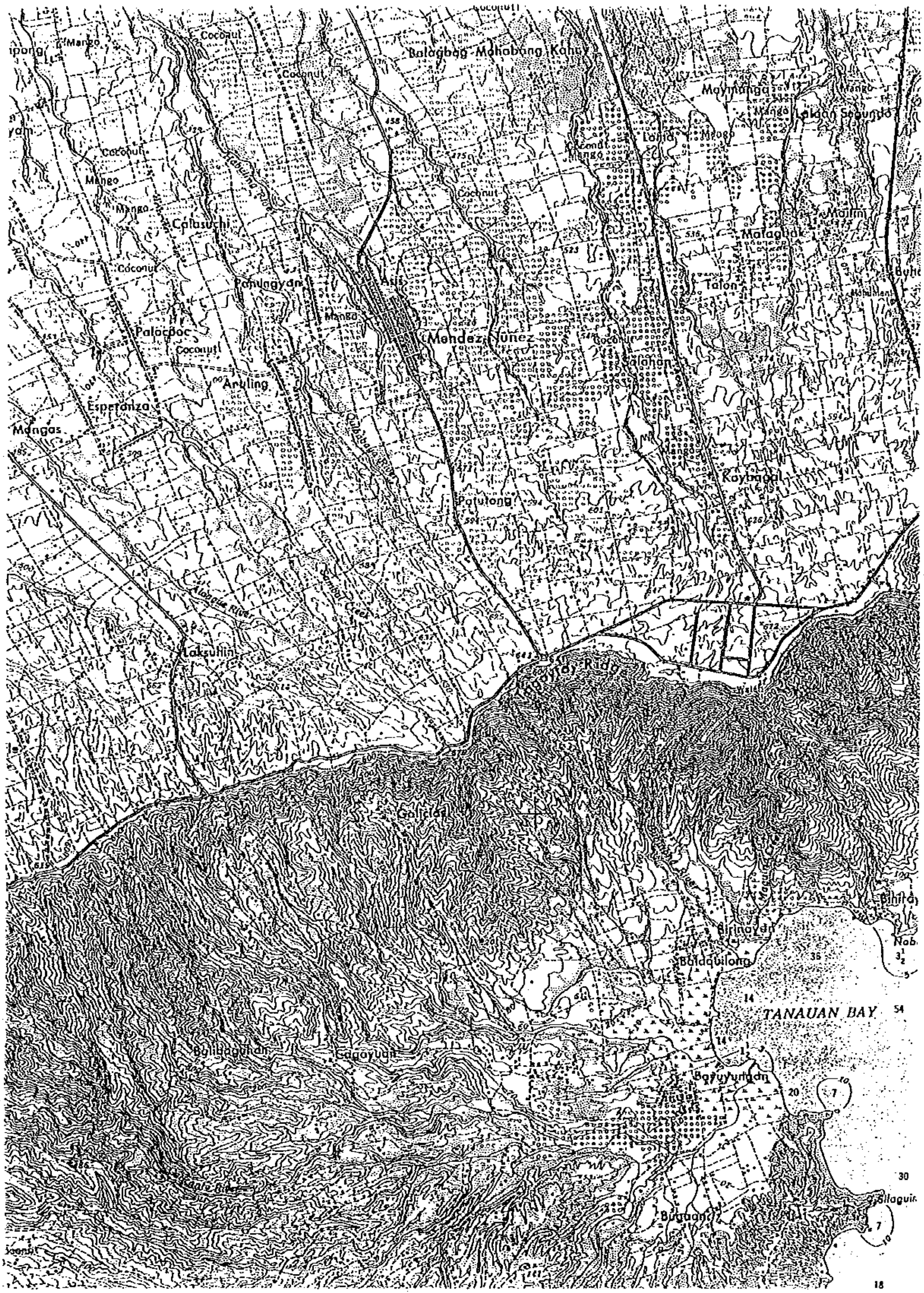
MUNICIPALITY OF MENDEZ
PROVINCE OF CAVITE

ROAD NETWORK DEV'T PLAN



LEGEND:

- POBLACION
- BARANGAY or BARRIO
- SITIO / PULO
- NATIONAL ROAD
- PROVINCIAL ROAD
- BARANGAY ROAD
- PROPOSED BARANGAY ROAD
- MUNICIPAL BOUNDARY
- [S] SPRING


Coconut
Mango
Balagbag-Mahabang Kahoy
Calusuchi
Palocpoc
Esperanza
Mangas
Mendez-Nunez
Talon
Patutong
TANAUAN BAY

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 5

1．地方自治体の名称： Municipality of Silang

2．地方自治体の規模
(1) 村落(Barangay)の数： 64　　{内 Poblacionを構成する村落数：　}
(2) 世帯数： 17,422(1990)　　(3) 面積： 15,641 ha
(4) 人　口：a．現在； 93,790(1990)　b．西暦2000年予想；　不明

