

JAPAN INTERNATIONAL COOPERATION AGENCY

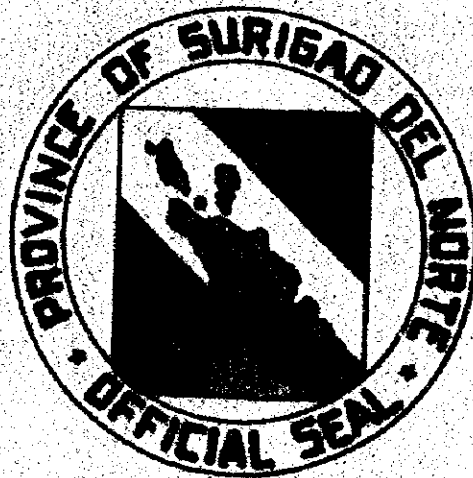
DEPARTMENT OF THE INTERIOR AND LOCAL GOVERNMENT  
THE REPUBLIC OF THE PHILIPPINES

THE STUDY ON THE  
PROVINCIAL WATER SUPPLY, SEWERAGE AND  
SANITATION SECTOR PLAN  
IN  
THE REPUBLIC OF THE PHILIPPINES

VOLUME II - [5]

SUPPORTING REPORT

PROVINCIAL WATER SUPPLY, SEWERAGE AND  
SANITATION SECTOR PLAN  
FOR THE PROVINCE OF  
SURIGAO DEL NORTE



OCTOBER 1998

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**PROVINCIAL WATER SUPPLY, SEWERAGE AND  
SANITATION SECTOR PLAN**

**VOLUME II SUPPORTING REPORT**

**TABLE OF CONTENTS**

<b>CHAPTER</b>	<b>Page No.</b>
<b>LIST OF TABLES</b>	iv
<b>LIST OF FIGURES</b>	vii
<b><i>A BACKGROUND INFORMATION AND EXISTING CONDITIONS</i></b>	
<b>1. INTRODUCTION</b>	
1.3 The Provincial Plan for the Province of Surigao del Norte	1 - 1
1.3.1 Preparation of the Plan	1 - 1
<b>2. PLANNING APPROACH FOR FUTURE SECTOR DEVELOPMENT</b>	
2.6 Planning Principles and Data Management	2 - 1
2.6.2 Data Management	2 - 1
<b>3. PROVINCIAL PROFILE</b>	
3.3 Socio-economic Conditions	3 - 1
3.3.1 Economic Activities and Household Income	3 - 1
3.3.3 Education	3 - 2
3.4 Population	3 - 3
3.4.2 Classification of Urban and Rural Areas	3 - 3
3.5 Health Status	3 - 4
3.6 Environmental Conditions	3 - 4
3.6.2 Water Pollution	3 - 4
<b>4. EXISTING FACILITIES AND SERVICE COVERAGE</b>	
4.1 Water Supply	4 - 1
4.1.3 Level III Systems	4 - 1
4.1.4 Level II Systems	4 - 5
4.1.5 Level I Facilities	4 - 37
4.1.6 Water Supply Service Coverage	4 - 40
4.2 Sanitation and Sewerage	4 - 49
4.2.2 Types of Facilities and Definition of Service Level Standard	4 - 49
4.2.3 Sanitation Facilities and Service Coverage	4 - 51
<b>5. EXISTING SECTOR ARRANGEMENTS AND INSTITUTIONAL CAPACITY</b>	
5.5 Sector Agencies at the Local Level	5 - 1
5.6 External Support Agencies Active in the Sector	5 - 4
5.7 Project Management Arrangement, and Issues and Problems	5 - 9
5.7.2 Institutional Aspect	5 - 9

5.8	Community Development	5 - 7
5.8.1	General	5 - 7
5.8.5	Utilization of NGOs	5 - 36
5.8.6	Existing Community Development Processes	5 - 37
<b>6.</b>	<b>PAST FINANCIAL PERFORMANCE IN WATER SUPPLY AND SANITATION</b>	
6.2	Past Public Investment	6 - 1
6.2.1	Sources of Local Fund	6 - 1
<b>7.</b>	<b>WATER SOURCE DEVELOPMENT</b>	
7.3	Groundwater Sources	7 - 1
7.3.2	Groundwater Availability in the Province	7 - 1
7.4	Spring Sources	7 - 6
7.5	Surface Water Sources	7 - 7
7.6	Future Development Potential of Water Sources	7 - 14
7.6.1	Groundwater	7 - 14
7.6.2	Springs	7 - 20
7.7	Water Source Development for Medium-Term Development Plan	7 - 21
7.7.1	Spacing Allocation for Level II and III Wells	7 - 21
<b>B</b>	<b><i>FUTURE REQUIREMENTS AND DEVELOPMENT PLAN</i></b>	
<b>8.</b>	<b>FUTURE REQUIREMENTS IN WATER SUPPLY AND SANITATION IMPROVEMENT</b>	
8.2	Targets of Provincial Sector Plan	8 - 1
8.3	Projection of Frame Values	8 - 11
8.3.1	Review of Past Population Development and Population Projection	8 - 11
8.3.2	School Enrollment Projection	8 - 18
8.3.3	Projection of the Number of Public Utilities	8 - 19
8.4	Types of Facilities and Implementation Criteria	8 - 21
8.4.1	Water Supply	8 - 21
8.5	Service Coverage by Target Year	8 - 25
8.5.1	Water Supply	8 - 25
8.5.2	Sanitation	8 - 31
8.6	Facilities, Equipment and Rehabilitation to Meet the Target Services	8 - 40
8.6.1	Water Supply	8 - 40
8.6.2	Sanitation	8 - 48
<b>C</b>	<b><i>SECTOR IMPLEMENTATION ARRANGEMENTS</i></b>	
<b>9.</b>	<b>SECTOR MANAGEMENT FOR MEDIUM-TERM DEVELOPMENT</b>	
9.4	Project Management Arrangements	9 - 1
9.4.1	Project Approach / Strategy	9 - 1
9.4.2	Project Implementation Arrangement	9 - 5
9.5	Community Development	9 - 64
9.5.2	CD Structure and Linkages	9 - 64
9.5.5	Approaches to CD	9 - 68



**10. COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT**

10.2 Assumptions for Cost Estimates	10 - 1
10.2.1 Unit Construction Cost	10 - 1
10.2.2 Unit Cost of Equipment	10 - 31
10.2.3 Cost of Laboratory and Equipment	10 - 32
10.3 Cost of Required Facilities and Equipment	10 - 34
10.3.1 Cost of Required Facilities	10 - 34
10.4 Costs of Sector Management	10 - 38
10.4.1 Breakdown of Community Development and Training Cost	10 - 38

**11. FINANCIAL ARRANGEMENTS**

11.3 Additional Funding Requirements	11 - 1
11.4 Medium-Term Implementation Arrangements	11 - 2
11.4.2 Alternative Countermeasures	11 - 2
11.5 National Government Assisted Level I Water Supply and Sanitation Project	11 - 2

**12. MONITORING FOR MEDIUM-TERM DEVELOPMENT PLAN**

12.4 Evaluation of Plan Implementation and Updating the PW4SP	12 - 1
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**PROVINCIAL WATER SUPPLY, SEWERAGE AND  
SANITATION SECTOR PLAN**

**LIST OF TABLES**

Table No.	Title	Page No.
2.6.1	Key Parameter	2 - 2
2.6.2	Composition of Well Sources and Specific Capacity	2 - 3
2.6.3	Annual Investment	2 - 4
2.6.4	Level I Safe and Unsafe Percentage	2 - 4
2.6.5	Unit Construction Cost of Different Facilities	2 - 5
2.6.6	Scoring Factor for Municipal Investment Ranking for Urban Water Supply	2 - 6
2.6.7	Scoring Factor for Municipal Comprehensive Investment Ranking	2 - 6
3.3.1	Distribution of Families by Income Class	3 - 1
3.3.2	Employment by Major Industry Group and Class of Worker, 1994	3 - 1
3.3.3	Household Population by Highest Educational Attainment	3 - 2
3.5.1	Number and Rates of Population to Health Facilities and/or Medical Practitioners	3 - 4
3.6.1	Types of Drainage Facilities	3 - 4
3.6.2	DENR Water Quality Criteria/Water Usage and Classification for Fresh Water	3 - 5
4.1.1	Details on Existing Level III Systems	4 - 1
4.1.2	Details on Existing Level II Systems	4 - 5
4.1.3	Percentage of Doubtful Water Sources	4 - 36
4.1.4(a)	Number of Level I Facilities by Safe and Unsafe Classification	4 - 38
4.1.4(b)	Public and Private Level I Facilities for Rural Water Supply	4 - 40
4.1.5	Estimation of Unserved Population by Municipality	4 - 42
4.1.6(a)	Estimation of Population Covered by Safe and Unsafe Source by Municipality	4 - 43
4.1.6(b)	Estimation of Population Covered by Safe and Unsafe Source by Municipality	4 - 46
4.2.1	Sanitation Facilities and Service Coverage of Household Toilets, by Type, by Municipality, Urban and Rural, 1997	4 - 51
4.2.2	Number of Student and School Toilet Facilities by Municipality	4 - 52
4.2.3	Number of Public Toilet Facilities	4 - 53
5.6.1	Priority Areas/Terms and Conditions, Programs and Projects by Donor	5 - 6
6.2.1	Income and Expenditures of Surigao del Norte, 1994-1998	6 - 1
6.2.2	Past Internal Revenue Allotment to Municipalities from Central Government	6 - 9
7.4.1	Existing Spring Sources	7 - 6
7.5.1	Gauging Station & River Water Use by Major River Basins	7 - 9
7.5.2	Probability of Surface Water	7 - 13
7.5.3	Element Concentrations (ppm) in the Soils and Stream Sediments of the Surigao River Watershed	7 - 12
7.6.1	Existing Well Sources	7 - 15

Table No.	Title	Page No.
7.6.2	Hydrogeological Description by Municipality	7 - 17
7.6.3	Untapped Spring Source Identification	7 - 20
7.7.1	Spacing Arrangements for Planned Wells	7 - 22
8.2.1	Estimation of Base Year Service Coverage of Water Supply	8 - 1
8.2.2	Population Coverage in Phase I Provided by Served Population in the Base Year (Water Supply)	8 - 2
8.2.3	Number of Households Served by Sanitary Toilets in the Base Year (1997)	8 - 3
8.2.4	Number of Public School Students Served by School Toilets in Base Year (1997)	8 - 5
8.2.5	Number of Public Utilities with Sanitary Toilets in the Base Year in 1997	8 - 6
8.2.6	Household Coverage in Phase I Provided by Existing Facilities in the Base Year (Household Toilets)	8 - 9
8.2.7	Public School Students and Public Utilities Coverage in Phase I by Existing Facilities in the Base Year	8 - 10
8.3.1	Past Population Development	8 - 11
8.3.2	Population Distribution in Urban and Rural Areas (1995 Census)	8 - 12
8.3.3	Growth Rates and Population Projection for Target Years: Region and Province	8 - 16
8.3.4	Provincial Population for the Base Year and Target Years	8 - 16
8.3.5	Projected Number of Households by Urban and Rural Area by Municipality by Target Year	8 - 17
8.3.6	Projected School Enrollment by Municipality by Target Year	8 - 18
8.3.7	Projected Number of Public Utilities by Municipality by Target Year	8 - 19
8.4.1	Rapid Evaluation of Untapped Spring for Use in Urban Water Supply	8 - 21
8.5.1	Population to be Served by Level II System in Phase I	8 - 25
8.5.2	Population to be Served in Phase I (Water Supply)	8 - 27
8.5.3	Population to be Served in Phase II (Water Supply)	8 - 29
8.5.4	Additional Number of Households to be Served in Phase I (Household Toilets)	8 - 31
8.5.5	Additional Number of Households to be Served in Phase II (Household Toilets)	8 - 33
8.5.6	Additional Number of Public School Students to be Served in Phases I and II (School Toilets)	8 - 35
8.5.7	Additional Number of Public Utilities with Sanitary Toilets in Phases I and II	8 - 36
8.6.1	Urban Water Supply Facilities Required by Target Year	8 - 41
8.6.2	Plan for Expansion of Existing Level III Systems	8 - 44
8.6.3(a)	Rural Water Supply Facilities Required by Target Year	8 - 45
8.6.3(b)	Public Facilities Required for Rural Water Supply by Target Year	8 - 46
8.6.4	Urban Household Toilets Required by Target Year	8 - 48
8.6.5	Rural Household Toilets Required by Target Year	8 - 49
8.6.6	Public School Toilets Required by Target Year	8 - 50
8.6.7	Public Toilets Required by Target Year	8 - 51
10.2.1	Price of Major Materials by Facility	10 - 2
10.2.2(a)	Unit Cost of Level I (Deep Well - 30m Depth)	10 - 3
10.2.2(b)	Unit Cost of Level I (Deep Well, Natural Gravel Pack - 30m Depth)	10 - 4
10.2.3(a)	Unit Cost of Level I (Deep Well - 50m Depth)	10 - 5
10.2.3(b)	Unit Cost of Level I (Deep Well, Natural Gravel Pack - 50m Depth)	10 - 6
10.2.4(a)	Unit Cost of Level I (Deep Well - 70m Depth)	10 - 7
10.2.4(b)	Unit Cost of Level I (Deep Well, Natural Gravel Pack - 70m Depth)	10 - 8

Table No.	Title	Page No.
10.2.5	Unit Cost of Level I (Deep Well Rehabilitation)	10 - 9
10.2.6	Unit Cost of Level I (Shallow Well – 18m Depth)	10 - 10
10.2.7	Unit Cost of Level I (Spring Development)	10 - 11
10.2.8	Unit Cost of Level II (600 Service Population)	10 - 12
10.2.9	Unit Cost of Level III (5,000 Service Population)	10 - 14
10.2.10	Unit Cost of Level III (10,000 Service Population)	10 - 15
10.2.11	Unit Cost of Level III (15,000 Service Population)	10 - 16
10.2.12	Unit Cost of Flush Water Sealed with Septic Tank Toilet	10 - 17
10.2.13	Unit Cost of Pour Flush with Double Pit Latrine	10 - 18
10.2.14	Unit Construction Cost of Ventilated Improved Pit Latrine	10 - 19
10.2.15	Unit Construction Cost of Pit Latrine	10 - 20
10.2.16	Unit Cost of School Toilet	10 - 21
10.2.17	Unit Cost of Public Toilet	10 - 26
10.2.18	Cost for New Laboratory	10 - 33
10.2.19	Cost for Upgrading Laboratory	10 - 33
10.3.1	Construction Cost of Water Supply Facilities Required for Phase I (2003)	10 - 34
10.3.2	Construction Cost of Water Supply Facilities Required for Phase II (2010)	10 - 35
10.3.3	Cost of Sanitation Facilities Required for Phase I (2003)	10 - 36
10.3.4	Cost of Sanitation Facilities Required for Phase II (2010)	10 - 37
10.4.1	Breakdown of Community Development and Training Cost	10 - 38
11.3.1	Percentage for Annual Investment	11 - 1
11.4.1	Comprehensive Investment Need Ranking of the Municipalities	11 - 4
11.5.1	Available IRA for GOP-Assisted Level I Water Supply and Rural Sanitation Project for Eligible Municipalities	11 - 5
11.5.2	Available IRA for GOP-Assisted Urban Sanitation Project for Eligible Municipalities	11 - 6
11.5.3	Total Available IRA for GOP-Assisted Level I Water Supply and Sanitation Project	11 - 6
11.5.4	FIRR for Level I Rural Water Supply	11 - 7
11.6.1	Investment Program of GOP-Assisted Level I Water Supply and Sanitation Project	11 - 8
11.6.2	O&M Cost for Level I Facilities	11 - 9
11.6.3	O&M Cost per IIIH/Month by Facility and Proportion to Monthly Family Income	11 - 9
11.6.4	Family Income	11 - 9
11.6.5	O&M Cost for Rural Sanitation	11 - 9
11.6.6	O&M Cost for Urban Sanitation	11 - 9
12.4.1	Draft Formats for Annual Sector Performance Summary Report (Provincial and Municipal Levels)	12 - 1



**PROVINCIAL WATER SUPPLY, SEWERAGE AND  
SANITATION SECTOR PLAN**

**LIST OF FIGURES**

<b>Figure No.</b>	<b>Title</b>	<b>Page No.</b>
1.3.1	Organization Chart for the Study Implementation	1 - 6
3.4.1	Distribution of Urban and Rural Areas	3 - 3
4.2.1	Standard Structure of Private Toilet Facility	4 - 49
4.2.2	Standard Structure of School Toilet Facility	4 - 50
5.5.1	Organization Chart, Provincial Planning & Development Office of Agusan del Sur	5 - 1
5.5.2	Organization Chart, Provincial Engineering Office of Agusan del Sur	5 - 2
5.5.3	Organization Chart, Provincial Health Office of Agusan del Sur	5 - 3
7.3.1	Work Flow of Groundwater Availability Map	7 - 2
7.3.2	Groundwater Potential Area	7 - 3
7.3.3	Potential Area of High Yielding	7 - 5
7.3.4	Area Category by Groundwater Utilization	7 - 4
7.5.1	Gauging Station & River Water Use by Major River Basins	7 - 10
7.5.2	River Flow Duration Curve	7 - 11
8.4.1	Typical Structure of Level I Well Facility	8 - 23
8.4.2	Staged Improvement in Sewage Collection Method	8 - 24
9.4.1	Project Implementation Arrangement amd Procedure (for Water Supply Component)	9 - 3
9.4.2	Project Implementation Arrangement amd Procedure (for Sanitation Component)	9 - 4

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**BACKGROUND INFORMATION  
AND EXISTING CONDITIONS**

**A**

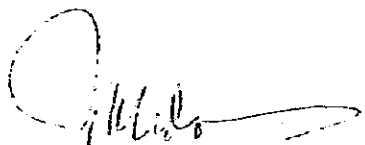


- 1. INTRODUCTION
- 1.3 The Provincial Plan for the Province of Surigao del Norte
- 1.3.1 Preparation of the Plan

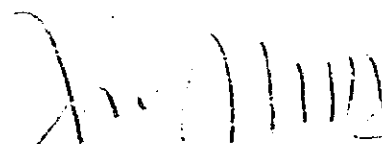
**MINUTES OF DISCUSSIONS**  
**ON**  
**THE INCEPTION REPORT**  
**FOR**  
**THE STUDY ON PROVINCIAL WATER SUPPLY, SEWERAGE AND**  
**SANITATION SECTOR PLANS**  
**FOR**  
**VISAYAS AND MINDANAO**  
**IN**  
**THE REPUBLIC OF THE PHILIPPINES**

**AGREED UPON BETWEEN**  
**THE DEPARTMENT OF THE INTERIOR AND**  
**LOCAL GOVERNMENT**  
**AND**  
**THE STUDY TEAM OF**  
**JAPAN INTERNATIONAL COOPERATION AGENCY**

MANILA, JANUARY 26, 1998



**MR. NORMANDO J. TOLEDO**  
Director  
Office of the Project Development  
Services  
Dept. of the Interior and Local Government



**MR. MASATOSHI MOMOSE**  
Team Leader, Study Team  
Japan International Cooperation  
Agency

Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, dispatched the Study Team to the Republic of the Philippines on January 13, 1998 to conduct "The Study on Provincial Water Supply, Sewerage and Sanitation Sector Plans for Visayas and Mindanao" (hereinafter referred to as "the Study") in accordance with the Implementing Arrangement for the Study executed between the JICA and the Department of the Interior and Local Government (hereinafter referred to as "DILG") on August 27, 1997.

