# 3. PROVINCIAL PROFILE

## 3.3 Socio-economic Conditions

### 3.3.2 Basic Infrastructure

**Table 3.3.1 Number of Elementary School, High School and Other Served Facilities**

Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) — Page: 1 of 1
Content: Socio-economic - Services — Date: 17 Jan. 2000
Data Collection Level: Provincial — Prov. Number: 0606 — Filename: Socio.xls
Region Number: VI — Prov. Name: Antique — Form No.: P.1.5

| Geographic Code | Name of City or Municipality | Services (As of 1999) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Elementary School | | | High School | | | Vocational Schools | Colleges and Universities | Hospitals | | Banks and Financing Institutions | | | |
| | | Public | Private | Total | Public | Private | Total | | | | | | | | |
| Number | Character | Number | Number | Number | Number | Number | Number | Number | Number | Number | | Number | | | |
| 060601 | Anini-y | 18 | | 18 | 2 | 2 | 4 | | | | | 3 | | | |
| 060602 | Barbaza | 16 | | 16 | 1 | 1 | 2 | | | | | 3 | | | |
| 060603 | Belison | 8 | | 8 | 1 | | 1 | | | | | 2 | | | |
| 060604 | Bugasong | 21 | 1 | 22 | 2 | 1 | 3 | 2 | | 1 | | 2 | | | |
| 060605 | Caluya | 15 | | 15 | 2 | 1 | 3 | | 1 | 1 | | 1 | | | |
| 060606 | Culasi | 31 | | 31 | 2 | 1 | 3 | 1 | 1 | 1 | | 2 | | | |
| 060608 | Hamtic | 34 | | 34 | 3 | | 3 | | | | | 4 | | | |
| 060609 | Laua-an | 25 | | 25 | 2 | | 2 | | | | | 3 | | | |
| 060610 | Libertad | 14 | 1 | 15 | 1 | | 1 | | | | | 3 | | | |
| 060611 | Pandan | 32 | | 32 | 4 | 1 | 5 | | | 1 | | 3 | | | |
| 060612 | Patnongon | 38 | | 38 | 3 | 1 | 4 | | | | | 3 | | | |
| 060613 | San Jose de Buenavista (Capital) | 23 | | 23 | 1 | 1 | 2 | 1 | 3 | 1 | | 10 | | | |
| 060614 | San Remigio | 38 | | 38 | 2 | 1 | 3 | | | | | | | | |
| 060615 | Sebaste | 10 | | 10 | 1 | 1 | 2 | | | | | 3 | | | |
| 060616 | Sibalom | 48 | 1 | 49 | 4 | | 4 | | 1 | 1 | | 3 | | | |
| 060617 | Tibiao | 16 | | 16 | 1 | 1 | 2 | | 1 | | | 3 | | | |
| 060607 | Tobias Fornier | 33 | | 33 | 6 | 1 | 7 | | | 1 | | 2 | | | |
| 060618 | Valderrama | 21 | | 21 | 1 | 1 | 2 | | | 1 | | 2 | | | |