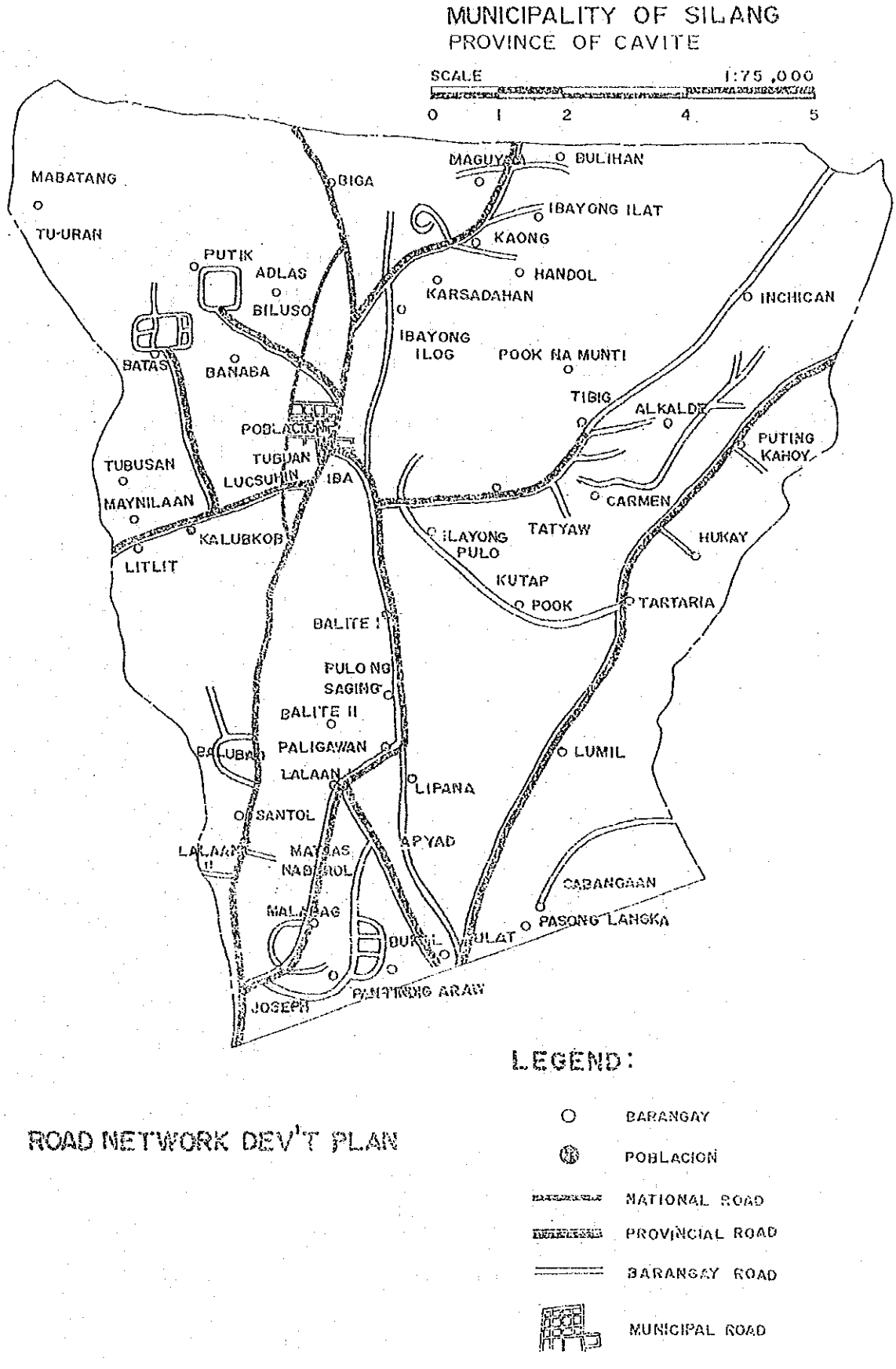
3．自然条件
(1) 地　形：緩やかな斜面をなす標高270~500m程度の高原地帯で、６本程度の河川の源流・上流をなす渓谷が走っている。
(2) 気　象：a．平均気温；　データなし，　b．年間降雨量； 2,300 mm
(3) 水資源：湧き水および地下水。既設井戸数は不明であるが、1993年だけで 33本の深井戸が掘削されたので、地下水は主要水源となっている。

4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）； 100%　b．その他；　不明
(2) 電力線整備率： 83%　　(3) 電話線整備率：　不明
(4) 学校の数：a．小学校； 46，　b．中高等学校； 10，　c．大学；　なし
(5) 医療機関の数：a．医院・診療所； 36，　b．病院； 5
(6) 工場の数： 5（セラミック、ゴルフバッグ、繊維、果物などの工場）