A series of discussions were made on the Inception Report for the Study between the Study Team and the officials of DILG and other agencies concerned. In the course of the discussions, both parties have agreed with the general approach and methodology, and implementation arrangements detailed in the Inception Report. Also agreed upon were the changes made as to which provinces are to be covered in 1<sup>st</sup> batch and 2<sup>nd</sup> batch (refer to 1. Study Area). The list of attendees in the series of discussions is presented in Appendix A.

### 1. Study Area

The subject twenty-one (21) provinces were grouped into four batches in the "Implementing Arrangement on the Study". However, a delay in the organization of the Provincial Sector Planning Team (PSPT) in the 1<sup>st</sup> batch provinces of Misamis Oriental and Surigao del Sur prompted their transfer to the 2<sup>nd</sup> batch. Instead, Davao del Sur and Davao Oriental from the 2<sup>nd</sup> batch whose PSPTs were already formed were moved up in their place. In this connection, the DILG completed to exchange MOA with the provinces on the participation and full support by the provinces.

The present study area covers the following 21 provinces grouped into four batches.

1 <sup>st</sup> BATCH	2 <sup>nd</sup> BATCH	3 <sup>rd</sup> BATCH	4 <sup>th</sup> BATCH
1. Agusan del Norte	1. Davao	1. Biliran	1. Aklan
2. Agusan del Sur	2. Misamis Oriental	2. Eastern Samar	2. Antique
3. Davao del Sur	3. Sarangani	3. Leyte	3. Capiz
4. Davao Oriental	4. South Cotabato	4. Northern Samar	4. Iloilo
5. Surigao del Norte	5. Surigao del Sur	5. Southern Leyte	5. Negros
		6. Western Samar	Occidental

With regard to Davao province, the separation into two provinces is currently under legislative process. Upon the formalization of an additional province, the total number of the provinces in the study area would be 22. The DILG has requested that the forthcoming province be included in the study area. The JICA Study Team will relay the request to JICA headquarters for consideration. The DILG is expected to complete the execution of the MOAs of the 2<sup>nd</sup> batch provinces by early July to catch up with the planned schedule. The required arrangements in terms of subject provinces and study period will be discussed between the DILG and JICA.

## 2. General Approach and Methodology to the Study

The PW4SPs will be prepared with the full participation of the respective PSPTs together with DILG coordinators and the Study team in accordance with the approach and methodology outlined in the Inception Report. The following topics were confirmed during the discussions:

### (1) Planning framework for future sector development

- a) Planning base year is 1997 for 1<sup>st</sup> and 2<sup>nd</sup> batches and 1998 for 3<sup>rd</sup> and 4<sup>th</sup> batches. Medium-term and long-term target years are 2005 (implementation program: year 2001 to year 2005) and 2010, respectively.
- b) Plan will be prepared in compliance with "Implementing Rules and Regulations of NEDA Board Resolution No. 4".

### (2) Standard provision of school toilets

Discussions and confirmation on the provision of school toilets will be arranged with DECS.

### (3) Options on the sludge removal from septic tank and its disposal will be shown in the plan.

### (4) Model province for 1<sup>st</sup> batch is Agusan del Sur.

## 3. Sector Information Collection

The DILG and the JICA Study Team will continuously collect information on the projects/programs assisted by various financial sources. The information will be reflected in the plans.

## 4. Implementation Set-Up for the Study

In accordance with the Implementing Arrangements between the DILG and the JICA, the DILG shall:

- (1) Secure the safety of the JICA Study Team;
- (2) Assign DILG counterpart staff members who will coordinate and assist PSPTs at the provincial level;
- (3) Set-up PSPTs by respective provincial governments in the study area and secure budget to carry out the Study;
- (4) Through PSPT in each study area province; facilitate and coordinate in data gathering with municipal government and other agencies concerned, and participate in workshops and preparation of PW4SP;

- (5) Facilitate coordination with concerned agencies like DPWH, DOH, NEDA, LWUA and with appropriate bodies.

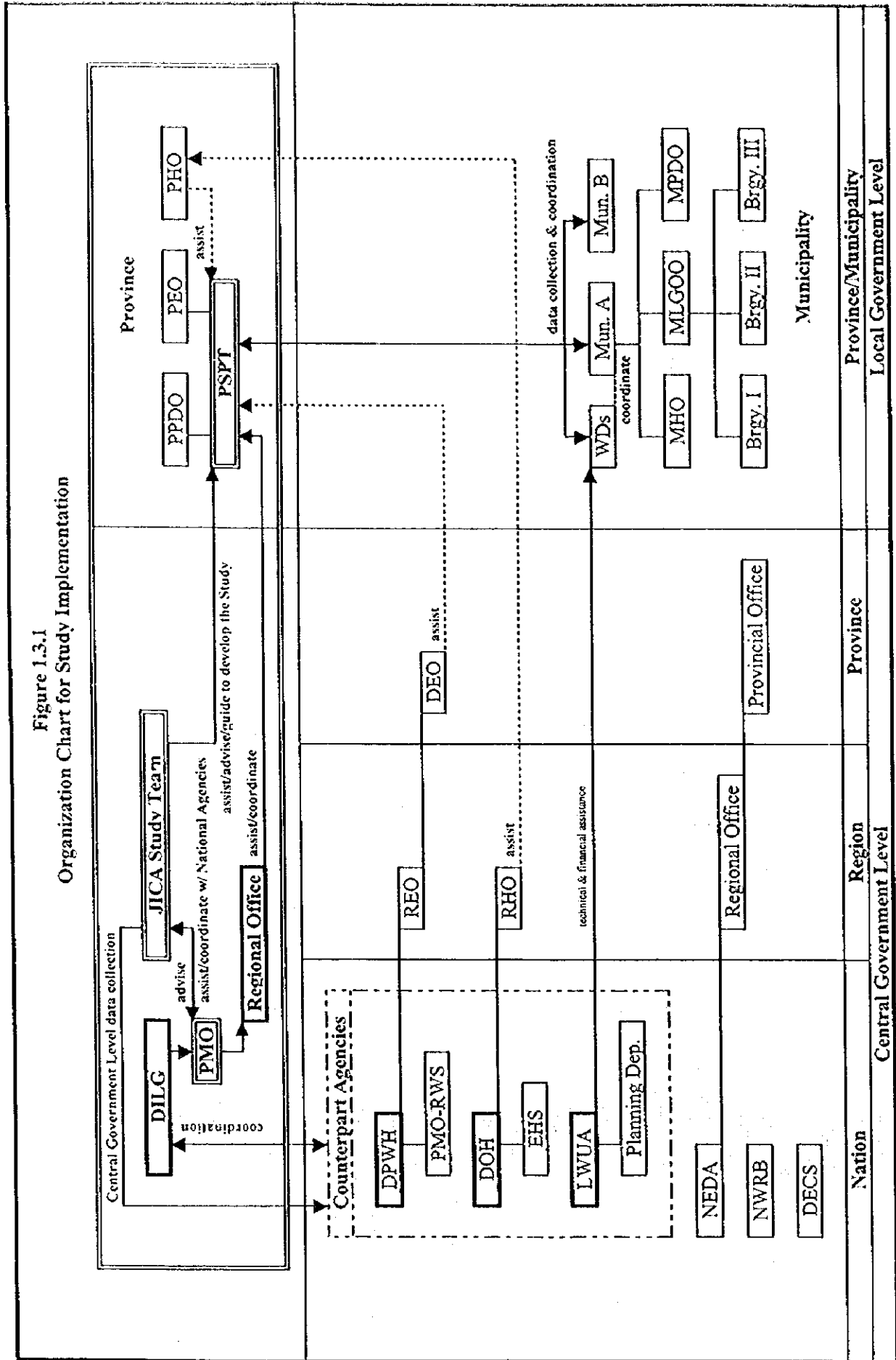
The JICA Study Team shall:

- (1) Pursue technology transfer to the Philippine counterpart personnel in the course of the Study and;
- (2) Assist PSPTs in the preparation of the PW4SP.

**LIST OF ATTENDEES IN THE SERIES OF DISCUSSIONS**

<u>ATTENDEES</u>	<u>DESIGNATION</u>
<b>A. DILG</b>	
1. Mr. Normando J. Toledo	Director, Office of Project Development Services
2. Mr. Orville M. Roque	Program Manager, WSS-PMO
3. Ms. Ellen I. Pascua	Asst. Program Manager, WSS-PMO
4. Mr. Rogelio B. Ocampo	Chief, Planning Division, WSS-PMO
5. Ms. Fe Crisilla M. Banluta	PW4SP Project Officer, WSS-PMO
<b>B. Other Agencies</b>	
1. Mr. Sam Siao	Officer, PMO-RWS, DPWH
2. Dr. Mario Villaverde	Director, EHS, DOH
<b>C. JICA Advisory Committee</b>	
1. Ms. Keiko Yamamoto	Chairman, Advisory Committee
2. Mr. Keiichi Kanaya	Member, Advisory Committee
<b>D. JICA Headquarters</b>	
1. Mr. Shigeyuki Matsumoto	Second Development Study Division, Social Development Study Dept.
<b>E. JICA Study Team</b>	
1. Mr. Masatoshi Momose	Team Leader/Water Supply Planning
2. Mr. Nobuki Abe	Water Supply/Sanitation Engineer
3. Ms. Consuelo B. Estepa	Community Dev't/WID Specialist
4. Ms. Elizabeth L. Verzola	Socio-Economic/Financial Specialist
5. Mr. Kenji Takayanagi	Water Source Development Specialist
6. Mr. Emmanuel L. Patingo	Data Management Specialist

Figure 1.3.1  
Organization Chart for Study Implementation

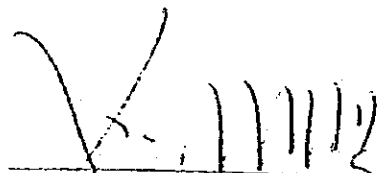


MINUTES OF DISCUSSIONS  
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VISAYAS AND MINDANAO  
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THE REPUBLIC OF THE PHILIPPINES  
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THE DEPARTMENT OF THE INTERIOR AND  
LOCAL GOVERNMENT  
AND  
THE STUDY TEAM OF  
JAPAN INTERNATIONAL COOPERATION AGENCY

MANILA, MARCH 18, 1998



MR. NORMANDO J. TOLEDO  
Director  
Office of the Project Development  
Service  
Dept. of the Interior and Local Government



MR. MASATOSHI MOMOSE  
Team Leader, Study Team  
Japan International Cooperation  
Agency

The Stage I fieldwork for "the Study on Provincial Water Supply, Sewerage and Sanitation Sector Plan" started on January 13, 1998 and completed on March 23, 1998.

A series of discussions were held throughout the course of the Study, between JICA Study Team and officials concerned including DILG, NEDA, DOH, DPWH and other central government agencies and provinces. The general approach and methodologies, as presented in the Inception Report, have been employed for the fieldwork.

A Progress Report, which covers all outputs during the work period, was prepared entailing part of PW4SP for the respective provinces. The contents of the report were basically agreed upon on March 18, 1998 between JICA Study Team and officials of the DILG. The list of attendees to the meeting is presented in Appendix A. The following issues/problems on the arrangements required for the implementation of the Study were discussed, and the Study Team will relay the modified arrangements required to JICA headquarters.

(1) Modified Arrangements Required for 1<sup>st</sup> batch Study

1) Due to the presidential election scheduled on May 11, 1998, the second workshop may be held from May 18 to May 22, 1998 after the election, and tentatively starting the 2<sup>nd</sup> field work on May 13, 1998.

2) The venue for the final workshop was requested by concerned PPDCs to be held in Mindanao rather than in Manila as originally planned. This is because of the financial constraint on the travel expenses required for 7 members of respective PSPTs under the current GOP instruction to LGUs to reduce its planned annual expenditures of up to 25%.

(2) Provinces to be Covered by the 2<sup>nd</sup> Batch

The total number of provinces for the 2<sup>nd</sup> batch (5 provinces) will be kept as previously agreed between the two parties. However, Surigao del Sur will be omitted from the Study, since timely establishment of the PSPT by the province seems to be difficult. Instead of the said province, either the newly created Compostela Valley or Bukidnon (Region X) would be included.

The DILG will inform the Study Team of the possibility in the setting up of PSPT by the administration of Compostela Valley by the middle of June 1998. If not, DILG will make an advanced arrangement with Bukidnon.

(3) Electric Resistivity Prospecting and Test Boring

Comparatively reliable data to evaluate the development potential of water source were collected for 1<sup>st</sup> batch provinces during the fieldwork. It is assumed that the conduct of the field test for groundwater analysis, given a limited period, cannot be able to contribute significantly to the level of accuracy in the preparation of M/P and F/S. The situation will remain the same for 2<sup>nd</sup> batch provinces. Accordingly, it is not recommended to conduct field test for this study.



The required areas and the scope of work/surveys, such as field tests, will be recommended in the PW4SP and will be considered during detailed design and construction stages.

(4) Time Constraint in Data Collection/Validation/Follow-up

It was found, both by the Study Team and the DILG through the fieldwork, the following problems on data collection/validation/follow-up:

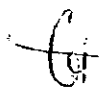
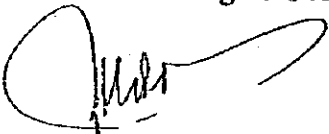
- 1) The summary reports on the sector status prepared by NEDA Regional Office through UNICEF fund were field confirmed as the materials to provide approximate sector situations in the fact of no existence of sector related information at present.
- 2) Data collection by PSPTs had sometimes to be done at the barangay level, due to limited data available in the municipal level. Thus, additional time was required for PSPTs to access to remote rural barangays.
- 3) Comprehensive planning work by the province in Mindanao area is still initial stage. It is necessary for the activities to ensure much more time through intensive technology transfer to DILG coordinators and PSPTs.

Based on the lessons learned, the Study Team and the DILG recognized the need of the review on the allotted period for the activities. The Study Team will relay this matter to JICA headquarters.

(5) Cities to be Covered in the Preparation of PW4SP

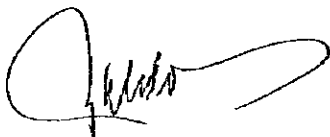
Of the three classes of cities in the Local Government Code, only component cities, which are under the jurisdiction of the provincial government will be considered. The subject cities are as follows:

<u>Province</u>	<u>Component City</u>
Surigao del Norte	Surigao City
Davao	Tagum City and Island Garden City
Leyte	Tacloban City
Western Samar	Calbayog City
Capiz	Roxas City
Iloilo	Passi City
Negros Occidental	Bago City, Cadiz City, La Carlota City, San Carlos City and Silay City



**LIST OF ATTENDEES IN THE SERIES OF DISCUSSION**

<b><u>ATTENDEES</u></b>	<b><u>DESIGNATION</u></b>
<b>A. DILG</b>	
1. Mr. Orville M. Roque	Program Manager, WSS-PMO
2. Ms. Ellen I. Pascua	Asst. Program Manager, WSS-PMO
3. Mr. Rogelio B. Ocampo	Chief, Planning Division, WSS-PMO
4. Ms. Fe Crisilla M. Banluta	PW4SP Project Officer, WSS-PMO
5. Ms. Charito Araza	Area Coordinator, WSS-PMO
6. Ms. Maria Contessa Navarro	Area Coordinator, WSS-PMO
7. Ms. Josephine Ramos	Area Coordinator, WSS-PMO
8. Ms. Susan Mangoda	Area Coordinator, WSS-PMO
9. Ms. Crisanta Rapirap	Area Coordinator, WSS-PMO
<b>B. JICA Study Team</b>	
1. Mr. Masatoshi Momose	Team Leader/Water Supply Planning
2. Mr. Nobuki Abe	Water Supply/Sanitation Engineer
3. Mr. Kenji Takayanagi	Water Source Development Specialist
4. Ms. Consuelo B. Estepa	Community Dev't./WID Specialist
5. Ms. Elizabeth L. Verzola	Socio-economic/Financial Specialist



2. PLANNING APPROACH FOR FUTURE SECTOR DEVELOPMENT  
2.6 Planning Principles and Data Management  
2.6.2 Data Management

(1) Computer-based System

The data management system was established to support the Provincial Sector Planning Team (PSPT) in the preparation of the Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP). An essential task of data management is to organize various kind of data into an effective and efficient information base.

A computer-based system was applied as a viable solution to process large amount of data and to minimize the human-error in calculation. For this particular project, a dynamic system is designed to allow the planner to adjust planning factors and update the information when further data becomes available.