Source: PSPT, Antique, 1999

## 3.5 Health Status

### 3.5.1 Morbidity, Mortality and Infant Mortality

**Table 3.5.1 Morbidity, Mortality and Infant Mortality**

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PWSSP) | | | Prov. Number 0606 | | | | | | | Page 1 of 1 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Content Health - Morbidity and Mortality | | | Prov. Name Antique | | | | | | | Date 17 Jan 2000 | | |
| Data Collection Level Provincial | | | Municipal Number | | | | | | | Filename Health xls | | |
| Region Number VI | | | Municipal Name | | | | | | | Form Number P 3 1 | | |
| Cause Group Diseases of | Disease No | Name of Diseases (Group) | Water Related Diseases | Annual Incidence | | | | | | | | |
| | | | | Morbidity | | | Mortality | | | Infant Mortality | | |
| | | | | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Infective and Parasitic (001-136) | A 01 | 2-4 Typhoid Parathyphoid | X | | | | | | | | | |
| | A 02 | 5-7 Dysentery | X | | | | | | | | | |
| | A 03 | 8-10 Intestinal Parasites | X | | | 1,237 | | | | | | |
| | A 04 | 11-13 Diarrhea | X | | | 5,732 | | | | | | 3 |
| | A 05 | 14-16 Tuberculosis | | | | 1,969 | | | 313 | | | |
| | A 06 | 17-19 Conjunctivities | X | | | 675 | | | | | | |
| | A 07 | 20-22 Whooping Cough | | | | | | | | | | |
| | A 08 | 23-25 Throat Ear Nose | | | | | | | | | | |
| | A 09 | 26-28 Tetanus | | | | | | | | | | |
| | A 10 | 29-31 Septicemia | | | | | | | 50 | | | 8 |
| | A 11 | 32-34 Cholera | X | | | | | | | | | |
| | A 12 | 35-37 Varicella, Chicknpox | | | | | | | | | | |
| | A 13 | 38-40 Measles | | | | 27 | | | 4 | | | |
| | A 14 | 41-43 Dengue Fever | X | | | 1,442 | | | | | | |
| | A 15 | 44-46 Viral Hepatitis | X | | | | | | 2 | | | |
| | A 16 | 47-49 Malaria | X | | | | | | | | | |
| | A 17 | 50-52 Schistosomiasis | X | | | | | | | | | |
| | A 18 | 53-55 Filariasis | X | | | | | | | | | |
| | A 19 | 56-58 Venerial Diseases | | | | | | | | | | |
| | A 20 | 59-61 Other Bacter / Viral Dis | | | | | | | | | | |
| Neoplasms (140-239) | B 01 | 62-64 Malignant Neoplasms | | | | | | | | | | |
| | B 02 | 65-67 Leukemia | | | | | | | | | | |
| Endocrine, Nutritional & Metabolic (250-279) | C 01 | 68-70 Diabetes Mellitus | | | | | | | 6 | | | |
| | C 02 | 71-73 Nutritional Deficiencies | | | | | | | | | | |
| | C 03 | 74-76 Endocrine Disorder | | | | | | | | | | |
| Blood & Blood Forming Organs (280-289) | D 01 | 77-79 Anemias | | | | 1,083 | | | 3 | | | |
| Mental Disorder (290-319) | E 01 | | | | | | | | | | | |
| Nervous System & Sense Organs (320-389) | F 01 | 80-82 Meningitis | | | | | | | | | | 3 |
| | F 02 | 83-85 Nervous System | | | | | | | | | | |
| Circulatory Systems (390-459) | G 01 | 86-88 Heart Diseases | | | | 616 | | | 300 | | | |
| | G 02 | 89-91 Vascular Diseases | | | | | | | 282 | | | |
| Respiratory Systems (460-519) | H 01 | 92-94 Bronchitis | | | | 6,539 | | | | | | |
| | H 02 | 95-97 Pneumonia | | | | 11,692 | | | 964 | | | 45 |
| | H 03 | 98-100 Influenza | | | | 3,237 | | | | | | |
| | H 04 | 101-103 Obstructive Pulmonary | | | | | | | | | | |
| | H 05 | 104-106 ARI | | | | 1,276 | | | | | | |
| Digestive System (520-579) | I 01 | 107-109 Appendicitis | | | | | | | | | | |
| | I 02 | 110-112 Gastroent Colitis | | | | 586 | | | | | | 1 |
| | I 03 | 113-115 Chronic Liver Disease | | | | | | | 19 | | | |
| | I 04 | 116-118 Other Diges Diseases | | | | | | | | | | |
| Genito-Urinary System (580-629) | J 01 | 119-121 Kidney, Nephritis | | | | | | | 48 | | | |
| | J 02 | 122-124 Urinary Infections | | | | | | | | | | |
| Complication of Pregnancy & the Puerperium (630-676) | K 01 | 125-127 Prematurity | | | | | | | | | | 20 |
| Skin & Subcutaneous Tissue (680-709) | L 01 | 128-130 Skin Diseases | X | | | 1,524 | | | | | | |
| | L 02 | 131-133 Scabies | X | | | 461 | | | | | | |
| Musculoskeletal & Connective Tissue (710-739) | M 01 | 134-136 Arthrop., Rheumatism | | | | | | | | | | |
| Congenital Anomalies (740-759) | N 01 | 137-139 Congenital Anomalies | | | | | | | | | | 19 |
| Certain Causes of Prenatal Morbidity & Mortality (760-779) | P 01 | 140-142 Birth Trauma | | | | | | | | | | |
| | P 02 | 143-145 Birth Injuries & Difficult Labor | | | | | | | | | | |
| | P 03 | 146-148 Resp. Fetus Newborn | | | | | | | | | | 8 |
| | P 04 | 159-151 Other Prenatal Causes | | | | | | | | | | |
| Symptoms & Illdefined Condition (780-799) | Q 01 | 152-154 Senility | | | | | | | | | | |
| | Q 02 | 155-157 Ill-Defined Conditon | | | | | | | | | | |
| Accidents, Poisoning & Violence (800-999) | R 01 | 158-160 Burns | | | | | | | | | | |
| | R 02 | 161-163 Suffoc. Foreign Body | | | | | | | | | | |
| | R 03 | 164-166 Other Accidents | | | | 383 | | | 71 | | | |

Source PHO-Antique, 1999

## Table 3.6.1 Municipal Solid Waste Collection and Disposal by Municipality

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | | | | | | | | Page: 1 of 1 |
|---|---|---|---|---|---|---|---|---|---|
| Content: **Environment Sanitation - Solid Waste Collection and Disposal** | | | | | | | | | Date: 17 Jan. 2000 |
| Data Collection Level: **Provincial** | | | Prov. Number: 0606 | | | | | | Filename: Sanitation.xls |
| Region Number: VI | | | Prov. Name: Antique | | | | | | Form Number: P.6.6 |
| Geographic Code | Name of City or Municipality | With Municipal Service | | | | | Without Service | | |
| | | Number of Collection Trucks | | | Disposal | | Number of Household by Manner of Disposal | | |
| | | Open Dump Trucks | Closed Type Trucks | Total Units | Number of Households Served by Open Dump Site | Number of Household Served by Sanitary Landfill | Dumping (Land and Water) and Burning | Burying | Composting |
| Number | Character | Number | Number | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | | | | | | 705 | 2,455 | 470 |
| 060602 | Barbaza | | | | | | 680 | 2,446 | 580 |
| 060603 | Belison | | | | | | 870 | 1,126 | 360 |
| 060604 | Bugasong | 1 | | 1 | 2,105 | | 409 | 2,523 | 570 |
| 060605 | Caluya | | | | | | 1,141 | 1,963 | 270 |
| 060606 | Culasi | 1 | | 1 | 1,057 | | 2,003 | 2,286 | 885 |
| 060608 | Hamtic | 1 | | 1 | 615 | | | 2,603 | 4,069 |
| 060609 | Laua-an | 1 | | 1 | 312 | | | 4,242 | |
| 060610 | Libertad | | | | | | 420 | 2,009 | 320 |
| 060611 | Pandan | 1 | | 1 | 855 | | 658 | 3,373 | 359 |
| 060612 | Patnongon | 1 | | 1 | 1,520 | | 1,977 | 2,545 | 200 |
| 060613 | San Jose de Buenavist | 1 | | 1 | 4,310 | | 1,874 | 2,125 | 510 |
| 060614 | San Remigio | | | | | | 780 | 3,632 | 115 |
| 060615 | Sebaste | | | | | | 875 | 1,296 | 325 |
| 060616 | Sibalom | 1 | | 1 | 2,705 | | | 5,247 | 1,505 |
| 060617 | Tibiao | | | | | | | 2,032 | 2,025 |
| 060607 | Tobias Fornier | 1 | | 1 | 489 | | 302 | 2,456 | 2,034 |
| 060618 | Valderrama | | | | | | 1,206 | 2,061 | |

Source: PSPT-Antique, 1999

# 4. EXISTING FACILITIES AND SERVICE COVERAGE

## 4.1 Water Supply

### 4.1.2 Type of Facilities and Definition of Service Level Standard

**NEDA Board Resolution**
**No. 12 (s. 1995)**

**APPROVING THE COMMON DEFINITION OF TERMS RELATIVE TO WATER SUPPLY, SEWERAGE AND SANITATION**

**DEFINITION OF TERMS**

**Water Supply**

Levels of Service

Three levels of water service shall be provided to urban and rural communities depending upon technical and financial considerations, the needs of the WDs and RWSAs, and their willingness and ability to share in the costs and the responsibility of constructing and maintaining the water systems. These are:

1. Level I (point source) - a protected well or a developed spring with an outlet but without a distribution system, generally adaptable for rural areas where the houses are thinly scattered. A Level I facility normally serves an average of 15 households.