5．生活経済
(1) 生計を立てている主な業種：　農業
(2) １世帯当たりの平均年間収入：　データなし

6．既設水道および取水施設の概要　　WDの有無：　有り
Silang WDは 26のBarangays（全戸数の40%相当）を対象に給水を行なっている。水源は、11本の深井戸（平均深さ200m）と１つの湧水泉で、全給水量は 11,000 GPM。1987年に建築した美しい事務所ビルを持ち、従業員数は40人。給水域を50%に拡大したいとのことで、踏査時に、ＬＷＵＡが新しい井戸（深さ240m）を掘削中であった。古い施設は1930-40年代に敷設されたもの。水道施設全体の図面はまだ出来上がっていない。戸別給水5550、公共水栓86を運営しており、公共水栓の料金は 200 リットル 当たり２ ペソ とのこと。
ＲＷＳＡを組織し、レベルⅡの水道を運営している barangayは８つある。これら以外の約30の村落はそれぞれレベルⅠの施設をもっている。

7．水道整備計画
ＬＷＵＡは、Barangay Bigaの水道整備に対する技術検討書を提出している。Municipalityとしては具体的な計画はもっていないが、２つの村落がレベルⅠからレベルⅡへの改善とＲＷＳＡの組織化を希望しているようである。



ROAD NETWORK DEV'T PLAN


Jaime Barker
Mabatang
Mangahan
Mandaluyong
Biclatan
Javalera
Biluso
Sabutan
Silang
Pasong Kabayo
Lalaan Primero
Pulong Saging
Pulong Bunga

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 6

1．地方自治体の名称： Municipality of Tanza

2．地方自治体の規模
(1) 村落(Barangay)の数： 41　　{内 Poblacionを構成する村落数： 7 }
(2) 世帯数： 不明　　(3) 面積： 9,630 ha
(4) 人　口：a．現在； 68,562　　b．西暦2000年予想； 87,406

3．自然条件
(1) 地　形：標高10m程度の海岸沖積低地が主体。南側は標高20~40mの台地。低地は水田地帯となっている。東境界線沿いをCanas川、西境界線沿いをTimalan川が流れ、それらの間に２つの川があり、マニラ湾に注ぐ。
(2) 気　象：a．平均気温； データなし，　b．年間降雨量； 1,681mm
(3) 水資源：地下水。南部に若干の湧水泉もある。河川水はＮＩＡの管轄。域内の９つの井戸に泥が混ざっている様子。

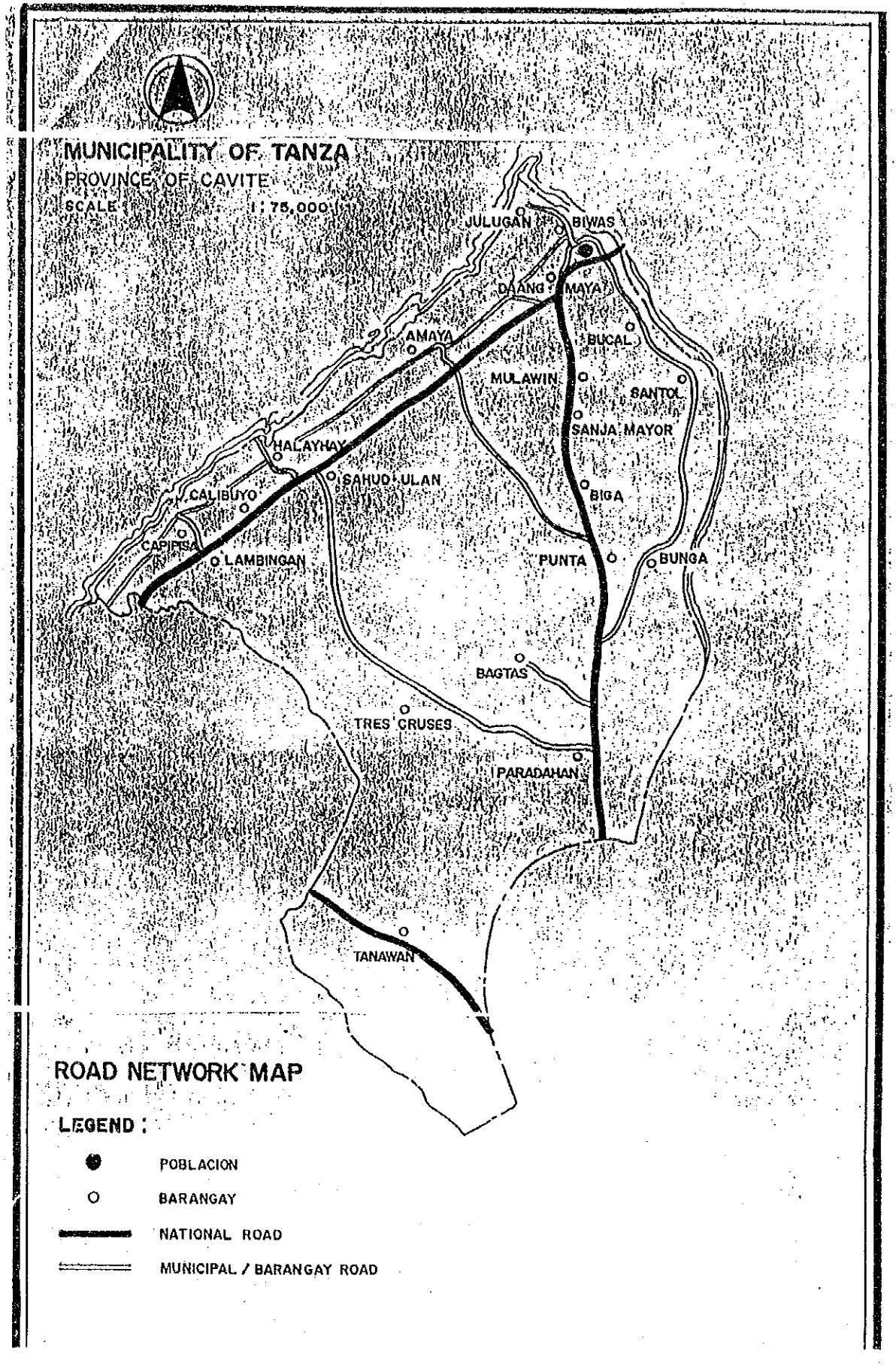
4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）； 80%　b．その他； 20%
(2) 電力線整備率： 98%　　(3) 電話線整備率： 10%
(4) 学校の数：a．小学校； 14,　b．中高等学校； 9,　c．大学； ゼロ
(5) 医療機関の数：a．医院・診療所； 22,　b．病院； 2
(6) 工場の数： 2