It is viable and economical to choose the microcomputer with software suitable for the average skills of the common user. In this connection, of the two types of software package available, *database* and *spreadsheet*, the latter method was selected. Among the available spreadsheet-type software, EXCEL was used. EXCEL supports file conversion (opening and saving), multiple file opening, graphic presentation of data, What-You-See-Is-What-You-Get (WYSIWYG) formatting, scaleable font and view, etc. The following are the advantages and disadvantages of the spreadsheet method with reference to database method.

<u>Advantage</u>	<u>Disadvantage</u>
1. Minimum programming skills	1. Repeated entry of same formula
2. Friendly environment to users	2. Sorting or indexing is done manually
3. Graphic presentation of data at user's option	3. All data are loaded in memory, which require huge amount of memory
4. Execution of data linkage at formula level entry	4. Limited to static data linkages
5. Guided formula creation using function wizard	

Data management task starts from the collection of data using the questionnaire forms. The existence and accuracy of data are major concern at this stage to prepare main information bases. Using the microcomputer provided with EXCEL spreadsheet, data in the questionnaire forms are transferred into the forms constructed in EXCEL. Applicable policy, criteria and assumptions are entered into key parameter tables. These data are then processed and finally consolidated into target forms. These final forms provide a map of provincial profile, service coverage, future requirements, cost estimates for future sector development, and funding requirements.

Table 2.6.1 Key Parameter

No.	Description of Key Parameter		Unit	Values
1.	Service Level	<i>Water Supply</i>		
		Number of household to be served by Level I Facility	HH/Source	
		Number of household to be served by Level II System	HH/Public Faucet	
		Water Consumption Rate for Level III System	Liter/capita/day	
2.	Provincial Sector Target	<i>Sanitation</i>		
		Std. number of student to be served by a unit of Sanitary toilet	Student/Toilet	
		Standard number of toilets for a public utility	Toilet/Public Facility	
2.	Provincial Sector Target	Medium Term Plan	<i>Water Supply</i>	
			Urban Water Supply	% of Population
			Rural Water Supply	% of Population
		Long Term Plan	<i>Sanitation</i>	
			Household Toilet	
			Urban Household Toilet	% of Household
			Flush	% of Household
			Pour Flush	% of Household
			VIP Latrine	% of Household
			Rural Household Toilet	% of Household
			Flush	% of Household
			Pour Flush	% of Household
			VIP Latrine	% of Household
			School Toilet	% of Public Student
			Public Toilet	% of Public Utility
			Solid Waste	% of Population
3.	Percentage of Level I Deep Wells to be Rehabilitated			%
4.	Percentage of Sector Management Cost to Construction Cost			
	Feasibility and Detail Design			% of Construction Cost
	Construction Supervision			% of Construction Cost
5.	Community Development and Training Cost			
	Level III			% of Construction Cost
	Level I, II and Public Toilet			% of Construction Cost
6.	Recurrent Cost	Level III System (Operating Cost)		Pesos/HH/year
		Level III System (Spare Parts/Equipment)		% of Construction Cost
		Level II System (Spare Parts/Equipment)		Pesos/HH/year
		Level I System (Spare Parts/Equipment)		Pesos/HH/year
		Public School Toilet Maintenance Cost		Pesos/Toilet/year
		Public Utility Toilet Maintenance Cost		Pesos/Toilet/year
7.	Allocation factors/Percentages of IRA			
	From Provincial			%
	From Municipality and Brgy.			%
8.	Funding Levels/Percentages for Different Financing Scenarios			
	1st Scenario			% Funding Available
	2nd Scenario			% Funding Available
	3rd Scenario			% Funding Available
	4th Scenario			% Funding Available
	5th Scenario			% Funding Available

Table 2.6.2 Composition of Well Sources and Specific Capacity

Name of Municipality	Type	Type Water Source	Proportion (%)	Standard Specification		
				Depth (m)	SWL (m)	Specific Capacity (liter/sec/m)
	Urban	Shallow Well				
		Deep Well				
		Spring				
	Rural	Shallow Well				
		Deep Well				
		Spring				
	Urban	Shallow Well				
		Deep Well				
		Spring				
	Rural	Shallow Well				
		Deep Well				
		Spring				
	Urban	Shallow Well				
		Deep Well				
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		Deep Well				
		Spring				
	Urban	Shallow Well				
		Deep Well				
		Spring				
	Rural	Shallow Well				
		Deep Well				
		Spring				
	Urban	Shallow Well				
		Deep Well				
		Spring				
	Rural	Shallow Well				
		Deep Well				
		Spring				

**Table 2.6.3 Annual Investment**

Sub-Sector	Component	1999	2000	2001	2002	2003	Total
Urban Water Supply	<b>Level III System</b>						
	Feasibility Study and Detail Design						
	Construction & Supervision Community Development & Training						
Rural Water Supply	<b>Level I Facility</b>						
	Detail Design						
	Construction & Supervision						
	Community Development & Training						
	<b>Level II System</b>						
	Detail Design Construction & Supervision Community Development & Training						
Sanitation	Urban Household Toilet						
	Rural Household Toilet						
	Public School Toilet						
	Public Toilet						
	Disinfection of Level I Wells						
	Detail Design						
	Construction & Supervision Community Development & Training						

**Table 2.6.4 Level I Safe & Unsafe Percentage**

Name of Municipality	Safe (%)	Unsafe (%)
<b>Provincial Total</b>		

Table 2.6.5 Unit Construction Cost of Different Facilities

Description	Unit Construction Cost (Pesos)	Service Coverage		Unit Cost	
		Served Population	Served Household	Pesos/ Person	Pesos/ Household
Water Supply					
<i>Level III - New System</i>					
For 5000 Population					
For 10000 Population					
For 15000 Population					
<i>Level III - Expansion</i>					
For 5000 Population					
For 10000 Population					
For 15000 Population					
<i>Level II</i>					
<i>Level I</i>					
Deep Well - 40 meter depth					
Deep Well - 80 meter depth					
Deep Well - 120 meter depth					
Shallow Well - 18 meter depth					
Spring Development					
<i>Rehabilitation Cost for Level I Deep Well</i>					
<i>Disinfection of Level I Wells</i>					
Sanitation					
Flush					
Pour Flush					
VIP / Dry					
School Toilet					
Public Toilet					
Urban Sewerage					

Table 2.6.6 Scoring Factor for Municipal Investment Ranking for Urban Water Supply

Score	Underserved and Underserved Population in Base Year	Underserved and Underserved Population in Phase I	Population Underserved by Level III Systems in Base Year
1.0	< %	< %	< %
0.8	< % < 40	< % < 40	< % < 40
0.6	< % < 30	< % < 30	< % < 30
0.4	< % < 20	< % < 20	< % < 20
0.2	% < 10	% < 10	% < 10
Weight Allocation Score (%)			

Table 2.6.7 Scoring Factor for Municipal Comprehensive Investment Ranking

Score	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation
1.0	N.A.	< %	< %	< %
0.8	N.A.	< % < 40	< % < 40	< % < 40
0.6	N.A.	< % < 30	< % < 30	< % < 30
0.4	N.A.	< % < 20	< % < 20	< % < 20
0.2	N.A.	% < 10	% < 10	% < 10
Weight Allocation Score (%)				



### 3. PROVINCIAL PROFILE

#### 3.3 Socio-economic Conditions

##### 3.3.1 Economic Activities and Families Income

Table 3.3.1 Distribution of Families by Income Class

S

Income Class	Surigao del Norte				CARAGA Region	
	Total Families		Annual Income		Total Number of Families	Annual Income Average (Pesos)
	Number	Share	Total (P '000,00)	Average (Pesos)		
Under 20,000	15,190	15	251,503	16,557	47,687	17,398
20,000 - 29,999	28,661	29	814,813	28,429	90,476	28,430
30,000 - 39,999	14,840	15	540,206	36,401	64,408	38,042
40,000 - 59,999	21,504	22	1,142,129	53,112	81,931	54,243
60,000 - 99,999	15,584	16	1,519,175	97,485	54,889	88,626
100,000 - 249,999	2,401	2	401,169	167,084	20,684	146,067
250,000 and over		0			2,246	451,654

Source : 1994 Family Income and Expenditure Survey, NSO

Notes:

- (1) Derived from Region X 1994 Files
- (2) Based on NEDA and other agencies , poverty threshold in Region XI in 1994 was estimated at P 43,659 (P 7,938 annual per capita poverty threshold).
- (3) For purposes of the survey, a family is defined as a group of persons usually living together and composed of the head and other persons related by blood, marriage and adoption. A single person living alone is considered as a separate family. A household is composed of 1 or more families in the same housing unit and have a common arrangement of food preparation and consumption.

Table 3.3.2 Employment by Major Industry Group and Class of Worker, 1994

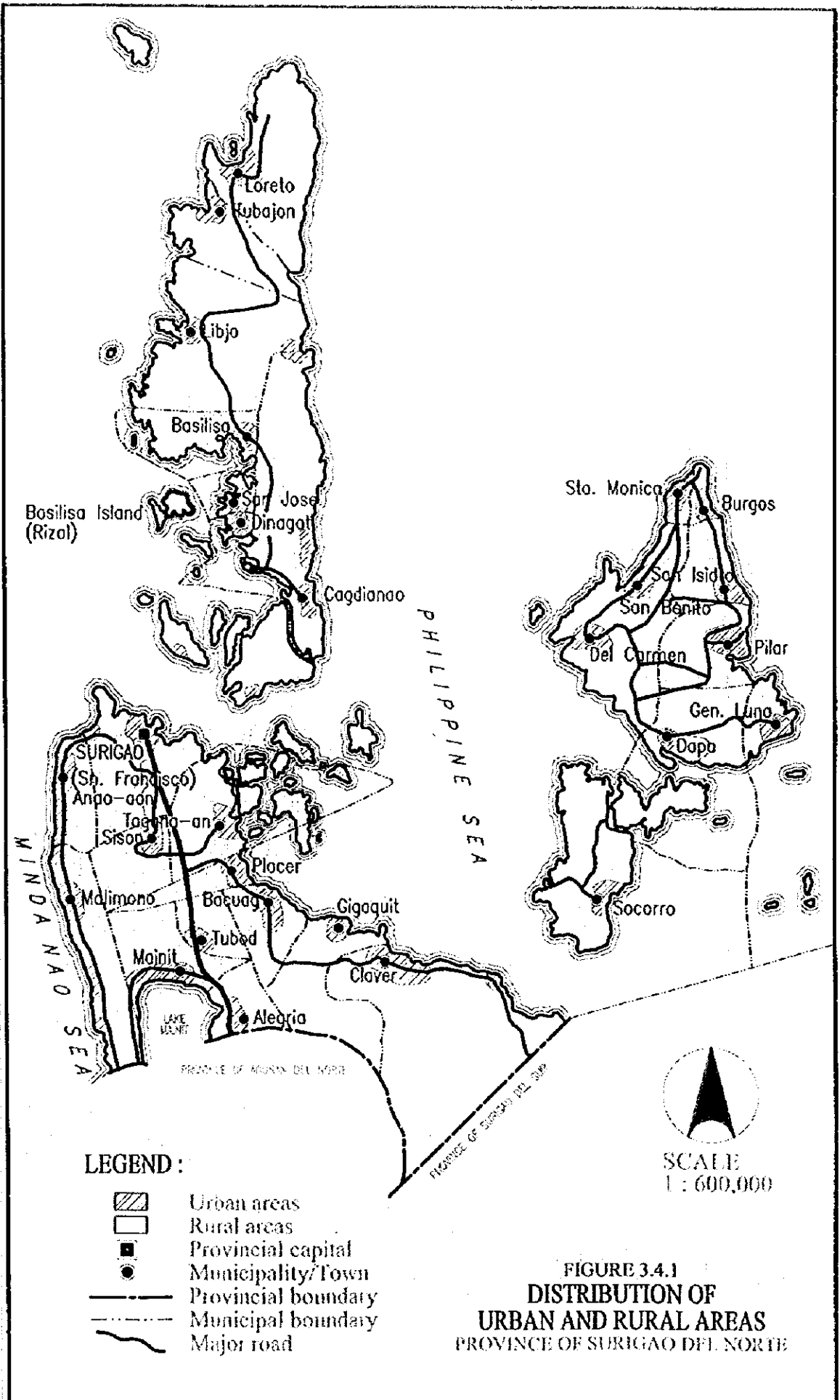
Major Industry Group	Household Population 15 years and Over Who Worked	Class of Worker							Not Reported
		Worked for Private Household (Domestic Services)	Worked for Private Business/ Enterprise/ Farm	Worked for Government/ Government Corporation	Self-employed Without Any Paid Employee	Employer In Own Farm or Business	Work With Pay in Own Family Operated Farm or Business	Work Without Pay in Own Family Operated Farm or Business	
Agriculture, Hunting and Forestry	70,561	416	5,158	169	27,342	12,943	240	23,497	790
Fishing	18,660	63	1,536	37	13,140	2,006	15	1,694	168
Mining and Quarrying	2,165	12	1,699	8	334	28	0	74	10
Manufacturing	3,237	75	1,367	33	1,273	236	3	206	44
Electricity, Gas and Water	486	15	367	49	37	8	0	4	6
Construction	5,363	264	4,121	191	635	75	2	37	38
Trade	12,154	58	1,386	26	6,692	1,826	17	2,078	74
Services	34,503	5,238	8,902	14,126	4,675	700	21	625	217
Not Stated	1,196	32	194	64	176	20	0	50	660
Provincial Total	148,325	6,173	24,730	14,703	54,304	17,847	298	28,265	2,007

3.3.3 Education

Table 3.3.3 Household Population by Highest Education Attainment

Highest Educational Attainment	Household Population 5 years Old and Over	Age Group				
		Below 20	20 - 24	25 - 29	30 - 34	35 and Over
No Grade Completed	22,888	16,520	503	435	596	4,834
Pre-school	14,775	14,312	52	35	27	349
Elementary						
1st - 4th Grade	98,731	59,633	3,999	3,594	3,238	28,267
5th - 7th Grade	98,661	28,819	8,199	8,623	8,435	44,585
High School						
Undergraduate	61,619	29,576	7,567	5,922	4,751	28,267
Graduate	32,986	28,819	8,199	8,623	8,435	44,585
Post Secondary						
Undergraduate	521	80	112	92	85	152
Graduate	3,525	124	748	836	610	1,207
College Undergraduate	21,703	5,000	6,014	2,930	2,448	5,311
Academic Degree Holder	20,031	115	2,770	3,646	3,501	9,999
Post-Baccalaureate	538	1	20	41	54	422
Not Stated	5,848	4,232	303	211	169	933
<b>Total</b>	<b>381,826</b>	<b>187,231</b>	<b>38,486</b>	<b>34,988</b>	<b>32,349</b>	<b>168,911</b>

3.4 Population  
 3.4.2 Classification of Urban and Rural Areas



DSK NAME : SURIGAO DEL NORTE (D.S.K.)  
 FILENAME : SURIGAO-DEL-NORTE (distribution)

### 3.5 Health Status

**Table 3.5.1 Number and Ratio of Population to Health Facilities And Medical Practitioners**

Health Facilities and Practitioners	Surigao del Norte		Philippines	
	Number	Ratio	Number	Ratio
<b>Health Facilities</b>				
Hospital	17	1/26,825	1,700	1/40,206
Rural Health Units	72	1/6,334	2,335	1/29,272
Barangay Health Station	129	1/3,535	11,646	1/5,869
<b>Practitioners</b>				
Doctors	24	1/19,001	2,029	1/33,686
Nurses	36	1/12,667	2,694	1/25,371
Midwives	149	1/3,061	10,898	1/6,272
Dentists	10	1/45,602	1,071	1/63,818
Others Medical Practitioner	51	1/8,942		

(1) Include only government health practitioners for the national (Philippines) total. No data is available for private practitioners.  
Source: Socio Economic Profile, 1995 and 1997 Philippine Statistical Yearbook

### 3.6 Environmental Conditions

#### 3.6.2 Water Pollution

**Table 3.6.1 Types of Drainage Facilities**

Type	Length (km)
Drainage Main	18
Open Channel (with Concrete & rubble masonry)	6
Open Ditches & Unlined Laterals	88
Reinforced Concrete Circular Pipes	1
Street Gutters	5
Outfalls to rivers from drainage mains	5

Source: Provincial Health Office

**Table 3.6.2 DENR Water Quality Criteria/Water Usage and Classification for Fresh Water**

PARAMETER	UNIT	CLASS AA	CLASS A	CLASS B	CLASS C	CLASS D
Color	PCU	15	50	(C)	(C)	(C)
Temperature (max. rise in deg. Celsius)	°C rise	--	3	3	3	3
pH (range)		6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0-9.0
Dissolved Oxygen (Minimum)	%satn	70	70	70	60	40
	mg/L	5.0	5.0	5.0	5.0	3.0
5-Day 20°C BOD	mg/L	1	5	5	7(10)	10(15)
Total Suspended Solids	mg/L	25	50			
Total Dissolved Solids	mg/L	500	1,000	--	--	1,000
Surfactants (MBAS)	mg/L	nil	0.2(0.5)	0.3(0.5)	0.5	--
Oil/Grease (Petroleum Ether Extract)	mg/L	nil	1	1	2	5
Nitrate as Nitrogen	mg/L	1	10	NR	10	--
Phosphate as Phosphorous	mg/L	nil	0.1	0.2	0.4	--
Phenolic Substances as Phenols	mg/L	nil	0.002	0.005	0.02	--
Total Coliforms	MPN/100mL	50	1,000	1,000	5,000	--
or Fecal Coliforms	MPN/100mL	20	100	200	--	--
Chloride as Cl	mg/L	250	250	--	350	--
Copper	mg/L	1	1	--	0.05	--

**Notes:**

Class AA - Public Water Supply Class I. Intended for waters having watersheds which are uninhabited and otherwise protected and which required only approved disinfection in order to meet the national standards for drinking water.