2. Level II (communal faucet system or standposts) – a system composed of a source, a reservoir, a piped distribution network, and communal faucets. Usually one faucet serves 4 to 6 households. Generally suitable for rural and urban fringe areas where houses are clustered densely to justify a simple piped system.

3. Level III (waterworks system or individual house connections) – a system with a source, a reservoir, a piped distribution network and household taps. It is generally suited for densely populated urban areas.

Urban – the revised definition of urban population included the criteria on the economic and social functions of barrios, poblaciones and central districts resulting to the new definition which states:

1. In their entirely, all municipal jurisdictions which, whether designated as chartered cities, provincial capital or not, have a population density of at least 1,000 persons per square kilometers.

2. Poblaciones or central districts of municipalities and cities which have a population density of at least 500 persons per square kilometer.
3. Poblaciones or central districts (not included in nos. 1 and 2) regardless of population size which have the following:

    a. Street pattern, i.e., network of streets in either at parallel or right angle orientation;
    b. At least six establishments (commercial, manufacturing, recreational and/or personal services); and

    c. At least three of the following:
        i) a town hall, church or chapel with religious services at least once a month;
        ii) a public plaza, park or cemetery;
        iii) a market place or building on at least once a week and
        iv) a public building like school, hospital, puericulture and health center or library.

4. Barrios having at least 1,000 inhabitants which meet the conditions setforth in no. 3 above, and in which the occupation of the inhabitants is predominantly non-farming/fishing.

Rural – all areas not falling under the urban classification (National Statistics Office).

Rural Waterworks and Sanitation Association (RWSAs) – non-stock, non-profit organizations envisioned to operate and mange Level II water supply facilities.

Barangay Waterworks and Sanitation Association (BWSA) – non-stock, non-profit organizations envisioned to operate and manage Level I water supply facilities.

Water Supply – for purpose of the plan, refers to the supply of the water for domestic, municipal, industrial/commercial uses.

Water Supply Coverage – refers to the number of people in a given community of geographical area who have access to safe water. The extent to which the population of a geographical area is covered (expressed in terms of the number of people served compared to the total population of that community or area).

Adequate Served – refers to those with the following rate or consumption:

| | |
|---|---|
| Level I | at least 20 liters/capita/day |
| Level II | at least 60 liters/capita/day |
| Level III | at least 100 liters/capita/day |

Service Coverage – the no. of people a facility can serve.

Level I Water Supply Systems

1. Deepwell – are characterized by aquifers or water bearing formations generally located at a depth of more than 20 (mbgs.). Construction of deepwells with depths greater than 20 meters are recommended in these areas.

2. Shallow Well – are areas suitable for construction of well with depths not more than 20 meters and are recommended for rural water supply development, particularly levels I and II services. Static water level in these areas are generally within 6 meters below ground surface.

3. Developed Springs – developed to capture the natural flow of an aquifer, pollution generally originates close to the point of capture. It is projected by: 1) excluding shallow seepage waters through encircling the spring with a watertight chamber penetrating a safe-distance into the aquifer and; 2) diverting surface run-off away from the immediate vicinity.

4. Protected Dug Wells – WASAMS defines protected dug wells as those which are adequately protected (guarded) against surface or outside contamination through the use of lining or covering, with a rim sufficiently raised above the ground level, and may be equipped with a pump (any type).

Salt Intrusion – encroachment of salt water upon fresh water.

Potable Water – water that is satisfactory for drinking, culinary and domestic purposes and meets the requirements of the health authority having jurisdiction. (Plumbing Code).

Population Underserved – population inadequately served.

Population Unserved – population without access to water supply facility.

Population Served – no. of population adequately served of connections x no. of persons served per connection.

Rainwater Cisterns/Collectors/Catchers – reservoirs, tanks or vessels for the storage of rainwater.

Reliable Water Supply – efficiency in the delivery of water supply in terms of quantity and quality.

Safe Drinking Water – water must be free of disease-producing bacteria (pathogens). In addition, the water should not possess undesirable tastes, odors, colors, turbidity or chemicals.

Service Area – geographic jurisdiction of water utilities.

Non-revenue Water – unbilled water.

Appropriate Technologies – suited to local conditions and resources.

Infiltration Galleries – horizontal wells which collect water over the entire length.

Accounted-for-water – billed water.

Access to Water Supply Facilities – access to water supply is categorized as follows:

Level I - the farthest user is not more than 250 meters from the point source.

Level II - the farthest house is not more than 25 meters from the communal faucet system.

Level III - the house have service connection from the system.

Private Water System – privately-owned water supply system.

Public Water System – system owned by the government.

## DEFINITION OF TERMS

### Sewerage and Sanitation

Sanitation – the development and practical application of sanitary measures for the sake of cleanliness and protecting health.

Sanitary Toilet – is an approved type of facility used for receiving and disposing human waste (feces and urine).

APPROVED TYPES

1. Flush – type of toilet facility with a mechanical device used to wash the waste into the receiving sewer or septic tank by the use of flushing water and with traps to provide a "water seal".
2. Poor Flush – type of toilet facility without a mechanical device and in hand-flush with "water seal" connected to receiving sewer, septic tank or leaching pit.
3. Ventilated Improved Pit refers to an on-site toilet facility without using any amount of water comprising a vent pipe with a fly screen used to trap flies in a pit and, also allows evacuation of foul air into the atmosphere. This minimizes foul odor with the latrine superstructure and traps flies that could not spread diseases through fecal contamination.
4. Sanitary Pit Privy – type of toilet facility without using any amount of water, with a pit of at least 1-2 meters depth, a hole of one square meter, provided with a floor covering a riser, seat with cover which are all fly-and rodent proof and a building for privacy including the Antipolo type.

Unsanitary Toilet – a type of facility used for receiving and disposing human waste which does not fall under the category of approved types of toilet facilities.