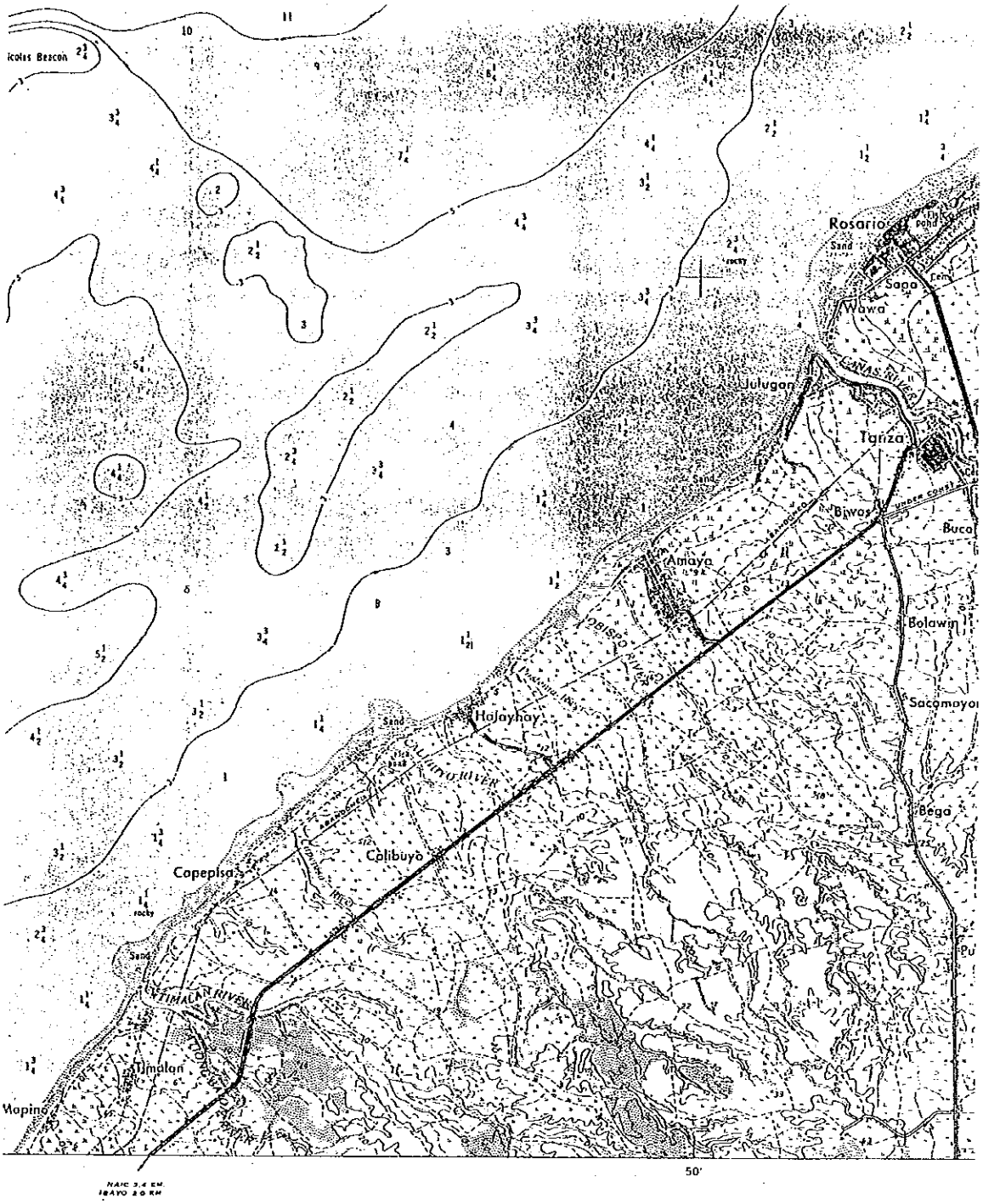
5．生活経済
(1) 生計を立てている主な業種：　漁業、農業、および工場就労
(2) １世帯当たりの平均年間収入： 不明