Class A - Public Water Supply Class II. Sources of water supply that will require complete treatment (coagulation, sedimentation, filtration and disinfection) in order to meet drinking water standards.

Class B - Recreational Water Class I. For primary contact recreation such as bathing, swimming, skin diving, etc. (particularly for tourism purposes).

Class C - Fishery Water for the propagation and growth of fish and other agnatic resources; recreational (for boating, etc.); industrial water supply class I for manufacturing processes after treatment.

Class D - For agriculture, irrigation, livestock watering, etc.; for industrial water supply class II (cooling, etc.); other inland waters by their quality, belong to this specification.



#### 4. EXISTING FACILITIES AND SERVICE COVERAGE

##### 4.1 Water Supply

##### 4.1.3 Level III Systems

Table 4.1.1 Details on Existing Level III Systems

Name of Municipality/ City	Name of Operating Body	Level III Services								
		Number of Barangays Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Alcgría	Brgy. Ouano	1		1	200		200	1,040		1,040
Bacuag	Bacuag WD	1		1	502		502	2,875		2,875
Burgos	LGS-Burgos	2		2	60		60	321		321
Cagdianao	LGU-Cagdiano		1	1		105	105		544	544
Dapa	Consolacion	1		1	277		277	1,389		1,389
Del Carmen	Del Caruwasá Inc.	2	1	3	13	50	63	65	300	365
Gigaquit	Alambique	1		1	73		73	393		393
	Ipil	1		1	99		99	556		556
	Mahanub		1	1		286	286		1,503	1,503
	Poniente		1	1		209	209		1,597	1,597
	San Antonio	1		1	116		116	702		702
	San Isidro	1		1	154		154	794		794
	<b>Municipal Total</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>442</b>	<b>495</b>	<b>937</b>	<b>2,445</b>	<b>3,100</b>	<b>5,545</b>
Loreto	LGU-Loreto	4		4	765		765	499		499
Mainit	Mun. Government	2	19	21	340	1,020	1,360	1,698	5,297	6,995
Malimono	Government	1		1	145		145	735		735
Placer	Anislagan		1	1		112	112		675	675
	Bugas-bugas		1	1		10	10		60	60
	<b>Municipal Total</b>		<b>2</b>	<b>2</b>		<b>122</b>	<b>122</b>		<b>735</b>	<b>735</b>
San Benito	LGU-San Benito	2		2	72		72	420		420
San Francisco (A)	Balite		1	1		100	100		600	600
	Banbanon		1	1						
	Hubas	1	1	2	250	150	400	1,442	1,034	2,476
	Jubgan	1		1	27		27	161		161
	Magtangale		1	1		180	180		804	804
	Oslao		1	1		140	140		700	700
	<b>Municipal Total</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>277</b>	<b>570</b>	<b>847</b>	<b>1,603</b>	<b>3,138</b>	<b>4,741</b>
San Jose	Brgy. Cuarenta	1		1	70		70	386		386
Santa Monica (S)	García		1	1		15	15		90	90
	LGU-Santa Monica	2		2	270		270	1,459		1,459
	<b>Municipal Total</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>270</b>	<b>15</b>	<b>285</b>	<b>1,459</b>	<b>90</b>	<b>1,549</b>
Sison	LGU-Sison	1	2	3	17	495	512	85	2,475	2,560
	Mabuhay		1	1		208	208		1,040	1,040
	<b>Municipal Total</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>17</b>	<b>703</b>	<b>720</b>	<b>85</b>	<b>3,515</b>	<b>3,600</b>
Surigao City (Ca)	Surigao Metro WD	4	5	9	9,036	100	9,136	45,180	500	45,680
Tubod	LGU-Brgys		2	2		520	520		2,194	2,194
	Marga		1	1		200	200		1,099	1,099
	Poblacion	1	2	3	293	200	493	1,526	1,009	2,535
	Timamana		1	1		250	250		1,485	1,485
	<b>Municipal Total</b>	<b>1</b>	<b>6</b>	<b>7</b>	<b>293</b>	<b>1,170</b>	<b>1,463</b>	<b>1,526</b>	<b>5,787</b>	<b>7,313</b>
<b>Provincial Total</b>		<b>31</b>	<b>45</b>	<b>76</b>	<b>12,779</b>	<b>4,350</b>	<b>17,129</b>	<b>61,726</b>	<b>23,006</b>	<b>84,732</b>

Table 4.1.1 Details on Existing Level III Systems

Name of Municipality	Name of Operating Body	Level II Service								
		Number of Public Faucets			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Alegria	Brgy. Ouano	30		30	300		300	1,500		1,500
Bacuag	Bacuag WD									
Burgos	LGS-Burgos	15		15	145		145	688		688
Cagdianao	LGU-Cagdianao		3	3		193	193		1,236	1,236
Dapa	Consolacion									
Del Carmen	Del Caruwas Inc.		12	12		167	167		1,000	1,000
Gigaquit	Alambique									
	Ipil									
	Mahanub									
	Poniente									
	San Antonio									
	San Isidro									
	<b>Municipal Total</b>									
Loreto	LGU-Loreto				714		714	3,773		3,773
Mainit	Mun.Government	100	30	130	650	200	850	3,373	1,179	4,552
Malimono	Government	4		4	24		24	120		120
Placer	Anislagan		10	10		13	13		75	75
	Bugas-bugas		3	3		68	68		326	326
	<b>Municipal Total</b>		13	13		81	81		401	401
San Benito	LGU-San Benito	40		40	148		148	800		800
San Francisco (Anao-Aao)	Balite					10	10		60	60
	Banbanon									
	Hubas									
	Jubgan	20		20	41		41	200		200
	Magtangale		10	10		100	100		487	487
	Oslao		5	5		20	20		127	127
	<b>Municipal Total</b>	20	15	35	41	130	171	200	674	874
San Jose	Brgy. Cuarenta									
Santa Monica (Sapao)	Garcia		7	7		40	40		231	231
	LGU-Santa Monica	23		23	88		88	356		356
	<b>Municipal Total</b>	23	7	30	88	40	128	356	231	587
Sison	LGU-Sison		25	25		140	140		700	700
	Mabuhay									
	<b>Municipal Total</b>		25	25		140	140		700	700
Surigao City (Capital)	Surigao Metro WD									
Tubod	LGU-Brigys									
	Marga		2	2		32	32		100	100
	Poblacion		16	16		238	238		1,221	1,221
	Timamana		3	3		42	42		214	214
	<b>Municipal Total</b>		21	21		312	312		1,535	1,535
<b>Provincial Total</b>		232	126	358	2,110	1,263	3,373	10,810	6,956	17,766



Table 4.1.1 Details on Existing Level III Systems

Name of Municipality	Name of Operating Body	Water Sources			Consumption			
		Type of Water Source <sup>1</sup>	Number	Production Capacity (cu.m/day)	Domestic	Institutional	Commercial	Industrial
					(cu.m/day)			
Alegria	Brgy. Ouano	SP	1	2,400				
Bacuag	Bacuag WD	SP	1	1,728	1,000	10	30	
Burgos	LGS-Burgos	SP	3					
Cagdianao	LGU-Cagdianao	SP	1	2,400				
Dapa	Consolacion	SP	1	2,400				
Del Carmen	Del Caruasa Inc.	SP/Surf	2					
Gigaquit	Alambique	DgW	1					
	Ipil	DgW	1					
	Mahanub	SP	1					
	Poniente	SP	1					
	San Antonio	SP	1					
	San Isidro	DgW	1					
<b>Municipal Total</b>			6					
Loreto	LGU-Loreto	SP	1	720				
Mainit	Mun. Government				158			
Malimono	Government		2	190				
Placer	Anislagan	SP	1	240				
	Bugas-bugas	SP	1	96				
<b>Municipal Total</b>								
San Benito	LGU-San Benito		1	190				
San Francisco (Anao-Aon)	Balite	SP	1	240	192	5		
	Banbanon				25	5		
	Hubas				330	20		
	Jubgan	SP	1	480	24	5		
	Magtangale	SP	1	240	240	5		
	Oslao	SP	1	120	96	12	12	
<b>Municipal Total</b>			4	1,080	907	52	12	
San Jose	Brgy. Cuarenta	SP						
Santa Monica (Sapao)	Garcia	SP						
	LGU-Santa Monica	SP	3	9				
<b>Municipal Total</b>								
Sison	LGU-Sison	SP	1	7,680	135	1	1	
	Mabuhay	SP	3	7,920				
<b>Municipal Total</b>			4	15,600	135	1	1	
Surigao City (Capital)	Surigao Metro	DW/Surf	4	10,714	5,313	77	440	
Tubod	LGU-Brgys	SP	1	364				
	Marga	SP						
	Poblacion	SP						
	Timamana	SP						
<b>Municipal Total</b>								
<b>Provincial Total</b>			37	38,131	7,513	140	483	

Note: 1. Type of Water Source: DW - Deep Well, DgW - Dug Well, Surf. - Surface Water (River), SP - Spring, IG - Infiltration Gallery.

Table 4.1.1 Details on Existing Level III Systems

Municipality	Name of System (Operating Body)	Consumers														
		Domestic House Connections			Domestic Public Faucet			Institutional Consumers			Commercial Consumers			Industrial Consumers		
		Connection		Consumption	Connection		Consumption	Connection		Consumption	Connection		Consumption	Connection		Consumption
		Metered	Unmetered	(cu m/day)	Metered	Unmetered	(cu m/day)	Metered	Unmetered	(cu m/day)	Metered	Unmetered	(cu m/day)	Metered	Unmetered	(cu m/day)
Alegria	Brgy. Quano															
Bacuag	Bacuag WD	463		1,000				10		10	29			30		
Burgos	LGS-Burgos															
Cagdianao	LGU-Cagdianao															
Dapa	Consolacion			396												
Del Carmen	Del Caruwas Inc.			365		35									1	
Gigaquit	Alambique			292												
	Ipil			246												
	Mahanub			286												
	Poniente			309												
	San Antonio			116												
	San Isidro			513												
	Municipal Total			1,762												
Loreto	LGU-Loreto			4,039					35			20				
Mainit	Mun. Government	429	57	158												
Malimono	Government			132		3			5			2				
Placer	Anislagan															
	Bugas-bugas															
	Municipal Total															
San Benito	LGU-San Benito			1		1			1							
San Francisco (Arao-Aon)	Balite			100	192						5					
	Banbanon				20			5		5						
	Hubas				300			30		20						
	Jubgan			201	24					20	5					
	Magtangale			180	240					20	5					
	Oslao			700	96					10	12		15	12		
	Municipal Total			1,181	872			35		50	52		15	12		
San Jose	Brgy. Cuarieta															
Santa Monica (Sapao)	Garcia			15			7									
	LGU-Santa Monica															
	Municipal Total															
Sison	LGU-Sison	450		135		10			4		1	6			1	
	Mabuhay															
	Municipal Total															
Surigao City (Capital)	Surigao Metro WD	6,588		5,313					95		77	546		440		
Tubod	LGU-Brgys															
	Marga															
	Poblacion															
	Timamana															
	Municipal Total															
	Provincial Total	7,930	7,948	7,478		56	35	109	91	140	581	37	483		1	

4.1.4 Level II Facilities

Table 4.1.2 Details on Existing Level II Systems  
Sheet 1 of 6

Name of Municipality	Name of Operating Body	Water Source			Existing Facilities				
		Type	Number	Discharge (m <sup>3</sup> /day)	Length of Transmission Line (meter)	Reservoir		Length of Distribution Line (meter)	Number of Public Faucets
						Number	Volume (m <sup>3</sup> )		
Alegria	Alipao BWSA	SP	1	190.8	800			1,000	6
	Budlignin	SP	1		800		9.0	200	5
	Cp Edward BWSA	SP	1	109.0	500			300	3
	Ferida	SP	1		1,800		9.0	300	10
	Ombong BWSA	SP	1	92.7	2,000			1,000	6
	Pongtud	SP	1		1,500		9.0	500	6
	<b>Municipal Total</b>			<b>6</b>	<b>392.5</b>	<b>7,400</b>	<b>3</b>	<b>27.0</b>	<b>3,300</b>
Bacuag	Cambuayon	SP			300		7.2	400	6
	Campo	SP			427		17.3	1,000	15
	Payapag	SP			1,800		7.5	250	7
	Pungtod	SP			30		22.5	50	6
	Sto. Rosario	SP			1,500		7.2	60	4
	<b>Municipal Total</b>		<b>0</b>	<b>0.0</b>	<b>4,057</b>	<b>5</b>	<b>61.7</b>	<b>1,760</b>	<b>38</b>
	Burgos	Baybay, Burgos	SP			7,500			3,700
Bitaug		SP			1,300			1,300	2
Poblacion 1		SP			1,900		22.5	500	10
Poblacion 2		SP			1,200		9.0	150	8
San Mateo		SP			1,500			500	3
<b>Municipal Total</b>		<b>0</b>	<b>0.0</b>	<b>13,400</b>	<b>2</b>	<b>31.5</b>	<b>6,150</b>	<b>27</b>	
Cagdianao	Cabimton-an BWSA	SP	1	81.8	800			500	4
	Maatas BWSA	SP	1	109.0	1,000			800	6
	San Jose, Cagdianao	SP	1	240.0	800		18.0		3
	Sta. Rita BWSA	SP	1	32.7	1,000			1,000	6
	Sto. Niño BWSA	SP	1	81.8	800			300	4
	<b>Municipal Total</b>		<b>5</b>	<b>545.3</b>	<b>4,400</b>	<b>1</b>	<b>18.0</b>	<b>2,600</b>	<b>23</b>

Table 4.1.2 Details on Existing Level II Systems

Name of Municipality	Name of Operating Body	Water Source			Existing Facilities				
		Type	Number	Discharge (m <sup>3</sup> /day)	Length of Transmission Line (meter)	Reservoir		Length of Distribution Line (meter)	Number of Public Faucets
						Number	Volume (m <sup>3</sup> )		
Claver	Cabugo BWSA	SP	1	130.8	1,200		1,000	10	
	Sapa BWSA	SP	1	32.7	1,000		800	5	
Del Carmen	Municipal Total		2	163.5	2,200	0	1,800	15	
	Del Caruwasa Inc.	SP	1	100.0	8,000	2	3,100	37	
	Bagakay	SP	1	2,400.0	350	1	80.0	25	
	Buнависта, Dapa	SP	1	2,400.0	30		30	9	
	Cabawa	SP	1	2,400.0	900	1	64.0	50	
	Corregidor	SP	1	2,400.0	30	1	125.0	150	
	Jubang	SP	1	2,400.0	800	1	80.0	70	
	San Carlos	SP	1	2,400.0	80		80	14	
	San Miguel	SP	1	1,200.0	3,000	1	45.0	80	
	Municipal Total		7	15,600.0	5,190	5	394.0	485	
Dinagat Libjo (Albor)	LGU-Dinagat	SP	1	287.0	9,000		4,225		
	Albor	SP	1	160.0	1,000	1	27.0	7	
	Arellano BWSA	SP	1	109.0	1,000		1,000	8	
	Bayanihan		1	4,800.0	5,000		400		
	Doña Helen								
	Garcia								
	Gen. Agumaldo	SP	1	3,600.0	6,000		700		
	Kanihaan BWSA	SP	1	81.8	1,000		800	6	
	Llamera BWSA	SP	1	81.8	1,000		800	6	
	Magsaysay, Libjo								
	Osmenta								
	Plandel								
	Quezon BWSA								
Rosita									
San Antonio	SP	1	2,240.0	6,000		700			
San Jose, Libjo	SP			5,000		360			
Sto. Niño	SP	1		3,000		1,200			
Municipal Total		7	11,072.6	29,000	2	27.0	6,960	27	

Table 4.1.2 Details on Existing Level II Systems

Name of Municipality	Name of Operating Body	Water Source			Existing Facilities				
		Type	Number	Discharge (m <sup>3</sup> /day)	Length of Transmission Line (meter)	Reservoir		Length of Distribution Line (meter)	Number of Public Faucets
						Number	Volume (m <sup>3</sup> )		
Loreto	LGU-Loreto	SP	9	480.0	1,000			2,500	36
	Binocaran	SP			2,500			800	5
Malirmono	Bunyasari (Gov)	SP							8
	Bunyasari (Pvt)	SP			1,000			200	
	Cagtinac, Brgy. Proper	SP			2,400			1,850	14
	Can-aga, Brgy. Proper	SP			2,700			1,600	5
	Cansayong	SP			4,000			2,500	32
	Cantapoy, Brgy. Proper	SP			7,000			3,500	16
	Cayawan, Brgy. Proper	SP			3,400			850	17
	Hanagdong, Brgy. Proper	SP			2,000			3,000	20
	Karihatag, Brgy. Proper	SP			3,900			1,550	12
	Masgad, Ad-on	SP			9,500			3,900	30
	Pili, Brgy. Proper	SP			4,500			2,300	14
	Tinago	SP			400				7
	Villariza, Cp. 1-4	SP			2,500			2,100	10
		<b>Municipal Total</b>		0	0.0	45,800	0	0.0	24,150
Pilar	Asin, Centro, Pilaring, Pu	SP	1	960.0	9,400			2,600	10
	Mabini, Pilar	SP	1	20.0	1,200			800	4
	San Roque, Pilar	SP	1	120.0	3,000			1,500	3
	<b>Municipal Total</b>		3	1,100.0	13,600	0	0.0	4,900	17
Placer	Boyongan	SP	1	48.0	300	1	8.0	650	5
	Central	SP	1	2,400.0	1,500			1,500	2
	Ellaperal	SP	1	48.0	500	1	8.0		6
	Ipil, Placer	SP	1		1,000	1	10.0		2
	Magupange	SP	1	36.0	600	1	6.0		4
	<b>Municipal Total</b>		5	2,532.0	3,900	4	32.0	2,150	19