UNAPPROVED/UNSANITARY TYPES

1. Open Pit Privy- a pit of at least the same dimension as the sanitary pit privy, provided with pit flooring, with or without riser and seat and without cover to protect from flies and rodents.
2. Overhang – a structure provided with flooring and with an opening built above the body of water or above the ground without pit under it, used for defecation of the disposal of human waste. It can be a part of the house or a separate structure outside the house.

**LEVELS OF TOILET USE**

1. Communal – a toilet facility shared by two or more households.
2. Public – toilet facility located at public places like markets, bus stations, etc. intended for public use.
3. School – a toilet facility located in a school.
4. Household – a toilet facility being used by an individual household.

Sewerage - facilities that collect human waste and sullage from residences and establishments usually piped and conveyed in structures (sewers, pump stations) for eventual central treatment and safe disposal. Piped sewerage includes a collection system (street laterals), a conveyance system (trunk sewers and pump stations), and a treatment plant/disposal system.

Human Waste – solid (feces) and liquid (urine) wastes from human.

Sullage – liquid wastes resulting from washing, bathing and laundry.

Drainage System – facilities that deal with rainwater.

Unsanitary Drainage System – facilities without treatment that deal with rainwater and also receive septic tank overflow and sullage. Includes open canals.

Without Toilet – households without any toilet but using body of water like rivers, lakes, etc. open field including coastal areas, and other mean to dispose human waste.

Access – availability of toilet facility within the household premises that can be used anytime.

On Site – the human waste is deposited and treated where the toilet facility is located.

Off Site – the human waste is transported for treatment.

## Table 4.2.1 Number of Household Toilets, by Type

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | | | | | | | | | | | | | | Page: 1of 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Content: **Environment Sanitation - Household Toilet** | | | | | | | | | | | | | | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | | | | Prov. Number: 0606 | | | | | | | | | | | Filename: Sanitation.xls |
| Region Number: VI | | | | Prov. Name: Antique | | | | | | | | | | | Form Number: P.6.1 |

| Geographic Code | Name of City or Municipality | Number of Households Using Sanitary Toilets | | | | | | | | Number of Households Using Unsanitary Toilets | | | Number of Households Without Toilets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Flush | | Pour Flush | | Sanitary Pit Latrine (VIP) | | Total | | | | | | | |
| | | Urban | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Urban | Rural | Total | Urban | Rural | Total |
| Number | Character | Number | Number | Number | Number | Number | Number | Number | Number | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | 10 | 14 | 102 | 2,343 | | 225 | 112 | 2,582 | 4 | 278 | 282 | 19 | 636 | 655 |
| 060602 | Barbaza | 39 | 65 | 401 | 1,811 | 42 | 236 | 482 | 2,112 | 3 | 490 | 493 | 63 | 556 | 619 |
| 060603 | Belison | 10 | 11 | 677 | 914 | 115 | 305 | 802 | 1,230 | 15 | 121 | 136 | 91 | 97 | 188 |
| 060604 | Bugasong | 28 | 110 | 474 | 1,632 | 408 | 586 | 910 | 2,328 | 409 | 954 | 1,363 | 56 | 951 | 1,007 |
| 060605 | Caluya | 104 | | 618 | 1,332 | 3 | 23 | 725 | 1,355 | 4 | 756 | 760 | 315 | 218 | 533 |
| 060606 | Culasi | | 314 | 812 | 1,715 | 60 | 548 | 872 | 2,577 | 15 | 257 | 272 | 189 | 2,321 | 2,510 |
| 060608 | Hamtic | 73 | 49 | 586 | 3,720 | 23 | 688 | 682 | 4,457 | 28 | 890 | 918 | 112 | 1,118 | 1,230 |
| 060609 | Laua-an | 5 | 2 | 371 | 1,896 | | 918 | 376 | 2,816 | 85 | 307 | 392 | 288 | 682 | 970 |
| 060610 | Libertad | 9 | 4 | 336 | 849 | | 748 | 345 | 1,601 | 6 | 120 | 126 | 70 | 608 | 678 |
| 060611 | Pandan | 112 | 256 | 364 | 3,206 | 32 | 214 | 508 | 3,676 | 28 | 326 | 354 | 108 | 599 | 707 |
| 060612 | Patnongon | 25 | 94 | 792 | 3,311 | | 821 | 817 | 4,226 | 6 | 309 | 315 | 116 | 768 | 884 |
| 060613 | San Jose de Buenavista (Capital) | 819 | 220 | 5,233 | 418 | 553 | 85 | 6,605 | 723 | 380 | | 380 | 1,055 | 56 | 1,111 |
| 060614 | San Remigio | | 243 | 145 | 1,635 | 20 | 456 | 165 | 2,334 | 25 | 880 | 905 | 67 | 1,056 | 1,123 |
| 060615 | Sebaste | 25 | | 1,700 | 194 | 20 | 138 | 1,745 | 332 | | 22 | 22 | 310 | 86 | 396 |
| 060616 | Sibalom | 16 | 13 | 1,213 | 4,799 | 168 | 1,570 | 1,397 | 6,382 | | 331 | 331 | 183 | 1,164 | 1,347 |
| 060617 | Tibiao | 106 | | 645 | 1,958 | 39 | 164 | 790 | 2,122 | 20 | 56 | 76 | 172 | 897 | 1,069 |
| 060607 | Tobias Fornier | 25 | 18 | 195 | 1,614 | 288 | 2,322 | 508 | 3,954 | 150 | 53 | 203 | 167 | 449 | 616 |
| 060618 | Valderrama | | | 539 | 427 | | 1,264 | 539 | 1,691 | 4 | 358 | 362 | 169 | 506 | 675 |