6．既設水道および取水施設の概要　　ＷＤの有無：　あり
Tanza ＷＤは1988年に設立し、Poblacion地区を対象に給水を行なっている。現在新しい貯水タンクを建設中。
Poblacion地区以外の地区は、全てレベルＩの状態で、深井戸および浅井戸に依存している。

7．水道整備計画
南部のBrgy ParadabanⅡに他の３つのbrgyを加えた地区（世帯数545、人口2,857）への水道敷設を希望している。水源は湧き水（5 l/s）を予定。

8．備　考


MUNICIPALITY OF TANZA
PROVINCE OF CAVITE
SCALE 1 : 75,000
JULUGAN
BIWAS
DAANG MAYA
AMAYA
BUCAL
MULAWIN
SANTOL
SANJA MAYOR
HALAYHAY
SAHUD ULAN
CALIBUYO
BIGA
CAPIPIHA
LAMBINGAN
PUNTA
BUNGA
BAGTAS
TRES CRUSES
PARADAHAN
TANAWAN
ROAD NETWORK MAP
LEGEND :
POBLACION
BARANGAY
NATIONAL ROAD
MUNICIPAL / BARANGAY ROAD



e requested to notify the
mation Authority (NAMRIA),
Manila.

CONTOL

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 7

1．地方自治体の名称：City of Tagaytay

2．地方自治体の規模
(1) 村落(Barangay)の数：35　　{内 Poblacionを構成する村落数：　}
(2) 世帯数：4,510(1992)　　(3) 面積：6,615 ha
(4) 人　口：a．現在；26,511　　b．西暦2000年予想；34,434

3．自然条件
(1) 地　形：タール火口湖外輪山の尾根沿いの標高600m程度の高原地帯。北側はなだらかな斜面をなすが、南側は比高差600m程度の急峻な崖をなし湖面に接する。崖面にいくつかの湧水泉およびクリークがある。
(2) 気　象：a．気温；　平均 22.7℃，　b．年間降雨量；　不明
(3) 水資源：湧き水および地下水。湧水は既設水道の水源として利用されている。深井戸は東部の標高550m付近に30本ほどある。いずれも私有井戸。

4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）；100%　b．その他；50%
(2) 電力線整備率：100%　　(3) 電話線整備率：　全戸数の4.1%
(4) 学校の数：a．小学校；17，　b．中高等学校；3，　c．大学；ゼロ
(5) 医療機関の数：a．医院・診療所；4，　b．病院；1
(6) 工場の数：ゼロ

5．生活経済
(1) 生計を立てている主な業種：　農業、次いで商業
(2) 1世帯当たりの平均年間収入：　データなし

6．既設水道および取水施設の概要　　WDの有無：　有り
Tagaytay City WDは、南側崖面にある3つの湧水泉を水源として給水を行なっており、1992年5月時点で、2,188の戸別水栓と121の商業用水道を運営しているが、水源の位置が相当に低い場所にあるため、ポンプ場を5箇所に設け、標高差300mを3段で押し上げている。そのため、電力費用が総収入の70%を占める状態で、水道料金は他の地区に比べ著しく高い。 因みに、最低基本料金は、家庭給水の場合 110 ペソ/月、商業用の場合 220 ペソ/月 となっている。従業員は45人。
東部の教会などでは、自家用の深井戸を持ち、農業用にも利用している。