Table 4.1.2 Details on Existing Level II Systems

Name of Municipality	Name of Operating Body	Water Source			Existing Facilities			Number of Public Faucets		
		Type	Number	Discharge (m <sup>3</sup> /day)	Length of Transmission Line (meter)	Reservoir			Length of Distribution Line (meter)	
						Number	Volume (m <sup>3</sup> )			
San Francisco (Anao-Amontay)			1	432.0	800	1	1.0	300	10	
	Honrado		1	432.0	600	1	0.5	500	2	
	Linongganan		1	360.0	1,000	1	1.0	400	2	
	Macopa	SP	1	109.0	800			800	8	
	<b>Municipal Total</b>		4	1,333.0	3,200	3	2.5	2,000	22	
San Isidro	Del Carmen	SP	1	33.0	12,000	1	132.0	1,000	28	
San Jose	Aurelio	Surf	1	0.8	1,379	4	5.6	56	14	
	Don Ruben	SP	1	13.2	1,600	1	1.8	500	2	
	Jacquez	SP	1	32.4	9,000	1	8.0	200	3	
	Luna	SP	1	4.8	3,000	1	2.0	500	12	
	Matingbe	SP	1	8.4	300	1	0.5	200	1	
	Wilson	SP	1	5.8	600	1	1.4	400	1	
		<b>Municipal Total</b>		6	65.4	15,879	9	19.3	1,856	33
		<b>Municipal Total</b>		1	100.0		1	1.7		20
Santa Monica (Sapao)	Alegria, Santa Monica	SP	1			2	63.1	2,730	27	
	Libertad	SP			82					
	Magsaysay	SP	1		1,000	1	12.0	500	7	
	<b>Municipal Total</b>		2	100.0	1,082	4	76.8	3,230	54	
Sison	Biyabid	SP	1	7,200.0	1,800			500	7	
	Ima	SP	1	190.8	2,300			600	6	
	Mabuhay	SP	1	136.3	800			1,000	8	
	San Isidro	SP	1	6,720.0	2,000			1,200	8	
	San Pablo	SP	1	98.1	1,000	1	10.0	1,000	8	
	Tagbayani	SP	1	4,800.0	1,600			700	6	
	Timogpahan	SP	1	5,040.0	1,700			800	5	
	<b>Municipal Total</b>		7	24,185.2	11,200	1	10.0	5,800	48	

Table 4.1.2 Details on Existing Level II Systems

Name of Municipality	Name of Operating Body	Water Source			Length of Transmission Line (meter)	Existing Facilities		
		Type	Number	Discharge (m <sup>3</sup> /day)		Number	Volume (m <sup>3</sup> )	Length of Distribution Line (meter)
Surigao City (Capital)	Alegria	SP						10
	Anomar	SP				1	15.6	15
	Aurora	SP				1	15.6	12
	Balibayon	SP				1	15.6	4
	Baybay	SP				1	15.6	13
	BoniEacio	SP				1	15.6	25
	Bucnavista	SP				1	15.6	15
	Cabongbongan	SP				1	15.6	23
	Cagnioog	SP				2	31.3	22
	Cantrasay	SP				1	15.6	18
	Capalayan	SP				3	46.9	17
	Danao	SP				1	15.6	5
	Danawan	SP				1	15.6	8
	Ipil	SP				3	46.9	26
	Libuac	SP				1	15.6	18
	Lipata	SP				2	31.3	32
	Lisondra	SP				1	15.6	16
	Mabini	SP				1	15.6	5
	Mabua	SP				2	31.3	16
	Mapawa	SP				2	31.3	19
	Mar-i	SP				3	46.9	20
	Nabago	SP				2	31.3	9
	Nonoc	SP				2	31.3	28
	Orok	SP				1	15.6	13
	Poctoy	SP				2	31.3	17
	Punta Pilar	SP				1	15.6	6

Table 4.1.2 Details on Existing Level II Systems

Name of Municipality	Name of Operating Body	Water Source			Existing Facilities				
		Type	Number	Discharge (m <sup>3</sup> /day)	Length of Transmission Line (meter)	Reservoir		Length of Distribution Line (meter)	Number of Public Faucets
						Number	Volume (m <sup>3</sup> )		
	Quezon	SP				1	15.6		13
	Rizal	SP				1	15.6		7
	San Jose	SP				2	31.3		24
	San Pedro	SP				2	31.3		18
	San Roque	SP				3	46.8		19
	Serra	SP				1	15.6		6
	Silop	SP				2	31.3		21
	Sukailang	SP				1	15.6		16
	Talisay	SP				1	15.6		7
	Togbongon	SP				1	15.6		29
	Trinidad	SP				3	46.9		17
	Zaragosa	SP				1	15.6		15
	<b>Municipal Total</b>		0	0.0	0	57	890.6	0	604
Tubajon		SP	1	100.0	10,000	1	309.0	800	76
Tubod	Capayahan BWSA	SP	1	98.1	1,000			700	5
	Cawilan BWSA	SP	1	109.0	1,000	1	8.0	1,000	14
	Del Rosario BWSA	SP			2,500			800	10
	Motorpool	SP	1	136.3	600	1	8.0	1,000	10
	San Isidro, Tubod	SP			1,500	1	10.2	300	20
	<b>Municipal Total</b>		3	343.4	6,600	3	26.2	3,800	59
	<b>Provincial Total</b>		70	58,432.9	206,908	103	2,173.6	82,566	1,457

Note: 1. Type of Water Source; *DW* - Deep Well, *DgW* - Dug Well, *Surf* - Surface Water (River), *SP* - Spring, and *IG* - Infiltration Gallery



Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Alegria	Alipao BWSA		1	1		30	30		180	180
	Budlingin		1	1		30	30		150	150
	Cp Edward BWSA		1	1		15	15		60	60
	Ferida		1	1		52	52		543	543
	Ombong BWSA		1	1		20	20		120	120
	Pongtud		1	1		36	36		180	180
	<b>Municipal Total</b>		6	6		183	183		1,233	1,233
Bacuag	Cambuayon		1	1		36	36		180	180
	Campo		1	1		90	90		450	450
	Payapag		1	1		42	42		210	210
	Pungtod		1	1		36	36		180	180
	Sto. Rosario		1	1		24	24		120	120
	<b>Municipal Total</b>		5	5		228	228		1,140	1,140
Burgos	Baybay, Burgos		1	1		20	20		120	120
	Bitang		1	1		10	10		60	60
	Poblacion 1	1			45		45	250		250
	Poblacion 2	1			35		35	250		250
	San Mateo		1	1		15	15		90	90
	<b>Municipal Total</b>	2	3	5	80	45	125	500	270	770
Cagdianao	Cabinton-an BWSA		1	1		24	24		120	120
	Maatas BWSA		1	1		30	30		150	150
	San Jose, Cagdianao		1	1		42	42		189	189
	Sta. Rita BWSA		1	1		30	30		150	150
	Sto. Niño BWSA		1	1		20	20		100	100
	<b>Municipal Total</b>		5	5		146	146		709	709
Claver	Cabugo BWSA		1	1		50	50		281	281
	Sapa BWSA		1	1		25	25		150	150
	<b>Municipal Total</b>		2	2		75	75		431	431

Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Del Carmen	Del Caruwas Inc.	2	2	4	651	191	842	3,255	955	4,210
	Bagakay		1	1		73	73		364	364
	Buenavista, Dapa		1	1		46	46		275	275
	Cabawa		1	1		93	93		416	416
	Corregidor		1	1		60	60		300	300
	Jubang		1	1		71	71		349	349
	San Carlos		1	1		69	69		385	385
	San Miguel		1	1		60	60		326	326
	<b>Municipal Total</b>		7	7	7	472	472		2,415	2,415
	Dinagat	LGU-Dinagat	7	1	8	270	786	1,056	2,515	1,351
Libjo (Albor)	Albor	1		1	42	40	42	210	200	200
	Arellano BWSA		1	1		15	15		75	75
	Bayanihan		1	1		40	40		240	240
	Doña Helen		1	1		55	55		330	330
	Garcia		1	1		25	25		150	150
	Gen. Aguinaldo		1	1		25	25		126	126
	Kanihaan BWSA		1	1		30	30		120	120
	Liamera BWSA		1	1		60	60		300	300
	Magsaysay, Libjo		1	1		12	12		61	61
	Osmeña		1	1		85	85		425	425
	Piandel		1	1		55	55		275	275
	Quezon BWSA		1	1		50	50		250	250
	Rosita		1	1		125	125	625		625
	San Antonio		1	1		90	90		450	450
San Jose, Libjo		1	1		85	85		425	425	
Sto. Niño		2	14	16	167	667	834	835	3,427	4,262
<b>Municipal Total</b>		2	5	5	579	579	579	2,773	2,773	2,773
Loreto	LGU-Loreto									

Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served			
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	
Malimono	Binocaran		1	1		30	30		150	150	
	Bunyanan (Gov)		1	1		37	37		185	185	
	Bunyanan (Pvt)		1	1		12	12		60	60	
	Cagimac, Brgy. Prop		1	1		84	84		420	420	
	Can-aga, Brgy. Prop		1	1		30	30		150	150	
	Cansayong		1	1		152	152		760	760	
	Cantapoy, Brgy. Prop		1	1		96	96		480	480	
	Cayawan, Brgy. Prop		1	1		106	106		530	530	
	Hanagdong, Brgy. Prop		1	1		120	120		600	600	
	Karihatag, Brgy. Prop		1	1		72	72		360	360	
	Masgad, Ad-on		1	1		200	200		1,000	1,000	
	Pili, Brgy. Proper		1	1		69	69		345	345	
	Tinago		1	1		42	42		210	210	
	Villaniza, Op. 1-4		1	1		60	60		300	300	
Pilar	<b>Municipal Total</b>		14	14		1,110	1,110		5,550	5,550	
	Asin, Centro, Pilaring	3	1	4	320	77	397	1,886	434	2,320	
	Mabini, Pilar		1	1		24	24		120	120	
	San Roque, Pilar		1	1		18	18		90	90	
	<b>Municipal Total</b>	3	3	6	320	119	439	1,886	644	2,530	
	Placer	Boyongan		1	1		66	66		303	303
		Central		1	1	100	66	100	528		528
		Ellaperal		1	1		66	66		348	348
		Jpil, Placer	1		1	25	25	25	132		132
		Magupange		1	1		50	50		234	234
		<b>Municipal Total</b>	2	3	5	125	182	307	660	885	1,545

Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
San Francisco (Anao-A)	Amontay		1	1		50	50		250	250
	Honrado		1	1		20	20		100	100
	Linonggan		1	1		20	20		100	100
	Macopa		1	1		40	40		240	240
	<b>Municipal Total</b>		4	4		130	130		690	690
San Isidro	Del Carmen	1		1	316	316	1,720		1,720	
San Jose	Aurelio	2		2	84	84	420		420	
	Don Ruben	1		1	12	12	60		60	
	Jacquez		1	1		30	30	180		180
	Luna	1		1	50	50	262		262	
	<b>Municipal Total</b>		1	1	7	158	158	802	180	982
Santa Monica (Sapao)	Alegria, Santa Moni		1	1		131	131	793		793
	Liberad		2	2		155	155	930		930
	Magsaysay		1	1		66	66	401		401
	<b>Municipal Total</b>		4	4		352	352	2,124	401	2,124
	Sison	Biyabid		1	1		15	15	75	
Surigao City (Capital)	Ima		1	1		30	30	150		150
	Mabuhay		1	1		60	60	240		240
	San Isidro		1	1		68	68	387		387
	San Pablo		1	1		43	43	233		233
	Tagbayani		1	1		66	66	396		396
	Tinogpahan		1	1		49	49	308		308
	<b>Municipal Total</b>		7	7		331	331	1,789	1,789	1,789
Surigao City (Capital)	Alegria		1	1		110	110	522		522
	Anomar		1	1		173	173	865		865
	Aurora		1	1		124	124	706		706
	Balibayon		1	1		24	24	120		120

Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Surigao City (Capital)	Baybay		1	1		54	54		283	283
	BoniEacio		1	1		218	218		1,190	1,190
	Euenavista	1		1	217		217	1,015		1,015
	Cabongbongan		1	1		110	110		588	588
	Cagnio		1	1		334	334		1,697	1,697
	Cantiasay		1	1		152	152		801	801
	Capalayan		1	1		60	60		347	347
	Danao		1	1		75	75		374	374
	Danawan		1	1		98	98		510	510
	Ipil		1	1		156	156		780	780
	Libuac		1	1		195	195		1,019	1,019
	Lipata		1	1		239	239		1,326	1,326
	Lisondra		1	1		115	115		639	639
	Mabini		1	1		30	30		150	150
	Mabua		1	1		305	305		1,518	1,518
	Mapawa		1	1		139	139		727	727
	Mat-i		1	1		120	120		600	600
	Nabago		1	1		54	54		270	270
	Nonoc		1	1		154	154		910	910
	Orok		1	1		154	154		725	725
Pocroy		1	1		199	199		959	959	
Punta Pilar		1	1		104	104		635	635	
Quezon		1	1		48	48		240	240	
Rizal		1	1		42	42		210	210	
San Jose	1		1	227		227	1,202		1,202	
San Pedro		1	1		106	106		632	632	
San Roque		1	1		133	133		652	652	
Serra		1	1		36	36		180	180	
Silop		1	1		129	129		785	785	

Table 4.1.2 Details on Existing Level II Systems  
Sheet 2 of 6

Name of Municipality	Name of Operating Body	Number of Barangay Served			Number of Households Served			Number of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Surigao City (Capital)	Sukailang		1	1		118	118		571	571
	Talisay	1		1	42		42	210		210
	Togbongon		1	1		265	265		1,395	1,395
	Trinidad		1	1		329	329		1,603	1,603
	Zaragosa		1	1		124	124		698	698
	<b>Municipal Total</b>		3	35	38	486	4,826	5,312	2,427	25,227
Tubajon	LGU-Tubajon	1	1	2	150	176	326	708	885	1,593
Tubod	Capayahan BWSA		1	1		25	25		150	150
	Cawilan BWSA		1	1		42	42		230	230
	Del Rosario BWSA		1	1		38	38		195	195
	Motorpool		1	1		47	47		230	230
	San Isidro, Tubod		1	1		159	159		742	742
	<b>Municipal Total</b>		5	5	5	311	311	311	1,547	1,547
<b>Provincial Total</b>		29	127	156	2,723	10,939	13,662	15,308	54,225	69,533

Table 4.1.2 Details on Existing Level II Systems  
Sheet 3 of 6

Name of Municipality	Name of Operating Body	Supply (Hrs/day)	Dirty Water <sup>1</sup>	Taste or Smell <sup>2</sup>	Service Conditions During Dry Season				Supply Water Pressure (% of total)		
					Power Failure	Pump Breakdown	Pipe Burst	Others	Adequate	Inadequate	
Alegria	Alipao BWSA										
	Budlingin			G						100	
	Cp Edward BWSA										
	Ferida			G						100	
	Ombong BWSA										
	Pongrud									100	
Bacuag	Cambuayon										
	Cambuayon										
	Campo										
	Payapag										
	Pungtod										
	Sto. Rosario										
Burgos	Baybay, Burgos		O	G							
	Bitang		O	G							
	Poblacion 1		O	G							
	Poblacion 2		O	G							
	San Mateo		O	G							
	Cabintan-an BWSA										
Cagdianao	Maatas BWSA										
	San Jose, Cagdianao										
	Sta. Rita BWSA										
	Sto. Niño BWSA										
Claver	Cabugo BWSA										
	Sapa BWSA										
	Del Caruwas Inc.										

Table 4.1.2 Details on Existing Level II Systems  
Sheet 3 of 6

Name of Municipality	Name of Operating Body	Supply (Hrs/day)	Dirty Water <sup>1</sup>	Taste or Smell <sup>2</sup>	Service Conditions During Dry Season						Supply Water Pressure (% of total)	
					Supply Interruption (number/month)				Others	Adequate	Inadequate	
					Power Failure	Pump Breakdown	Pipe Burst					
Dapa	Bagakay	24	O	G							95	5
	Buнависта, Dapa	24	O	G			1				95	5
	Cabawa	24	O	G			2				95	5
	Corregidor	24	O	G			1				95	5
	Jubang	24	O	G			2				90	10
	San Carlos	24	O	G			2				95	5
	San Miguel	12	O	G			3				30	70
	LGU-Dinagat											
Dinagat Libjo (Albor)	Albor			G							70	30
	Arellano BWSA											
	Bayanihan											
	Doña Helen											
	Garcia											
	Gen. Aguinaldo											
	Kanihaan BWSA											
	Llamera BWSA											
	Magsaysay, Libjo											
	Osmelia											
	Plaridel											
	Loreto	Quezon BWSA										
Rosita												
San Antonio												
San Jose, Libjo												
Sto. Niño												
LGU-Loreto												



Table 4.1.2 Details on Existing Level II Systems  
Sheet 3 of 6

Name of Municipality	Name of Operating Body	Service Conditions During Dry Season							Supply Water Pressure (% of total)			
		Supply (Hrs/day)	Dirty Water <sup>1</sup>	Taste or Smell <sup>2</sup>	Supply Interruption (number/month)				Adequate	Inadequate		
					Power Failure	Pump Break-down	Pipe Burst	Others				
Mahimono	Binocaran											
	Bunyasari (Gov)											
	Bunyasari (Pvt)											
	Cagunac, Brgy. Proper											
	Can-aga, Brgy. Proper											
	Cansayong											
	Cantapoy, Brgy. Proper											
	Cayanan, Brgy. Proper											
	Hanagdong, Brgy. Proper											
	Karhatag, Brgy. Proper											
	Masgad, Ad-on											
	Pili, Brgy. Proper											
	Tinago											
	Villariza, Cp. 1-4											
Pilar	Asin, Centro, Pilaring, Punta											
	Mabini, Pilar											
Placer	San Roque, Pilar											
	Boyongan	24	OM	G						75	25	
	Central											
	Ellaperal	24	O	G						50	50	
	Ipil, Placer		O	G						75	25	
San Francisco (Anao-A)	Magupange	24	O	G						75	25	
	Amontay											
	Honrado											
	Linonganan											
San Isidro	Macopa											
	Del Carmen											

Table 4.1.2 Details on Existing Level II Systems  
Sheet 3 of 6

Name of Municipality	Name of Operating Body	Supply (Hrs/day)	Dirty Water <sup>1</sup>	Taste or Smell <sup>2</sup>	Service Conditions During Dry Season				Supply Water Pressure (% of total)		
					Supply Interruption (number/month)				Adequate	Inadequate	
					Power Failure	Pump Breakdown	Pipe Burst	Others			
San Jose	Aurelio										
	Don Kuben										
	Jacquez	12		G					50		50
	Luna										
	Matungbe										
Santa Monica (Sapao)	Wilson										
	Alegria, Santa Monica										
	Libertad										
Sison	Magsaysay	24	O								
	Biyabid	24	O	G					100		100
	Ima										
	Mabuhay										
	San Isidro	24		G			1				100
	San Pablo										
	Tagbayan	24	O	G							100
Surigao City (Capital)	Tinogpahan	24	O	G							100
	Alegria										
	Anomar										
	Aurora										
	Balibayon										
	Baybay										
	Bomfacio										
	Buonavista										
	Cabongbongan										
	Cagnog										
	Cantiasay										
	Capalayan										
	Danao										
	Danawan										
	Ipil										
Libuac											
Lipata											

Table 4.1.2 Details on Existing Level II Systems  
Sheet 3 of 6

Name of Municipality	Name of Operating Body	Supply (Hrs/day)	Dirty Water <sup>1</sup>	Taste or Smell <sup>2</sup>	Service Conditions During Dry Season						Supply Water Pressure (% of total)		
					Supply Interruption (number/month)				Pipe Burst	Others	Adequate	Inadequate	
					Power Failure	Pump Breakdown							
	Lisondra												
	Mabini												
	Mabua												
	Mapawa												
	Mat-i												
	Nabago												
	Nonoc												
	Orok												
	Poctoy												
	Punta Pilar												
	Quezon												
	Ruzal												
	San Jose												
	San Pedro												
	San Roque												
	Serra												
	Silop												
	Sukailang												
	Talisay												
	Togbongon												
	Trinidad												
	Zaragosa												
Tubaion	LGU-Tubaion	12	O	G								100	
Tubod	Capayahan BWSA												
	Cawilan BWSA												
	Del Rosario BWSA												
	Motorpool												
	San Isidro, Tubod	24	O	G									

Note: 1. Dirty Water: E - Everyday, OW - Once a week, OM - Once a month, O - Occasional.  
2. Taste or Smell: G - Good taste, S - Salty, W - Wood taste, M - Metallic taste, O - Others.