Source: PSPT, Antique, 1999

**Table 4.2.2 Number of School Toilets by Public and Private Classification**

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | | | | | | Page: 1 of 2 |
|---|---|---|---|---|---|---|---|
| Content: **Environment Sanitation - School and Student** | | | | | | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | | Prov. Number: 0606 | | | | | Filename: Sanitation.xls |
| Region Number: VI | | Prov. Name: Antique | | | | | Form Number: P.6.2 |
| Geographic Code | Name of City or Municipality | Number of School | | | Number of Student | | |
| | | Public | Private | Total | Public | Private | Total |
| Number | Character | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | 20 | 2 | 22 | 3,892 | 875 | 4,767 |
| 060602 | Barbaza | 17 | 1 | 18 | 4,095 | 472 | 4,567 |
| 060603 | Belison | 9 | | 9 | 2,294 | | 2,294 |
| 060604 | Bugasong | 23 | 2 | 25 | 5,602 | 437 | 6,039 |
| 060605 | Caluya | 17 | 1 | 18 | 4,809 | 273 | 5,082 |
| 060606 | Culasi | 33 | 1 | 34 | 6,888 | 519 | 7,407 |
| 060608 | Hamtic | 37 | | 37 | 9,232 | | 9,232 |
| 060609 | Laua-an | 27 | | 27 | 4,933 | | 4,933 |
| 060610 | Libertad | 15 | 1 | 16 | 3,071 | 192 | 3,263 |
| 060611 | Pandan | 36 | 1 | 37 | 6,936 | 612 | 7,548 |
| 060612 | Patnongon | 41 | 1 | 42 | 15,266 | 403 | 15,669 |
| 060613 | San Jose de Buenavista (Capital | 24 | 1 | 25 | 7,415 | 386 | 7,801 |
| 060614 | San Remigio | 40 | 1 | 41 | 6,222 | 174 | 6,396 |
| 060615 | Sebaste | 11 | 1 | 12 | 2,737 | 431 | 3,168 |
| 060616 | Sibalom | 52 | 1 | 53 | 11,883 | 139 | 12,022 |
| 060617 | Tibiao | 17 | 1 | 18 | 4,581 | 284 | 4,865 |
| 060607 | Tobias Fornier | 39 | 1 | 40 | 5,338 | 281 | 5,619 |
| 060618 | Valderrama | 22 | 1 | 23 | 3,876 | 235 | 4,111 |

Source: PSPT, Antique, 1999

## Table 4.2.2 Number of School Toilets by Public and Private Classification (cont'd)

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | Page: 2 of 2 |
|---|---|---|
| Content: **Environment Sanitation - School Toilets** | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | Prov. Number: 0606 | Filename: Sanitation.xls |
| Region Number: VI | Prov. Name: Antique | Form Number: P.6.3 |

| Geographic Code | Name of City or Municipality | Number of School Toilets | | | | | | Total Unit |
|---|---|---|---|---|---|---|---|---|
| | | Sanitary | | | Unsanitary | | | |
| | | Public | Private | Total | Public | Private | Total | |
| Number | Character | Number | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | 104 | 14 | 118 | 5 | | 5 | 123 |
| 060602 | Barbaza | 36 | 13 | 49 | 2 | | 2 | 51 |
| 060603 | Belison | 60 | | 60 | | | | 60 |
| 060604 | Bugasong | 98 | 6 | 104 | 4 | | 4 | 108 |
| 060605 | Caluya | 36 | 4 | 40 | | | | 40 |
| 060606 | Culasi | 80 | 6 | 86 | 12 | | 12 | 98 |
| 060608 | Hamtic | 120 | | 120 | 7 | | 7 | 127 |
| 060609 | Laua-an | 54 | | 54 | | | | 54 |
| 060610 | Libertad | 30 | 4 | 34 | | | | 34 |
| 060611 | Pandan | 68 | 7 | 75 | 10 | | 10 | 85 |
| 060612 | Patnongon | 98 | 5 | 103 | 30 | | 30 | 133 |
| 060613 | San Jose de Buenavista (Capital) | 166 | 5 | 171 | 2 | | 2 | 173 |
| 060614 | San Remigio | 54 | 6 | 60 | 56 | | 56 | 116 |
| 060615 | Sebaste | 72 | 7 | 79 | 4 | | 4 | 83 |
| 060616 | Sibalom | 212 | 5 | 217 | 11 | | 11 | 228 |
| 060617 | Tibiao | 50 | 5 | 55 | 5 | | 5 | 60 |
| 060607 | Tobias Fornier | 204 | 4 | 208 | 7 | | 7 | 215 |
| 060618 | Valderrama | 14 | 4 | 18 | 11 | | 11 | 29 |

Source: PSPT, Antique, 1999

## Table 4.2.3 Number of Public Toilets by Type of Facility

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | | Page: 1 of 3 |
|---|---|---|---|
| Content: **Environment Sanitation - Public Toilets(Public Market)** | | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | Prov. Number: 0606 | | Filename: Sanitation.xls |
| Region Number: VI | Prov. Name: Antique | | Form Number: P.6.4.1 |

| Geographic Code | Name of City or Municipality | Public Markets | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Number | Number of Toilets | | | | | |
| | | | Sanitary | | Unsanitary | | Total | |
| | | | Male | Female | Male | Female | Male | Female |
| Number | Character | Number | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | 3 | 3 | 3 | | | 3 | 3 |
| 060602 | Barbaza | 1 | | | 1 | 1 | 1 | 1 |
| 060603 | Belison | 1 | | | 1 | 1 | 1 | 1 |
| 060604 | Bugasong | 1 | 1 | 1 | | | 1 | 1 |
| 060605 | Caluya | | | | | | | |
| 060606 | Culasi | 1 | 1 | 1 | | | 1 | 1 |
| 060608 | Hamtic | 1 | 1 | 1 | | | 1 | 1 |
| 060609 | Laua-an | 1 | 1 | 1 | | | 1 | 1 |
| 060610 | Libertad | 1 | | | 1 | 1 | 1 | 1 |
| 060611 | Pandan | 1 | 1 | 1 | | | 1 | 1 |
| 060612 | Patnongon | 1 | 1 | 1 | | | 1 | 1 |
| 060613 | San Jose de Buenavista (( | 2 | 2 | 2 | | | 2 | 2 |
| 060614 | San Remigio | 1 | | | 1 | 1 | 1 | 1 |
| 060615 | Sebaste | 1 | | | 1 | 1 | 1 | 1 |
| 060616 | Sibalom | 1 | 1 | 1 | | | 1 | 1 |
| 060617 | Tibiao | 1 | 1 | 1 | | | 1 | 1 |
| 060607 | Tobias Fornier | 1 | | | 1 | 1 | 1 | 1 |
| 060618 | Valderrama | 1 | 1 | 1 | | | 1 | 1 |