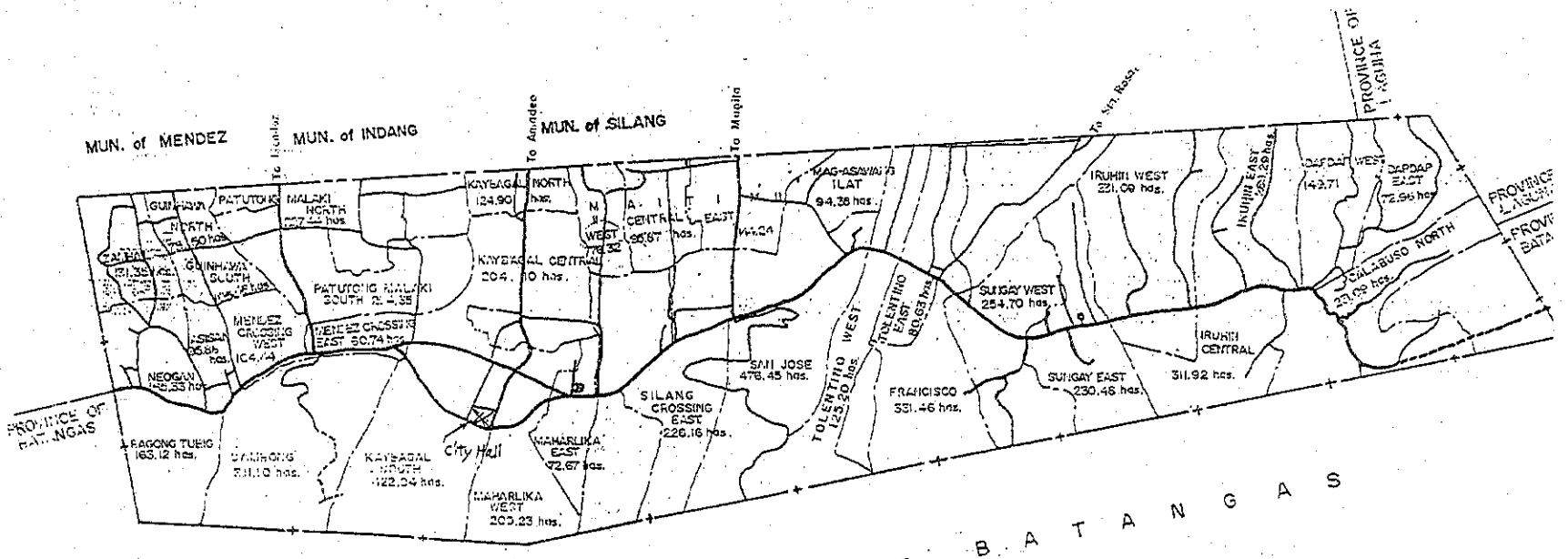
7．水道整備計画
ＬＷＵＡは、既設水道施設の改善・改修のための技術検討書を提出している。