Table 4.1.2 Details on Existing Level II Systems  
Sheet 4 of 6

Name of Municipality	Name of Operating Body	Technical Staff	Administrative Staff	Collector	Total Number of Staff	Number of Staff			
						Local Tradesman	MEO/CEO	DEO	Others
Alegria	Alipao BWSA								
	Budlingin					✓			
	Cp Edward BWSA								
	Ferida					✓			
	Ombong BWSA								
	Pongrud						✓		
Bacuag	Cambuayon								
	Cambuayon								
	Campo								
	Payapag								
	Pungtod								
	Sto. Rosario								
Burgos	Baybay, Burgos								
	Bitaug								
	Poblacion 1								
	Poblacion 2								
	San Mateo								
Cagdianao	Cabintan-an BWSA								
	Maatas BWSA								
	San Jose, Cagdianao								
	Sta. Rita BWSA								
Claver	Sto. Niño BWSA								
	Cabugo BWSA								
	Sapa BWSA								
Del Carmen	Del Caruwasa Inc.								

Table 4.1.2 Details on Existing Level II Systems  
Sheet 4 of 6

Name of Municipality	Name of Operating Body	Technical Staff	Administrative Staff	Collector	Total Number of Staff	Number of Staff			
						Local Trademan	MEO/CEO	DEO	Others
Dapa	Bagakay					✓			
	Buнавista, Dapa					✓			
	Cabawa					✓			
	Corregidor					✓			
	Jubang					✓			
	San Carlos					✓			
	San Miguel					✓			
Dinagat	LGU-Dinagat								
Libjo (Albor)	Albor							✓	
	Arellano BWSA								
	Bayaniban								
	Doña Helen								
	Garcia								
	Gen. Agumaldo								
	Kanihaan BWSA								
	Llamera BWSA								
	Magsaysay, Libjo								
	Osmeña								
	Plaridel								
	Quezon BWSA								
	Rosita								
	San Antonio								
San Jose, Libjo									
Sto. Niño									
Loreto	LGU-Loreto								

Table 4.1.2 Details on Existing Level II Systems  
Sheet 4 of 6

Name of Municipality	Name of Operating Body	Technical Staff	Administrative Staff	Collector	Total Number of Staff	Number of Staff				
						Local Tradesman	MEO/CEO	DEO	Others	
Malimono	Binocaran									
	Bunyasari (Gov)									
	Bunyasari (Pvt)									
	Cagnac, Brgy. Proper									
	Can-aga, Brgy. Proper									
	Cansayong									
	Cantapoy, Brgy. Proper									
	Cayawan, Brgy. Proper									
	Hanagdong, Brgy. Proper									
	Karibatang, Brgy. Proper									
	Masgad, Ad-on									
	Pili, Brgy. Proper									
	Timago									
	Villarza, Cp. 1-4									
Pilar	Asin, Centro, Pilaring, Punta									
	Mabini, Pilar									
Placer	San Roque, Pilar									
	Boyongan							✓		
	Central									
	Ellapera							✓		
	Ipil, Placer							✓		
San Francisco (Anao-A)	Magupange							✓		
	Amontay									
	Honrado									
	Linonganan									
San Isidro	Macopa									
	DeJ Carmen									

Table 4.1.2 Details on Existing Level II Systems  
Sheet 4 of 6

Name of Municipality	Name of Operating Body	Technical Staff	Administrative Staff	Collector	Total Number of Staff	Number of Staff		
						Local Tradesman	MEO/CEO	DEO Others
San Jose	Aurelio							
	Don Ruben							
	Jacquez					✓		
	Luna							
	Maringbe							
Santa Monica (Sapao)	Wilson							
	Alegria, Santa Monica							
	Libertad					✓		
Sison	Magsaysay					✓		
	Biyabid							
	Ima							
	Mabuhay							
	San Isidro					✓		
Surigao City (Capital)	San Pablo							
	Tagbayani					✓		
	Tinogpahan							
	Alegria					✓		
	Anomar							
	Aurora							
	Balibayon							
	Baybay							
	BoniEacio							
	Buena Vista							
	Cabongbongan							
	Cagnog							
	Canasay							
	Capalayan							
	Danao							
	Danawan							
	Ipil							
	Libuac							

Table 4.1.2 Details on Existing Level II Systems  
Sheet 4 of 6

Name of Municipality	Name of Operating Body	Number of Staff					Repair Work		
		Technical Staff	Administrative Staff	Collector	Total Number of Staff	Local Trademan	MEO/CEO	DEO	Others
	Lipata								
	Lisondra								
	Mabini								
	Mabua								
	Mapawa								
	Mat-1								
	Nabago								
	Nonoc								
	Orok								
	Poctoy								
	Punta Pilar								
	Quezon								
	Rizal								
	San Jose								
	San Pedro								
	San Roque								
	Serra								
	Silop								
	Sukailang								
	Talisay								
	Togbongon								
	Trinidad								
	Zaragoza								
Tubajon	LGU-Tubajon	1							
Tubod	Capayahan BWSA								
	Cawilan BWSA								
	Del Rosano BWSA								
	Motorpool								
	San Isidro, Tubod								



Table 4.1.2 Details on Existing Level II Systems

Sheet 5 of 6

Name of Municipality	Name of Operating Body	Expenditures						Tariff			Average Collection Efficiency (%)		
		Annual	Wages	Fuel, Chem. Maint.	Transport	Repairs	Loan Repayment	Other	Consumer Payment (Year)	Cost per Pail		Cost per Cu. Meter (Pesos)	Other
Alegria	Alipao BWSA												
	Budingin		1.8	5	2	10							
	Cp Edward BWSA												
	Ferida		1.8	5	2	10							
	Ombong BWSA												
	Pongtud		1.8	5	2	10							
	Cambuayon												
	Cambuayon												
	Campo												
	Payapag												
Burgos	Pungtod												
	Sto. Rosario												
	Baybay, Burgos												
	Bitang												
	Poblacion 1												
	Poblacion 2												
	San Mateo												
	Cabintan-on BWSA												
	Maatas BWSA												
	San Jose, Cagdianao												
Cagdianao	Sta. Rita BWSA												
	Sto. Niño BWSA												
	Cabugo BWSA												
	Sapa BWSA												
	Del Caruwas Inc.												
	Bagakay												
	Buena Vista, Dapa												
	Cabawa												
	Corregidor												
	Jubang												
Claver	San Carlos												
	San Miguel												
	LGU-Dinagat												
Del Carmen													
	Dapa												
Dinagat													

Table 4.1.2 Details on Existing Level II Systems  
Sheet 5 of 6

Name of Municipality	Name of Operating Body	Expenditures						Consumer Payment (Year)	Tariff			Average Collection Efficiency (%)		
		Annual	Wages	Fuel, Chem. Mat'l (P '000.00 / year)	Transport	Repairs	Loan Repayment		Other	Cost per Cu. Meter (Pesos)	Cost per HH		Other	
Libjo (Albor)	Albor													
	Arellano BWSA													
	Bayanhan											100		
	Doña Helen													
	Garcia													
	Gen. Aginaldo													
	Kamihan BWSA													
	Llamera BWSA													
	Magsaysay, Libjo													
	Osmenia													
	Plandel													
	Quezon BWSA													
	Rosita													
	San Antonio		48										35	
	San Jose, Libjo							10						
	Sto. Niño													
Lorico	LGU-Lorico													
Malimono	Binocaran													
	Bunyasas (Gov)													
	Bunyasas (Pvt)													
	Cagunac, Brgy. Proper													
	Can-aga, Brgy. Proper													
	Cansayong													
	Camapoy, Brgy. Proper													
	Cayawan, Brgy. Proper													
	Hanagdong, Brgy. Proper													
	Kanihatag, Brgy. Proper													
	Masgad, Ad-on													
	Pili, Brgy. Proper													
	Tinago													
	Villariza, Cp. 1-4													
Pilar	Asin, Centro, Pilaring, Punta Mabini, Pilar San Roque, Pilar													

Table 4.1.2 Details on Existing Level II Systems  
Sheet 5 of 6

Name of Municipality	Name of Operating Body	Expenditures							Tariff				Average Collection Efficiency (%)		
		Annual	Wages	Fuel, Chem. Maint	Transport	Repairs	Loan Repayment	Other	Consumer Payment (Year)	Cost per Pail	Cost per Cu. Meter	Cost per HH		Other	
		(P '000.00 / year)							(Pesos)						
Placer	Boyongan														
	Central														
	Ela-peral														
	Ipil, Placer														
San Francisco (Anao-A)	Magupange														
	Amontay														
	Honrado														
	Linonggan														
San Isidro	Maco-pa														
	Del Carmen														
	Aurelio														
	Don Ruben														
San Jose	Jaquez														
	Luna														
	Maingbe														
	Wilson														
Santa Monica (Sapao)	Alegria, Santa Monica														
	Libertad														
	Magsaysay	1.2	0.7					0.5							
	Biyabid							3							
Sison	Ima														
	Mabuhay														
	San Isidro							4							
	San Pablo														
Surigao City (Capital)	Tagbayani							2							
	Tinogpahan							3							
	Alegria														
	Anomar														
	Aurora														
	Balibayon														
	Baybay														
	BoniEaño														
	Buenavista														
	Cabongbongan														
	Cagnog														
	Canhasay														

Table 4.1.2 Details on Existing Level II Systems  
Sheet 5 of 6

Name of Municipality	Name of Operating Body	Expenditures					Consumer Payment (Year)	Tariff (Pesos)			Average Collection Efficiency (%)	
		Annual	Wages	Fuel, Chem. (Month)	Transport	Repairs		Loan Repayment	Other	Cost per Pall		Cost per Cu. Meter
	Capalayan											
	Danao											
	Danawan											
	Ipil											
	Libuac											
	Lipana											
	Lisondra											
	Mabini											
	Mabua											
	Mapawa											
	Mat-i											
	Nabago											
	Nonoc											
	Orok											
	Poctoy											
	Punta Pilar											
	Quezon											
	Rizal											
	San Jose											
	San Pedro											
	San Roque											
	Serra											
	Silop											
	Sukailang											
	Talisay											
	Togbongon											
	Trinidad											
	Zaragoza											
	LGU-Tubajon	36										
Tubajon	Capayahan BWSA											
Tubod	Cawilan BWSA											
	Del Rosario BWSA											
	Motorpool											
	San Isidro, Tubod											

Table 4.1.2 Details on Existing Level II Systems

Sheet 6 of 6

Name of Municipality	Name of Operating Body	Annual Billing (Number)	Billings			Revenues					
			Public Faucet Consumers	House Connection Consumers	Expected Subsidies	Others	Annual Income (P '000.00 / year)	Payment by Public Faucet Consumers	Payment by House Connection	Subsidies	Other
Alegria	Alipao BWSA										
	Budlingin										
	Cp Edward BWSA										
	Ferida										
	Ombong BWSA										
	Pongtud										
	Cambuayon										
	Cambuayon										
	Campo										
	Payapag										
Burgos	Pungrod										
	Sto. Rosario										
	Baybay, Burgos										
	Bitang										
	Poblacion 1										
	Poblacion 2										
	San Mateo										
	Cabintan-an BWSA										
	Maatas BWSA										
	San Jose, Cagdianao										
Claver	Sta. Rita BWSA										
	Sto. Niño BWSA										
	Cabugo BWSA										
	Sapa BWSA										
	Del Carmen										
	Dapa										
	Bagakay										
	Buena Vista, Dapa										
	Cabawa										
	Corregidor										
Dinagat	Jubang										
	San Carlos										
	San Miguel										
	LGU-Dinagat										

Table 4.1.2 Details on Existing Level II Systems  
Sheet 6 of 6

Name of Municipality	Name of Operating Body	Billings				Revenues					
		Annual Billing (Number)	Public Faucet Consume	House Connection Consumers	Expected Subsidies	Others	Annual Income (P '000.00 / year)	Payment by Public Faucet Consumers	Payment by House Connection	Subsidies	Other
Libjo (Albor)	Albor										
	Arellano BWSA										
	Bayanihan										
	Doña Helen										
	Garcia										
	Gen. Aginaldo										
	Kamhaan BWSA										
	Llamera BWSA										
	Magsaysay, Libjo										
	Osmeña										
	Plaridel										
	Quezon BWSA										
	Rosita										
	San Antonio						10				
	San Jose, Libjo										
	Sto. Niño										
	Loroto	LGU-Loroto									
Malimono	Binocaran										
	Bunyasán (Gov)										
	Bunyasán (Pvt)										
	Cagrinas, Brgy. Proper										
	Can-aga, Brgy. Proper										
	Cansayong										
	Cantapoy, Brgy. Proper										
	Cayanan, Brgy. Proper										
	Hanagdong, Brgy. Proper										
	Kamhatag, Brgy. Proper										
Magdad, Ad-on											
Pili, Brgy. Proper											
Tinago											
Villanza, Cp. 1-4											

Table 4.1.2 Details on Existing Level II Systems  
Sheet 6 of 6

Name of Municipality	Name of Operating Body	Billings				Revenues					
		Annual Billing (Number)	Public Faucet Consumers	House Connection Consumers	Expected Subsidies	Others	Annual Income (P '000.00 / year)	Payment by Public Faucet Consumers	Payment by House Connection	Subsidies	Other
Pilar	Asin, Centro, Pilaring, Punta										
	Mabini, Pilar										
	San Roque, Pilar										
Placer	Boyongan										
	Central										
	Ellaperal										
	Ipil, Placer										
San Francisco (Anao-A)	Magupange										
	Armontay										
	Honrado										
	Linongganan										
	Macopa										
	Del Carmen										
	Aurelio										
	Don Ruben										
	Jacquez										
	Luna										
Santa Monica (Sapao)	Matingbe										
	Wilson										
	Alegria, Santa Monica										
	Libertad										
	Magsaysay										
	Biyabid										
	Ima										
	Mabuhay										
	San Isidro										
	San Pablo										
Sison	Tagbayani										
	Timogpahan										

Table 4.1.2 Details on Existing Level II Systems

Sheet 6 of 6

Name of Municipality	Name of Operating Body	Billings				Revenues					
		Annual Billing (Number)	Public Faucet Consumers	House Connection Consumers	Expected Subsidies	Others	Annual Income (P'000.00 / year)	Payment by Public Faucet Consumers	Payment by House Connection	Subsidies	Other
	Alegria										
	Anomar										
	Aurora										
	Balibayon										
	Baybay										
	BoniEacio										
	Buнавista										
	Cabongbongan										
	Cagnitog										
	Canlasay										
	Capalayan										
	Danao										
	Danawan										
	Ipil										
	Libuac										
	Lipata										
	Lisondra										
	Mabini										
	Mabua										
	Mapawa										
	Mat-i										
	Nabago										
	Nonoc										
	Orok										
	Poctoy										
	Punta Pilar										
	Quezon										
	Rizal										
	San Jose										



Table 4.1.2 Details on Existing Level II Systems  
Sheet 6 of 6

Name of Municipality	Name of Operating Body	Billings			Revenues						
		Annual Billing (Number)	Public Faucet Consumers	House Connection Consumers	Expected Subsidies	Others	Annual Income (P '000.00 / year)	Payment by Public Faucet Consumers	Payment by House Connection	Subsidies	Other
	San Pedro										
	San Roque										
	Serra										
	Silop										
	Sukailang										
	Tahisay										
	Togbongon										
	Trinidad										
	Zaragosa										
Tubajon	LGU-Tubajon										
Tubod	Capayahan BWSA										
	Cawilan BWSA										
	Del Rosario BWSA										
	Motorpool										
	San Isidro, Tubod										

Table 4.1.3 Percentage of Unsafe Source

Municipality	No. of Samples	Unsafe Source	
		Number	(%)
Alegria	3	1	33
Bacuag	2	1	50
Basilisa (Rizal)			
Burgos	3		0
Cagdianao			
Claver	1	1	100
Dapa	4	2	50
Del Carmen			
Dinagat	1		0
General Luna			
Gigaquit			
Libjo (Albor)			
Loreto			
Mainit			
Malimono			
Pilar	2		0
Placer			
San Benito	1		0
San Francisco (Anao-Aon)			
San Isidro	2		0
San Jose			
Santa Monica (Sapao)	3		0
Sison			
Socorro			
Surigao City (Capital)	10	1	10
Tagana-An	2	1	50
Tubajon			
Tubod	1		0
<b>Province</b>	<b>35</b>	<b>7</b>	<b>20</b>

Source: PPDO

#### 4.1.5 Level I Facilities

##### Safe and Unsafe Classification of Level I Facilities

According to the definition of DOH, protected deep well protected shallow well, covered/improved dug well and developed spring are classified as safe sources, while unprotected shallow well, open dug well, undeveloped spring and rain water collector are classified as unsafe sources.