Source: PSPT, Antique, 1999

## Table 4.2.3 Number of Public Toilets by Type of Facility (cont'd)

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | Page: 2 of 3 |
|---|---|---|
| Content: **Environment Sanitation - Public Toilets(Jeepney/Bus Terminal)** | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | Prov. Number: 0606 | Filename: Sanitation.xls |
| Region Number: VI | Prov. Name: Antique | Form Number: P.6.4.2 |

| Geographic Code | Name of City or Municipality | Jeepney/Bus Terminal | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Number | Number of Toilets | | | | | | |
| | | | Sanitary | | Unsanitary | | Total | | |
| | | | Male | Female | Male | Female | Male | Female | |
| Number | Character | Number | Number | Number | Number | Number | Number | Number | |
| 060601 | Anini-y | | | | | | | | |
| 060602 | Barbaza | | | | | | | | |
| 060603 | Belison | | | | | | | | |
| 060604 | Bugasong | | | | | | | | |
| 060605 | Caluya | | | | | | | | |
| 060606 | Culasi | | | | | | | | |
| 060608 | Hamtic | | | | | | | | |
| 060609 | Laua-an | | | | | | | | |
| 060610 | Libertad | | | | | | | | |
| 060611 | Pandan | | | | | | | | |
| 060612 | Patnongon | | | | | | | | |
| 060613 | San Jose de Buenavista (C | 1 | | | 1 | 1 | 1 | 1 | |
| 060614 | San Remigio | | | | | | | | |
| 060615 | Sebaste | | | | | | | | |
| 060616 | Sibalom | | | | | | | | |
| 060617 | Tibiao | | | | | | | | |
| 060607 | Tobias Fornier | | | | | | | | |
| 060618 | Valderrama | | | | | | | | |

Source: PSPT, Antique, 1999

## Table 4.2.3 Number of Public Toilets by Type of Facility (cont'd)

| Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) | | | Page: 3 of 3 |
|---|---|---|---|
| Content: **Environment Sanitation - Public Toilets(Parks/Playground)** | | | Date: 19 Jan. 2000 |
| Data Collection Level: **Provincial** | Prov. Number: 0606 | | Filename: Sanitation.xls |
| Region Number: VI | Prov. Name: Antique | | Form Number: P.6.4.3 |

| Geographic Code | Name of City or Municipality | Parks/Playground | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Number | Number of Toilets | | | | | |
| | | | Sanitary | | Unsanitary | | Total | |
| | | | Male | Female | Male | Female | Male | Female |
| Number | Character | Number | Number | Number | Number | Number | Number | Number |
| 060601 | Anini-y | 2 | 2 | 2 | | | 2 | 2 |
| 060602 | Barbaza | 1 | | | | | | |
| 060603 | Belison | 1 | | | | | | |
| 060604 | Bugasong | 1 | | | | | | |
| 060605 | Caluya | 1 | | | | | | |
| 060606 | Culasi | 1 | | | | | | |
| 060608 | Hamtic | 1 | | | | | | |
| 060609 | Laua-an | 1 | | | | | | |
| 060610 | Libertad | 1 | 1 | 1 | | | 1 | 1 |
| 060611 | Pandan | 1 | | | | | | |
| 060612 | Patnongon | 1 | | | | | | |
| 060613 | San Jose de Buenavista (( | 1 | | | | | | |
| 060614 | San Remigio | 1 | | | | | | |
| 060615 | Sebaste | 1 | | | | | | |
| 060616 | Sibalom | 1 | | | | | | |
| 060617 | Tibiao | 1 | | | | | | |
| 060607 | Tobias Fornier | 1 | | | | | | |
| 060618 | Valderrama | 1 | | | | | | |

Source: PSPT, Antique, 1999

## 5. EXISTING SECTOR ARRANGEMENT AND INSTITUTIONAL CAPACITY

### 5.2 Sector Reforms

### A. IMPLEMENTING RULES AND REGULATION

#### IMPLEMENTING RULES AND REGULATIONS OF NEDA BOARD RESOLUTION NO. (SERIES OF 1994), CLAUSE (G)

PREFACE

The following Implementing Rules and Regulations (IRR) of Clause (g) of NEDA Board Resolution No. 4 (series of 1994) was prepared with assistance from the World Bank, upon request of the Philippine Government, through the Department of the Interior and Local Government (DILG). It is an update of the earlier draft prepared in August 1995 and incorporates the developments that have occurred in the sector since that time. The intention is to provide a comprehensive and consistent set of IRR that reflects evolving policies in the sector to address basic service deficits. In particular, it attempts to translate the global sectoral principles of managing water as an economic good and managing services at the most appropriate level, into rules and regulations that can be understood and implemented by the local government units. This IRR reflects the following policies currently being developed by the Government:

a. Encouraging LWUA lending rates to local water districts to be aligned to market rates;

b. Providing national government grants for source development of Level I systems in support of a national objective of poverty alleviation;

c. Developing a national sector plan that will provide the basis for provinces and cities/municipalities to plan and implement water and sanitation investments based on what communities want and are willing to pay for;

d. Instituting a framework for economic regulation of the water supply and sanitation sector and defining the role of the LGU in this framework; and

e. Instituting a system of public performance audit of public and private water utilities, so that consumers feedback on service coverage and reliability is available at the national and local levels of Government.

A major development was the creation of the Presidential Task Force on Water Resources Development and Management in October 1996, which has the objective of streamlining the regulatory environment of the sector, that is, linking resource regulation with the economic regulation aspects. A proposed bill prepared by the Task Force has been filed with Congress in July 1997 for the creation of a Water Resources Authority of the Philippines (WRAP) to undertake these regulatory functions, among others. Once this is approved by Congress and passed into law, the IRR may have to be revised to reflect the major institutional changes, particularly with regard to the roles of national government agencies in the sector.

## RULE 1
## PURPOSE AND OBJECTIVES

**Article 1. Title.** These rules shall be known as the Implementing Rules and Regulations of clause (g) of NEDA Board Resolution No. 4, (series of 1994).