8．備　考
Tagaytay は、観光地に指定されており、別荘地にも適しているので、政府はこの地区の開発に強い関心をもっている。

CITY OF TAGAYTAY

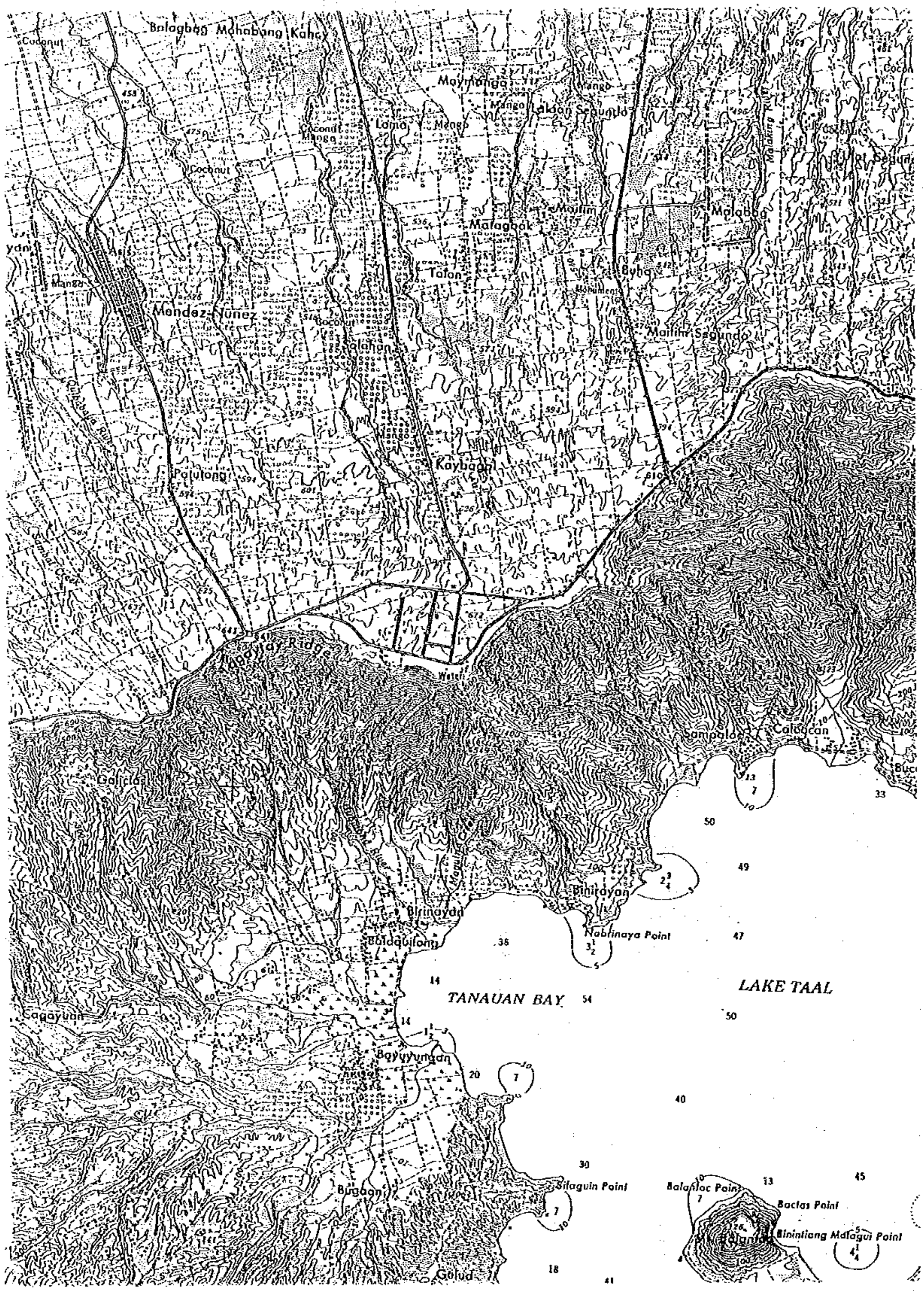
ROAD NETWORK DEVELOPMENT PLAN

SCALE 1: 50,000



LEGEND:

- MAJOR ROAD
- MINOR ROAD
- PROPOSED ROAD
- CITY BOUNDARY
- BARANGAY BOUNDARY
- PROVINCIAL BOUNDARY



Mendez-Nunez
Kaybagal
Maymanga
Malagaak
Talon
Calaboan
Sampaloc
Caloocan
Birinayan
Nabrinaya Point
TANAUAN BAY
LAKE TAAL
Bayuyungan
Bugaan
Gulud
Silaguin Point
Balantoc Point
Bactas Point
Bininliang Malagui Point
Sagayuan
Patulong

フィリピン国カビテ水供給計画調査（事前調査）　地方自治体別整理表　No. 8

1．地方自治体の名称：　Municipality of Amadco

2．地方自治体の規模
(1) 村落(Barangay)の数：　26　　{内 Poblacionを構成する村落数：　8　}
(2) 世帯数：　4,500　　(3) 面積：　4,790 ha
(4) 人　口：a．現在；　12,500　　b．西暦2000年予想；　？

3．自然条件
(1) 地　形：緩やかな勾配をなす標高240~550mの斜面状高原で、マニラ湾に注ぐ数条の源流沢が形成されている。谷の深さは 30m程度。

(2) 気　象：a．平均気温；　データなし　　b．年間降雨量；　2,032-2,286mm
(3) 水資源：地下水および湧き水。
現在、取水源としている深井戸は 49、湧水泉は５つある。