As for water sources in the province, the PHO conducts water quality examination upon request. However, the number of samples was very limited and majority of these samples was usually collected from doubtful sources.

On the other hand, as one of the activities in the preparation of this PW4SP, the PPDO conducted water quality analysis by random sampling from public and private wells.

The results of water quality analysis indicate that 20% of the existing wells, as a provincial average, are classified as unsafe sources. Since the total number of shallow well (991) occupies about 40% of the total number of Level I Facilities (2,444) and deep well is rarely exposed to contamination by seepage of wastewater, these unsafe sources are considered to be shallow wells. Although the number of samples was very limited, the PPDO analysis result (20% of unsafe percentages) was applied to classify all shallow wells (drilled and driven) into safe and unsafe sources.

The unsafe percentage of provincial average was applied common to urban and rural areas of respective municipality both for public and private shallow wells. While, those sources other than shallow wells are classified based on the questionnaire. Table 4.1.4 (a) presents the number of Level I facilities by safe and unsafe classification.

Table 4.1.4 Number of Level I Facilities by Safe and Unsafe Classification

Name of Municipality	Area	Safe Sources										Unsafe Source						Grand Total	
		Public					Private					Public			Private				
		Deep Well	Shallow Well	Covered/Improved Dug Well	Developed Spring	Sub-total	Deep Well	Shallow Well	Covered/Improved Dug Well	Sub-total	Total	Shallow Well	Open Dug Well	Undeveloped Spring	Rain Water Collection	Sub-total	Shallow Well		Open Dug Well
Alegna	Urban	2	12	10	22	42	22	20	20	64	3	5	2	2	5	3	8	8	72
Alegna	Rural	2	34	10	47	137	117	20	137	183	8	29	8	24	29	29	38	221	
Alegna	Total	4	46	20	74	284	234	40	324	467	11	34	16	48	58	58	66	442	
Bacug	Urban	6	7	6	19	40	30	10	40	59	2	7	2	2	7	91	100	150	
Bacug	Rural	6	7	6	19	40	30	10	40	59	2	7	2	2	7	91	100	150	
Bacug	Total	12	14	12	38	80	60	20	80	118	4	14	4	4	14	182	200	300	
Basilisa (Rizal)	Urban	3	7	6	16	30	20	10	30	60	1	1	1	1	1	15	16	26	
Basilisa (Rizal)	Rural	20	12	12	28	60	60	60	60	60	1	1	1	1	1	15	16	26	
Basilisa (Rizal)	Total	23	19	18	44	120	120	120	120	120	2	2	2	2	2	30	32	52	
Burgos	Urban	4	2	6	12	20	22	15	37	43	0	4	0	0	4	4	4	47	
Burgos	Rural	4	2	6	12	20	22	15	37	43	0	4	0	0	4	4	4	47	
Burgos	Total	8	4	12	24	40	44	30	74	86	0	8	0	0	8	8	8	94	
Caighanao	Urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Caighanao	Rural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Caighanao	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Claver	Urban	39	83	2	124	228	85	21	105	333	10	12	10	12	12	12	22	61	
Claver	Rural	83	2	2	87	124	85	21	105	209	21	3	3	24	27	3	24	109	
Claver	Total	122	85	4	211	352	170	42	212	542	31	15	13	48	63	15	46	170	
Dapa	Urban	14	51	51	65	121	65	3	68	189	3	65	3	3	68	3	68	257	
Dapa	Rural	3	19	19	25	47	25	1	26	72	1	4	1	1	4	1	4	95	
Dapa	Total	17	70	70	90	168	90	4	94	261	4	69	4	4	72	4	72	352	
Del Carmen	Urban	5	10	8	14	22	8	1	9	31	2	2	2	2	2	4	4	25	
Del Carmen	Rural	5	10	9	14	38	14	3	17	55	2	2	2	2	2	4	4	45	
Del Carmen	Total	10	20	17	28	70	22	4	26	86	4	4	4	4	4	8	8	70	
Dinagat	Urban	2	23	21	27	52	27	4	31	83	2	2	2	2	2	2	2	27	
Dinagat	Rural	21	44	44	55	124	55	4	59	183	4	25	4	4	29	9	21	227	
Dinagat	Total	23	67	65	82	276	82	8	90	266	6	26	6	6	31	11	22	254	
General Luna	Urban	2	46	44	48	140	48	11	59	199	11	29	11	120	132	120	132	297	
General Luna	Rural	2	2	2	2	2	2	0	2	2	0	0	0	0	0	0	0	2	
General Luna	Total	4	48	46	50	142	50	11	61	201	11	29	11	120	132	120	132	299	
Gigaquit	Urban	3	120	16	16	139	16	3	19	155	1	1	1	1	1	66	67	194	
Gigaquit	Rural	3	136	136	139	275	139	3	142	417	1	123	1	124	125	123	125	292	
Gigaquit	Total	6	256	252	278	514	275	6	287	872	2	124	2	125	126	126	125	296	
Libjo (Albor)	Urban	5	5	5	5	5	5	1	6	11	1	1	1	1	1	1	1	6	
Libjo (Albor)	Rural	5	5	5	5	5	5	1	6	11	1	1	1	1	1	1	1	6	
Libjo (Albor)	Total	10	10	10	10	10	10	2	12	22	2	2	2	2	2	2	2	12	
Loroto	Urban	4	2	2	6	6	2	2	4	8	1	1	1	1	1	6	6	7	
Loroto	Rural	4	2	2	6	6	2	2	4	8	1	1	1	1	1	6	6	7	
Loroto	Total	8	4	4	12	12	4	4	8	16	2	2	2	2	2	12	12	14	
Maimit	Urban	8	22	22	30	50	30	5	35	85	5	30	5	35	35	5	35	55	
Maimit	Rural	4	14	14	14	14	14	4	18	32	4	4	4	4	4	4	4	36	
Maimit	Total	12	36	36	44	64	44	9	53	117	9	34	9	39	39	9	39	91	
Mallimno	Urban	4	30	30	32	36	30	3	33	69	3	30	3	30	30	3	30	39	
Mallimno	Rural	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	36	
Mallimno	Total	8	33	33	35	39	33	6	36	72	6	33	6	33	33	6	33	75	
Pilar	Urban	11	1	1	7	20	8	18	26	46	0	0	0	0	0	0	0	46	
Pilar	Rural	11	1	1	7	20	8	18	26	46	0	0	0	0	0	0	0	46	
Pilar	Total	22	2	2	14	40	16	36	72	92	0	0	0	0	0	0	0	92	

Table 4.1.4 Number of Level I Facilities by Safe and Unsafe Classification

Name of Municipality	Safe Sources										Unsafe Source						Grand Total				
	Public					Private					Public			Private							
	Deep Well	Shallow Well	Covered/Improved Dug Well	Developed Spring	Sub-total	Deep Well	Shallow Well	Covered/Improved Dug Well	Covered/Improved Sub-totals	Total	Shallow Well	Open Dug Well	Undeveloped Spring	Rain Water Collection	Sub-total	Shallow Well		Open Dug Well	Rain Water Collector	Sub-total	Total
Placer	4	4	1	2	7					7											7
Rural	3	11	1	7	11					11											11
Total	7	9	2	9	18					18											18
San Benito	2	3	1	3	3					3											3
Rural	2	3	1	3	3					3											3
Total	2	3	1	3	3					3											3
San Francisco (Anne-Aon)	1	1	1	1	1					1											1
Rural	1	1	1	1	1					1											1
Total	1	1	1	1	1					1											1
San Isidro	10	3	3	3	20					20											20
Urban	10	3	3	3	20					20											20
Total	10	3	3	3	20					20											20
San Jose	18	16	16	7	34					34											34
Urban	18	16	16	7	34					34											34
Total	18	16	16	7	34					34											34
Santa Monica (Sapao)	10	4	3	3	17					17											17
Urban	10	4	3	3	17					17											17
Total	10	4	3	3	17					17											17
Sison	6	1	1	1	7					7											7
Urban	6	1	1	1	7					7											7
Total	6	1	1	1	7					7											7
Socorro	1	2	4	4	4					4											4
Urban	1	2	4	4	4					4											4
Total	1	2	4	4	4					4											4
Sungao City (Capital)	33	137	158	38	158					158											158
Urban	33	137	158	38	158					158											158
Total	33	137	158	38	158					158											158
Taguana-An	15	2	2	2	18					18											18
Urban	15	2	2	2	18					18											18
Total	15	2	2	2	18					18											18
Tubayan	5	5	5	5	5					5											5
Urban	5	5	5	5	5					5											5
Total	5	5	5	5	5					5											5
Tubod																					
Urban																					
Total																					
Provincial Total	67	147	199	15	338	15	154	56	225	563	37	40	36	347	43	328	368	931			368
Urban	67	147	199	15	338	15	154	56	225	563	37	40	36	347	43	328	368	931			368
Total	67	147	199	15	338	15	154	56	225	563	37	40	36	347	43	328	368	931			368

## Public and Private Level I Facilities for Rural Water Supply

Table 4.1.4 (b) represents number and proportion of Level I facilities by public and private sources for rural water supply in the province. The number of public and private facilities shares 75% and 25% of the safe water sources, respectively. Developed springs share 16% of public facilities.

**Table 4.1.4 (b) Public and Private Level I Facilities for Rural Water Supply**

Type of Facility	Public Sources		Private Sources		Total
	Number	%	Number	%	
Deep Well	114	75	37	25	151
Shallow Well	311	63	181	37	492
Spring Development	120	100	0	0	120
Others	211	86	47	18	258
<b>Total</b>	<b>756</b>	<b>75</b>	<b>265</b>	<b>25</b>	<b>1,021</b>

### 4.1.6 Water Supply Service Coverage

#### Estimation of Service Coverage in Terms of Safe, Unsafe and Unserved Classification

Through the review of the number of water supply systems/facilities and the number of households derived from questionnaire, it was found that a great number of unserved population would be figured out as a balance between the total population and population with any levels of services (including unsafe facilities) in application of the service level standard for Levels I and II. To come up with more realistic service coverage, the unserved population in 1997 was referred to the profile in 1990 population census data, "Households by Main Source of Drinking Water and City/Municipality." Of the rest of the population those who are not served by Levels III or II systems were considered to be covered by shared or own use of Level I facilities. The calculation procedure is as follows:

- Service percentage/population of Level III and Level II systems was estimated based on the questionnaire survey results.
- Percentage of unserved population (using undeveloped spring, lake, river, peddler, etc.) reported in the 1990 population census was assumed to have unchanged up to present.
- Population covered by Level I facilities were calculated as a balance figure between the total population, and the population served by Level III & II systems and the unserved population.
- Level I population coverage was estimated in assumption that 50% of the private facilities were shared by neighbors.

Unserved population and the population covered by Level I facilities are presented in Table 4.1.5. Table 4.1.6 presents overall population covered by Level I facilities and number of households.

Number of households per shared public/private facilities is calculated at 23 households as provincial average, which is considered as rather high, compared with the service level standard of Level I public facility (15 households/facility). In particular, those figures at Suigao City (urban area) and the municipalities of General Luna (rural area), Libjo (rural area), Placer (urban and rural area), San Francisco (urban and rural area), Sison (urban area), Socorro (urban area) and Tagana-an (rural area) are quite large. This reason seems to arise from presence of considerable number of non-reported/unidentified private wells.

#### **Percentage of Population Covered by Level I Public Facility for Rural Water Supply**

Grasping the current percentage of population covered by public facilities would be useful information for considering to what extent the additional population to be covered by public facilities in the future plan, because Level I facilities will be major facilities specially for rural water supply through the future.

Population covered by public facilities is calculated as a balance between total population served by Level I facilities and population covered by private facilities. Thus, it is estimated at 80,100 persons or 85% of the total population covered by Level I facilities from the figures shown in Table 4.1.6 (a) and 4.1.6 (b).

Table 4.1.5 Estimation of Unserved Population by Municipality

Name of Municipality	Area	Population and Household (1997)		Served Population			Unserved Population (1995)				Population Covered by Level I Facilities
		Number	HH Size	Level III	Level II	Total	Total No. of HHs	No. of Unserved HHs	Unserved Percentage (1995)		
									Unserved	Population 1997	
Mегria	Urban	5,264	5.90	1,049	1,500	2,540	864	50	6	305	2,419
	Rural	6,893	5.44		1,233	1,233	1,221	87	7	489	5,171
	Total	12,157	5.63	1,049	2,733	3,773	2,091	137	7	797	7,590
Bactag	Urban	8,395	5.59		2,875	2,875	1,440	34	2	158	5,322
	Rural	4,440	6.14		1,140	1,140	693	59	9	378	2,922
	Total	12,835	5.77	2,875	1,140	4,015	2,133	93	4	566	8,244
Bacilisa (Bazel)	Urban	3,209	5.65				531	25	5	151	3,058
	Rural	22,596	5.54				3,817	317	8	1,877	20,719
	Total	25,805	5.55				4,348	342	8	2,030	23,777
Burgos	Urban	2,213	4.83	321	1,188	1,509	443	13	3	65	639
	Rural	667	5.38		270	270	120	22	18	122	375
	Total	2,880	4.95	321	1,458	1,779	563	35	6	179	914
Caghanas	Urban	5,172	4.88				1,042	221	21	1,027	4,075
	Rural	6,186	5.09	544	1,943	2,489	1,195	383	32	1,093	1,704
	Total	11,358	5.00	544	1,943	2,489	2,237	606	27	1,071	5,779
Claver	Urban	7,668	5.03				1,475	82	6	426	7,343
	Rural	7,118	5.02		431	431	1,371	142	10	737	5,950
	Total	14,786	5.02		431	431	2,846	224	8	1,164	13,191
Dapa	Urban	11,760	4.90	1,389		1,389	2,377	613	26	3,043	7,328
	Rural	4,818	5.06		2,415	2,415	943	472	50	2,403	
	Total	16,578	4.95	1,389	2,415	3,804	3,320	1,087	33	5,428	7,328
Del Carmen	Urban	3,437	5.12	65	3,255	3,320	651	328	50		117
	Rural	9,273	5.20	300	1,955	2,255	1,729	570	33	3,057	3,961
	Total	12,710	5.17	365	5,210	5,575	2,380	898	38	4,296	4,078
Dinagut	Urban	2,550	4.88		2,515	2,515	516	359	20		35
	Rural	6,175	5.12		1,351	1,351	1,189	48	4	249	4,575
	Total	8,725	5.05		3,866	3,866	1,705	407	24	2,088	4,610
General Luna	Urban	4,632	5.04				885	27	3	141	4,491
	Rural	8,404	5.40				1,499	45	3	258	8,146
	Total	13,036	5.27				2,384	73	3	399	12,637
Gigaquit	Urban	6,574	5.42	2,445		2,445	1,168	147	13	830	3,319
	Rural	9,317	5.46	3,100		3,100	1,636	254	16	1,458	4,759
	Total	15,891	5.44	5,545		5,545	2,804	403	14	2,287	8,078
Ibijo (Albur)	Urban	3,094	5.14		835	835	581	353	61	1,880	379
	Rural	12,358	5.33		3,427	3,427	2,239	613	27	3,383	5,548
	Total	15,452	5.29		4,262	4,262	2,820	966	34	5,293	5,927
Loreto	Urban	5,662	4.71	499	3,773	4,272	1,145	36	3	178	1,213
	Rural	2,789	4.91		2,773	2,773	541	62	11		16
	Total	8,451	4.77	499	6,546	7,045	1,686	98	6	491	1,229
Mainit	Urban	10,125	5.22	1,698	3,373	5,071	1,892	221	12	1,183	3,871
	Rural	12,198	5.41	5,297	1,179	6,476	2,188	384	17	2,131	3,591
	Total	22,323	5.33	6,995	4,552	11,547	4,090	605	15	3,302	7,462
Malambo	Urban	6,777	5.07	735	120	855	1,339	80	6	405	5,517
	Rural	7,385	5.24		5,550	5,550	1,412	140	10	732	1,103
	Total	14,162	5.16	735	5,670	6,495	2,751	220	8	1,133	6,620
Palar	Urban	2,289	5.19		1,886	1,886	427	286	67	403	
	Rural	6,279	5.64		644	644	1,079	497	46	2,892	2,743
	Total	8,568	5.51		2,530	2,530	1,506	783	52	4,455	2,743
Placer	Urban	12,774	5.40		660	660	2,258	121	5	683	11,429
	Rural	8,906	4.94	735	1,285	2,021	1,722	211	12	1,091	5,794
	Total	21,680	5.20	735	1,945	2,681	3,980	332	8	1,808	17,223
San Benito	Urban	2,174	5.60	420	800	1,220	377	39	10	223	729
	Rural	2,460	5.29				451	68	15	371	2,089
	Total	4,634	5.43	420	800	1,220	828	107	13	599	2,818
San Francisco (Anao-Aon)	Urban	4,036	4.88	1,603	200	1,803	801	25	3	126	2,107
	Rural	6,303	5.21	3,138	1,364	4,502	1,171	44	4	237	4,564
	Total	10,339	5.07	4,741	1,564	6,305	1,972	69	3	362	3,671
San Isidro	Urban	1,800	5.73		1,720	1,720	307	52	17	80	
	Rural	4,229	5.75				707	90	13	538	3,691
	Total	6,029	5.74		1,720	1,720	1,009	142	14	848	3,691
San Jose	Urban	16,011	5.53	386	807	1,188	2,884	448	16	2,487	12,336
	Rural	11,574	5.92		180	180	1,548	777	40	4,617	6,777
	Total	27,585	5.69	386	987	1,368	4,832	1,225	25	6,993	19,113
Santa Monica (Sapao)	Urban	1,815	5.32	1,459	356	1,815	333	143	43		
	Rural	5,581	5.78	90	231	321	942	249	26	1,475	3,785
	Total	7,396	5.66	1,549	587	2,136	1,275	392	31	2,274	3,785
Sison	Urban	2,896	5.15	85		85	543	22	4	117	2,694
	Rural	6,270	5.47	3,515	2,489	6,004	1,108	38	3	215	51
	Total	9,166	5.36	3,600	2,489	6,089	1,651	66	4	333	2,745
Socorro	Urban	7,775	5.72				1,305	123	9	233	7,042
	Rural	8,069	5.90				1,313	214	16	1,313	6,734
	Total	15,844	5.81				2,618	337	13	2,600	13,796
Surigao City (Capital)	Urban	70,705	5.21	45,180		45,180	13,160	436	3	2,343	23,182
	Rural	37,570	5.14	500		500	7,080	757	11	4,017	33,053
	Total	108,275	5.18	45,680		45,680	20,240	1,193	6	6,387	56,235
Tagna An	Urban	5,676	5.13				1,072	122	11	646	5,030
	Rural	6,867	5.23				1,273	213	17	1,149	5,718
	Total	12,543	5.19				2,345	335	14	1,793	10,748
Tubigon	Urban	1,910	4.80		708	708	383	86	22	429	773
	Rural	4,455	5.15		885	885	839	150	18	802	2,788
	Total	6,395	5.04		1,593	1,593	1,222	236	19	1,233	3,571
Tubod	Urban	1,526	5.17	1,526			1,526	293	50	17	
	Rural	8,869	5.09	5,787	3,082	8,869	1,729	87	5		
	Total	10,395	5.10	7,313	3,082	10,395	2,022	137	7		
Provincial Total	Urban	217,939	5.23	61,726	23,691	85,417	40,487	4,544	11	18,174	114,348
	Rural	238,079	5.34	23,008	33,830	56,838	43,171	6,998	16	37,987	143,256
	Total	456,018	5.29	84,732	57,521	142,255	83,658	11,542	14	56,161	257,604