**Article 2. Purpose.** The purpose of these rules and regulations is to implement clause (g) of NEDA Board Resolution No. 4, (series of 1994), and is in support of NEDA Board Resolution No. 6, (series of 1996) which defines the executing agency arrangement for devolved infrastructure activities/facilities, including water supply, where national government assistance is provided. Clause (g) of NEDA Board Resolution No. 4 (series of 1994) states that:

*"Level I (point source system), Level II (command faucet) and Level III (house connections) water supply projects may be implemented by the concerned LGUs within their jurisdiction. LWUA shall implement only financially viable Level III water supply projects in areas outside the MWSS jurisdiction. DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) as well as in the identification of water supply systems. MWSS will be responsible for Level III water systems in Metro Manila and adjacent areas. DPWH, together with DILG and DOH, will provide technical assistance (within a period of about two years) to LGUs in the planning, implementation, and operation and maintenance of water supply facilities."*

Annex C presents NEDA Board Resolution No. 6, (series of 1996).

**Article 3. Objectives.** The objectives of the Implementing Rules and Regulations are as follows:

a. To definite the role of local government units (LGUs) in the provision of water supply services and the assistance to be made available to them by national government agencies concerned;

b. To provide guidance to the LGUs in the development and implementation of viable and sustainable water supply projects, to the extent feasible, supporting the principles espoused by the sector of managing water as an economic good, promoting a demand-oriented approach in the provision of services and management to be made at the most appropriate level, and greater private sector participation in service delivery; and

c. To identify institutional strengthening needs of LGUs to further develop their capacity to adequately perform their agreed functions in the sector.

## RULE 2
## SCOPE

**Article 4. Scope.** These Implementing Rules and Regulations shall apply to water supply projects to be implemented and managed by LGUs where national government assistance is provided.

## RULE 3
## DEFINITION OF TERMS

**Article 5. Definition of Terms.** For purpose of these Implementing Rules and Regulations, the following terms shall be construed to mean as follows:

a. **Levels of Service.** Based on NEDA Board Resolution No. 12 (series of 1995), approving the common definition of terms relative to water supply, sewerage and on-site sanitation, levels of service are defined as follows:

**Level I (point source)** – a protected well or a developed spring with an outlet but without a distribution system; generally adaptable for rural areas where the houses are thinly scattered. A Level I facility normally serves an average of 15 households.

**Level II (communal faucet system or standposts)** – a system composed of a source, a reservoir, a piped distribution network, and communal faucets. Usually, one faucet serves four to six households. It is generally suited for rural and urban fringe areas where houses are clustered densely to justify a simple piped system.

**Level III (waterworks system or individual house connections)** – a system with a source, a reservoir, a piped distribution network and household taps. It is generally suited for densely populated urban areas.

b. A **financially viable water supply system** refers to a system wherein its revenues can cover for all costs related to capital and operation and maintenance, including providing for reasonable reserves for future expansion. For those systems managed by water districts, a financially viable system is one that is able to generate revenues directly from user payments sufficient to cover all costs[1]. For LGU-managed systems, capital and operations and maintenance costs shall be recovered through a combination of user fees, general municipal taxes and other incomes available to the LGUs.

## RULE 4
## ROLE OF LOCAL GOVERNMENT UNITS

**Article 6. General.** The Local Government Code of 1991 mandates the decentralization and devolution of authority to LGUs in providing for certain basic services, which include safe potable water. At the local level, the LGUs are responsible for providing reliable water supply to their constituents, whether these are in the form of Levels I, II or III systems, depending on the expressed demand by the community for these services. LGUs may both directly provide and finance these services, or involve the private sector to participate in both provision and financing through concession, management or service contracts.

**Article 7. Financing and Cost Recovery.** In financing water supply investments, the LGUs may tap their Internal Revenue Allotment and/or locally generated revenues, or leverage these resources to borrow from government and private financial institutions. The amount that an LGU can borrow, including the required equity, is dependent on its current and expected revenue performance, as well as the amount of user charges and equity contributions from the community. The amount of equity contributions from the community shall be a local decision of the LGUs concerned.

For any national government grant that may be provided for the development of Level I systems, the LGU and beneficiaries concerned shall be required to provide any remaining amount as equity to the

[1] The Department of Finance is considering aligning the LWUA lending rates to local water districts toward market rates to allow for a more efficient use of scarce resources, as well as to provide for consistent policy on lending to LGUs by government financial institutions.

investment. No subsidies from the national government shall be provided for Levels II and III systems.[2]

In providing for Level III service, the LGUs may opt to form a water district or an LGU company, provide a franchise to a private party or participate in a joint venture with a private party. Except in areas with water districts, LGUs shall maintain overall responsibility for ensuring consumer satisfaction through the exercise of institutional and/or contractual regulatory powers over local water utilities[3], in collaboration with other national regulatory agencies, and by instituting a system of public performance audit.

Cost recovery through user payments shall be encouraged for both capital and operation and maintenance costs. However, at the minimum, user payments shall be required to cover the operation and maintenance costs in all services levels. For LGU- owned, operated and/or guaranteed systems, any shortfall in revenues required for loan repayment shall be financed by the LGU from its Internal Revenue Allotment and/or locally-generated revenues, following a process of negotiation between the LGU and the beneficiaries concerned on the level of user payments.

For systems managed by local water districts, full cost recovery, through user charges, is required by LWUA.

In areas where there are existing local water districts, LGUs may finance rehabilitation works and/or expansion of the existing waterworks system on the following conditions:

a. The local water district concerned is not in LWUA's current program of assistance, that is, it is not included in any loan of LWUA with a financing institution, and

b. Endorsement by the local water district concerned should have been secured.

In the event that the local water district is servicing a loan from LWUA, the local water district shall seek clearance from LWUA prior to entering into an agreement with the LGU concerned on any program of system expansion.

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[2] This policy has been approved by the Investment Coordination Committee of the NEDA Board.

[3] As per Presidential Decree No. 198 (Provincial Water Utilities Act), LWUA regulates the technical standards and the tariffs of local water districts, based on its requirement to issue a certificate of conformance on every loan disbursed to the latter. Source regulation is done by the National Water Resources Board. At the moment, there is no recourse by the LGU in case of non-performance by the local water district. This is an issue that needs to be addressed by Government.