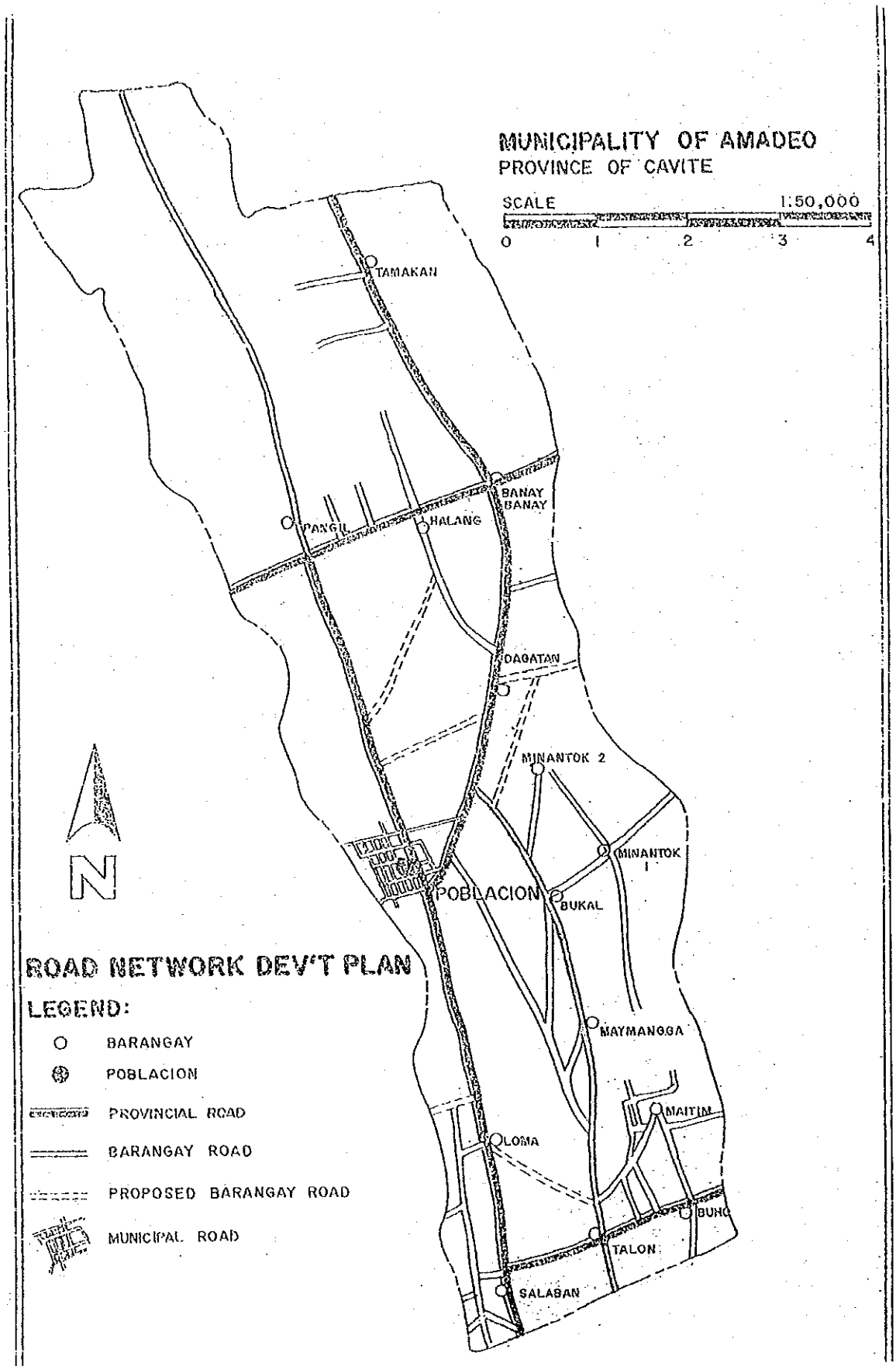
4．社会基盤整備状況（水道を除く）
(1) 道路舗装率：a．主要道（国道・州道）；　22.53km　　b．その他；　10%
(2) 電力線整備率：　90%　　(3) 電話線整備率：　電話局１つあるのみ
(4) 学校の数：a．小学校；　11,　　b．中高等学校；　5,　　c．大学；　0
(5) 医療機関の数：a．医院・診療所；　？　　b．病院；　1（保健所）
(6) 工場の数：　4

5．生活経済
(1) 生計を立てている主な業種：　農業
(2) １世帯当たりの平均年間収入：　？

6．既設水道および取水施設の概要　　WDの有無：　なし
1986年にＬＧＵが造ったシステムとＲＷＳＡのシステムの２つの方式の既設水道がある。前者は Poblacion地区の8 brgysを対象とし、深さ244mの井戸を取水源として、300以上の家に戸別給水している。水道料金は 35 ペソ/月/戸 である。
ＲＷＳＡシステムを整備している brgy は４つあり、いずれもレベルIIIのシステムとなっている。
残りの14のbrgysは、自家用井戸や湧き水を利用している。

7．水道整備計画
具体的計画はないが、Poblacionの 1/3 はまだ水道が整備されていない模様。ＬＧＵシステムの揚水時間は１日当たり 12~16 時間。貯水槽が小さくかつ取水源となる井戸数がまだ不十分な感じ。
南部の Balbac Spr. を水源とする新しいシステムを希望している。

8．備　考
浅井戸は年間を通して利用できるという（枯れることはないとのこと）。


MUNICIPALITY OF AMADEO
PROVINCE OF CAVITE
SCALE 1:50,000
0 1 2 3 4
TAMAKAN
BANAY BANAY
PANGIL
HALANG
DAGATAN
MINANTOK 2
MINANTOK
POBLACION
BUKAL
MAYMANGGA
MAITIM
LOMA
BUHO
TALON
SALABAN
N
ROAD NETWORK DEV'T PLAN
LEGEND:
BARANGAY
POBLACION
PROVINCIAL ROAD
BARANGAY ROAD
PROPOSED BARANGAY ROAD
MUNICIPAL ROAD


Silang
Kalobkob
Lalaan
Balete
Amadeo
Mendez Nuñez
Maitim Segundo
Malabag
Malagbak
Talon
Kaybagal
Coconut
Mango