Table 4.1.6 (a) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Pop. Covered by Level I Facilities	Number of Facilities						Coverage of Own Use					
			Public Facilities			Private Facilities			Number of Private Facilities			(1) Population Covered		
			Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total
Alegria	Urban	2,419	22	3	25	42	5	47	21	3	24	123	16	139
	Rural	5,171	25	5	30	95	24	119	48	12	60	281	70	351
	Total	7,591	47	8	55	137	29	166	68	15	83	404	86	490
Bacuag	Urban	5,322												
	Rural	2,922	19	2	21	40	98	138	20	49	69	111	275	386
	Total	8,244	19	2	21	40	98	138	20	49	69	111	275	386
Basilisa (Rizal)	Urban	3,058	10		10	16	16	16		8	8		45	45
	Rural	20,719	60		60									
	Total	23,777	70		70	16	16	16		8	8		45	45
Burgos	Urban	639												
	Rural	275	6	0	6	37	4	41	19	2	21	90	9	99
	Total	914	6	0	6	37	4	41	19	2	21	90	9	99
Cagdianao	Urban	4,075												
	Rural	1,704												
	Total	5,779												
Claver	Urban	7,242	39	10	49			12	12	6	6		30	30
	Rural	5,950	85	21	106			3	3	2	2		8	8
	Total	13,191	124	31	155			15	15	8	8		38	38
Dapa	Urban	7,328	65	3	68									
	Rural		26	1	27									
	Total	7,328	91	4	95									
Del Carmen	Urban	117	1		1			24	24		12	12	61	61
	Rural	3,961	37	2	39			6	6	3	3		15	15
	Total	4,078	38	2	40			30	30	15	15		77	77
Dinagat	Urban	35	27		27									
	Rural	4,575	25		25									
	Total	4,610	52		52									
General Luna	Urban	4,491	48	11	59	118	120	238	59	60	119	296	303	600
	Rural	8,146	2	0	2	1	0	1	0	0	1	2	1	3
	Total	12,637	49	12	61	118	121	239	59	60	120	298	304	602

Table 4.1.6 (a) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Pop. Covered by Level I Facilities	Number of Facilities						Coverage of Own Use					
			Public Facilities			Private Facilities			Number of Private Facilities			(1) Population Covered		
			Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total
Gigaquit	Urban	3,319	16		16		57		29	29		154		154
	Rural	4,759	123	1	124	3	67	70	2	33	35	9	181	190
	Total	8,078	139	1	140	3	124	127	2	62	64	9	335	344
Libjo (Albor)	Urban	379												
	Rural	5,548	5	1	6									
	Total	5,927	5	1	6									
Loreto	Urban	1,212	5	1	6	2	6	8	1	3	4	5	14	19
	Rural	1,228	6		6		17	17		9	9		40	40
	Total	2,440	11	1	12	2	23	25	1	12	13	5	54	59
Maimit	Urban	3,871	30	5	35									
	Rural	3,591	14	4	18									
	Total	7,462	44	9	53									
Malimono	Urban	5,517												
	Rural	1,103	36	3	36	3	3	3	2	2	2	8	8	
	Total	6,620	36	3	36	3	3	3	2	2	2	8	8	
Pilar	Urban		1	3	4	17	11	28	9	6	14			
	Rural	2,743	20	0	20	26	3	29	13	2	15	67	8	75
	Total	2,743	21	3	24	43	14	57	22	7	29	67	8	75
Placer	Urban	11,429	7		7									
	Rural	5,794	11		11		3	3		2	2		8	8
	Total	17,223	18		18		3	3		2	2		8	8
San Benito	Urban	729					8	8		4	4		22	22
	Rural	2,089	3		3		16	16		8	8		45	45
	Total	2,818	3		3		24	24		12	12		67	67
San Francisco (Anao-Aon)	Urban	2,107	2	1	3	1	0	1	0	0	1	2	0	2
	Rural	1,564	1	0	1					0	1	2	0	2
	Total	3,671	3	1	4	1	0	1	0	0	1	2	0	2
San Isidro	Urban		3	3	3		6	6		3	3			
	Rural	3,691	17	4	21									
	Total	3,691	20	4	24		6	6		3	3			

Table 4.1.6 (a) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Pop. Covered by Level I Facilities	Number of Facilities						Coverage of Own Use					
			Public Facilities			Private Facilities			Number of Private Facilities			(1) Population Covered		
			Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total	Safe	Unsafe	Total
San Jose	Urban	12,336	6	1	7	10	53	63	5	26	32	29	145	174
	Rural	6,777	34	4	38	13	141	154	6	71	77	35	391	426
	Total	19,113	39	6	45	23	194	217	12	97	109	64	536	600
Santa Monica (Sapao)	Urban					5	2	7	3	1	4			
	Rural	3,785	17	2	19	30	10	40	15	5	20	80	26	106
	Total	3,785	17	2	19	35	12	47	18	6	24	80	26	106
Sison	Urban	2,694	2		2	1	6	7	1	3	4	3	15	18
	Rural	51	5		5	1	7	8	1	4	4	3	18	21
	Total	2,745	7		7	2	13	15	2	7	8	5	33	39
Socorro	Urban	7,042	4		4	19	1	20	10	1	10	54	3	57
	Rural	6,754	13	0	13	12	10	22	6	5	11	34	29	63
	Total	13,796	17	0	17	31	11	42	16	6	21	89	31	120
Surigao City (Capital)	Urban	23,182	38	1	39									
	Rural	33,053	158	34	192									
	Total	56,235	196	35	231									
Tagana-An	Urban	5,030	13	0	13	10	1	11	5	0	6	26	2	28
	Rural	5,718	5		5	4		4	2		2	10		10
	Total	10,748	18	0	18	14	1	15	7	0	8	36	2	38
Tubajon	Urban	773												
	Rural	2,798	5		5									
	Total	3,571	5		5									
Tubod	Urban													
	Rural													
	Total													
Provincial Total	Urban	114,348	338	40	378	225	328	553	112	164	277	538	813	1,351
	Rural	143,256	756	83	839	265	409	674	132	205	337	729	1,123	1,852
	Total	257,604	1,094	123	1,217	489	738	1,227	245	369	614	1,267	1,937	3,204

Table 4.1.6 (b) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Coverage of Shared Well					Level I Coverage (1) + (2)						
		(2) Population Covered by Private and Public			Number of Households		No. of HHs per Shared Facility	Safe		Unsafe		Total	
		Safe	Unsafe	Total	Safe	Unsafe		Pop.	%	Pop.	%		Pop.
Alegria	Urban	2,135	146	2,281	362	25	387	2,258	43	162	3	2,419	46
	Rural	4,172	649	4,820	767	119	886	4,453	65	719	10	5,171	75
	Total	6,307	794	7,101	1,129	144	1,273	6,710	55	880	7	7,591	62
Bacuag	Urban		5,322	5,322		952	952			5,322	63	5,322	63
	Rural	1,266	1,270	2,536	206	207	413	1,377	31	1,545	35	2,922	66
	Total	1,266	6,592	7,858	206	1,159	1,365	1,377	11	6,867	54	8,244	64
Basilisa (Rizal)	Urban	1,699	1,314	3,013	301	233	533	1,699	53	1,359	42	3,058	95
	Rural	20,719		20,719	3,740		3,740	20,719	92			20,719	92
	Total	22,418	1,314	23,732	4,041	233	4,273	22,418	87	1,359	5	23,777	92
Burgos	Urban		639	639		132	132			639	29	639	29
	Rural	176		176	33		33	266	40	9	1	275	41
	Total	176	639	815	33	132	165	266	9	648	23	914	32
Cagdianao	Urban		4,075	4,075		835	835			4,075	79	4,075	79
	Rural		1,704	1,704		335	335			1,704	28	1,704	28
	Total		5,779	5,779		1,170	1,170			5,779	51	5,779	51
Claver	Urban	5,161	2,050	7,212	1,026	408	1,434	5,161	67	2,080	27	7,242	94
	Rural	4,716	1,227	5,942	939	244	1,184	4,716	66	1,234	17	5,950	84
	Total	9,877	3,277	13,154	1,965	652	2,617	9,877	67	3,315	22	13,191	89
Dapa	Urban	6,962	366	7,328	1,421	75	1,496	6,962	59	366	3	7,328	62
	Rural												
	Total	6,962	366	7,328	1,421	75	1,496	6,962	42	366	2	7,328	44
Del Carmen	Urban	9	47	56	2	9	11	9	0	108	3	117	3
	Rural	3,452	494	3,946	664	95	759	3,452	37	509	5	3,961	43
	Total	3,461	540	4,001	666	104	770	3,461	27	617	5	4,078	32
Dinagat	Urban	35		35	7		7	35	1			35	1
	Rural	4,575		4,575	893		893	4,575	74			4,575	74
	Total	4,610		4,610	901		901	4,610	53			4,610	53

Table 4.1.6 (b) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Coverage of Shared Well										Level I Coverage (1) + (2)					
		(2) Population Covered by Private and Public			Number of Households			No. of HHs per Shared Facility	Safe		Unsafe		Total				
		Safe	Unsafe	Total	Safe	Unsafe	Total		Pop.	%	Pop.	%	Pop.	%			
General Luna	Urban	2,684	1,207	3,891	533	239	772	4	2,981	64	1,510	33	4,491	97			
	Rural	6,517	1,627	8,144	1,207	301	1,508	603	6,519	78	1,627	19	8,146	97			
	Total	9,201	2,833	12,035	1,739	541	2,280	13	9,500	73	3,137	24	12,637	97			
Gigaquit	Urban	1,193	1,971	3,165	220	364	584	13	1,193	18	2,126	32	3,319	50			
	Rural	3,735	834	4,569	684	153	837	5	3,744	40	1,015	11	4,759	51			
	Total	4,929	2,805	7,734	904	516	1,421	7	4,937	31	3,141	20	8,078	51			
Libjo (Albor)	Urban		379	379		74	74				379	12	379	12			
	Rural	4,438	1,110	5,548	833	208	1,041	173	4,438	36	1,110	9	5,548	45			
	Total	4,438	1,489	5,927	833	282	1,115	186	4,438	29	1,489	10	5,927	38			
Loreto	Urban	776	417	1,193	165	89	253	25	780	14	432	8	1,212	21			
	Rural										40	1	40	1			
	Total	776	417	1,193	165	89	253	10	780	9	472	6	1,252	15			
Mainit	Urban	3,274	597	3,871	627	114	742	21	3,274	32	597	6	3,871	38			
	Rural	2,873	718	3,591	531	133	664	37	2,873	24	718	6	3,591	29			
	Total	6,147	1,315	7,462	1,158	247	1,405	27	6,147	28	1,315	6	7,462	33			
Malimono	Urban		5,517	5,517		1,088	1,088				5,517	81	5,517	81			
	Rural	1,095		1,095	209		209	6	1,103	15			1,103	15			
	Total	1,095	5,517	6,612	209	1,088	1,297	35	1,103	8	5,517	39	6,620	47			
Pilar	Urban																
	Rural	2,608	60	2,668	462	11	473	14	2,675	43	68	1	2,743	44			
	Total	2,608	60	2,668	462	11	473	9	2,675	31	68	1	2,743	32			
Placer	Urban	11,429		11,429	2,117		2,117	302	11,429	89			11,429	89			
	Rural	5,098	687	5,786	1,032	139	1,171	94	5,098	57	695	8	5,794	65			
	Total	16,528	687	17,215	3,149	139	3,288	169	16,528	76	695	3	17,223	79			
San Benito	Urban		707	707		126	126	32			729	34	729	34			
	Rural	570	1,475	2,044	108	279	386	35	570	23	1,519	62	2,089	85			
	Total	570	2,181	2,751	108	405	513	34	570	12	2,248	49	2,818	61			
San Francisco (Anso-Aon)	Urban	1,686	419	2,105	345	86	431	123	1,688	42	419	10	2,107	52			
	Rural	1,251	313	1,564	240	60	300	300	1,251	20	313	5	1,564	25			
	Total	2,937	732	3,669	586	146	731	163	2,939	28	732	7	3,671	36			

Table 4.1.6 (b) Estimation of Population Covered by Safe and Unsafe Source by Municipality

Name of Municipality	Area	Coverage of Shared Well						Level I Coverage (1) + (2)									
		(2) Population Covered by Private and Public			Number of Households			No. of HHs per Shared Facility	Safe		Unsafe		Total				
		Safe	Unsafe	Total	Safe	Unsafe	Total		Pop.	%	Pop.	%	Pop.	%			
San Isidro	Urban																
	Rural	2,988	703	3,691	520	122	642	31	2,988	71	703	17	3,691	87			
	Total	2,988	703	3,691	520	122	642	24	2,988	50	703	12	3,691	61			
San Jose	Urban	3,525	8,637	12,162	637	1,562	2,199	57	3,553	22	8,783	55	12,336	77			
	Rural	2,351	4,000	6,352	397	676	1,073	9	2,386	21	4,391	38	6,777	59			
	Total	5,876	12,637	18,513	1,035	2,238	3,272	21	5,940	22	13,174	48	19,113	69			
Santa Monica (Sapao)	Urban																
	Rural	3,115	563	3,678	539	97	636	16	3,195	57	589	11	3,785	68			
	Total	3,115	563	3,678	539	97	636	15	3,195	43	589	8	3,785	51			
Sison	Urban	1,224	1,451	2,676	238	282	520	94	1,227	42	1,467	51	2,694	93			
	Rural	30	30	60	6	6	12	1	33	1	18	0	51	1			
	Total	1,255	1,481	2,736	244	288	532	95	1,260	14	1,485	16	2,745	30			
Socorro	Urban	6,791	194	6,985	1,187	34	1,221	87	6,845	88	197	3	7,042	91			
	Rural	5,291	1,400	6,691	897	237	1,134	47	5,325	66	1,429	18	6,754	84			
	Total	12,082	1,595	13,677	2,084	271	2,355	62	12,170	77	1,626	10	13,796	87			
Surigao City (Capital)	Urban	22,469	713	23,182	4,313	137	4,450	114	22,469	32	713	1	23,182	33			
	Rural	27,165	5,888	33,053	5,285	1,145	6,431	33	27,165	72	5,888	16	33,053	88			
	Total	49,635	6,601	56,236	9,598	1,282	10,880	47	49,635	46	6,601	6	56,236	52			
Tagana-An	Urban	4,867	135	5,002	949	26	975	53	4,893	86	137	2	5,030	89			
	Rural	5,708		5,708	1,091		1,091	156	5,718	83			5,718	83			
	Total	10,575	135	10,710	2,040	26	2,066	81	10,611	85	137	1	10,748	86			
Tubujon	Urban		773	773		161	161				773	40	773	40			
	Rural	2,798		2,798	543		543	109	2,798	62			2,798	62			
	Total	2,798	773	3,571	543	161	704	141	2,798	44	773	12	3,571	56			
Tubod	Urban																
	Rural																
	Total																
Provincial Total	Urban	75,919	37,077	112,997	14,449	7,050	21,499	33	76,457	35	37,891	17	114,348	52			
	Rural	116,707	24,720	141,427	21,826	4,562	26,388	22	117,436	49	25,844	11	143,280	60			
	Total	192,626	61,798	254,424	36,275	11,612	47,887	26	193,893	43	63,734	14	257,628	56			