**Article 8. Management of Systems.** LGUs shall adopt commercial principles in the operation and management of water utilities in order to provide cost-effective and reliable services to consumers, whether management of the system is a direct responsibility of the LGU or is contracted out by the LGU to the private sector. An LGU may also consider amalgamating or consolidating its system with that of its neighboring LGUs in order to benefit from economies of scale that could expand water supply services to consumers at the lowest possible cost.

For the operation and management of Level I and II systems, the LGUs shall initiate the formation of Barangay and Rural Waterworks and Sanitation Associations (BWSAs/RWSAs), respectively, through a participatory approach involving consultation with all stakeholders (Article 20) and assist in their registration with the appropriate authorities (Article 21). Upon request, LGUs may accredit duly registered RWSAs/BWSAs in order to enable them to avail of financial assistance from local governments. LGUs shall have overall supervision of RWSAs and BWSAs.

**Article 9. Project Planning and Development.** Provinces and cities/municipalities shall be required to prepare, and update on an annual basis, provincial and city/municipal sector plans that are consistent with a national sector plan[4]. These sector plans shall be integrated into the local investment programs. Water supply projects shall be identified from the local investment program. A financing program of foreign and nationally/locally-generated resources, including private sector resources, shall support the local investment program.

**Article 10. Approval and Award of Contracts.** The LGUs shall be required to conduct public bidding, in accordance with the provisions of Law, including Presidential Decree No. 1594, as amended, Executive Order No.164, Executive Order No.302 and other applicable laws, and shall have the final authority to approve and award contracts for water supply and sanitation projects within their jurisdictions.

**Article 11. Application for Water Rights.** LGUs or the concerned water utility shall apply for water rights from the National Water Resources Board prior to implementing a project that would require extraction of water.

**Article 12. Public Performance Audit.** The LGUs shall establish a system of public performance audit for public and private water utilities focusing on critical performance indicators. Upon request

[4] ADB is assisting the preparation of a National Sector Plan for Water Supply, Sewerage and Sanitation for 1999-2004

of the LGUs, DILG may provide technical assistance for this purpose, in coordination with appropriate national government agencies.[5]

## RULE 5
## ROLES OF NATIONAL GOVERNMENT AGENCIES

**Article 13. Department of the Interior and Local Government (DILG).** The DILG shall have the following responsibilities in the sector:

a. Raise awareness of LGUs on opportunities relating to the sector, within the framework of relevant government policies, such as financing schemes and available assistance from local and foreign financing institutions, technological breakthroughs, management and institutional arrangements, etc.;

b. Facilitate transactions between LGUs and communities and lending institutions by preparing water supply investment packages, assisting in the financial, economic and institutional and environmental data collection and analysis, etc., in coordination with appropriate national government agencies;

c. Build capacity of LGUs and BWSAs/RWSAs in the general areas of planning, implementation, management, monitoring and evaluation, and regulation, upon agreement with the LGUs, and as required by financing institutions, in coordination with national government agencies such as DPWH in the case of the engineering aspects;

d. Develop and maintain a national data management system of LGU-managed water systems to include data on extent of service coverage, cost recovery, collection efficiency, size of water systems, nature of water resources, among others, in coordination with appropriate national government agencies;

e. Establish a system for monitoring strategic performance of LGUs in relation to the sector, including compliance with technical standards established by LWUA and DPWH;

f. Upon agreement with the LGU, provide technical assistance in the establishment of a system of public performance audit, in collaboration with appropriate national government agencies;

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[5] This system shall be pilot-tested in Metro Manila by the MWSS with World Bank financing.

g. Coordinate sector activities of LGUs vis-a-vis other national government agencies involved in the sector;

h. Register RWSAs/BWSAs and maintain a record of all documents and issue regular bulletins;

i. Monitor the implementation of this IRR, including the formulation of monitoring and evaluation parameters and reporting requirements; and

j. Act as the coordinator for projects funded by the National Government per NEDA Board Resolution No. 6 (series of 1996).

**Article 14. Local Water Utilities Administration (LWUA).** The LWUA shall have the following responsibilities in the sector:

a. Act as a specialized lending institution for local water districts;

b. Provide technical assistance to local water districts in the areas of operation, maintenance, personnel training and fiscal practices;

c. Upon agreement with the LGU, provide technical and financial assistance in the conduct of engineering studies;

d. Approve tariffs of local water districts;

e. Establish and update, as and when necessary, the technical standards for local water utilities, including LGU-managed systems;

f. Monitor and evaluate the performance of local water districts; and

g. Register RWSAs and furnish all registration documents to DILG.

**Article 15. Department of Public Works and Highways (DPWH).** The DPWH shall have the following responsibilities in the sector:

a. Set and/or update, as and when necessary, technical standards for engineering surveys, design, construction and operation and maintenance of Level I systems;

b. Upon agreement with the LGUs, assist in the conduct of engineering surveys and in the preparation of plans, specifications and programs of work, through its District Offices;

c. Upon agreement with the LGUs, assist in construction management, through its District Offices; and

d. Conduct technical researches in coordination with the LGUs.

**Article 16. Department of Health (DOH).** The DOH shall have the following responsibilities in the sector:

a. Set and/or update, as and when necessary, standards on water quality testing, treatment and surveillance, and sanitary practices;

b. Provide technical assistance to the LGUs in the conduct of periodic water quality control and surveillance-related activities; and

c. Monitor and evaluate, on a regular basis, health and hygiene education programs implemented by local health offices, particularly in areas where waterworks systems are expected to be constructed.

**Article 17. National Water Resources Board (NWRB).** The NWRB shall have the following responsibilities in the sector:

a. Regulate the use of water resources through the issuance of water rights;

b. Regulate tariffs of privately-run water systems; and

c. Establish and manage a user-friendly water resources data management system.

**Article 18. Metropolitan Waterworks and Sewerage System (MWSS).** The MWSS shall be responsible for water systems in Metro Manila and its adjacent areas.

## RULE 6
## RURAL/BARANGAY WATERWORKS AND SANITATION ASSOCIATIONS

**Article 19. General Provision.** A Rural/Barangay Waterworks and Sanitation Association shall be formed to manage public water systems and sanitation facilities: RWSAs for Level II systems and BWSAs for Level I systems. RWSAs/BWSAs shall initiate/assist in site identification, planning, implementation and evaluation of water supply projects as well as guide the construction and/or maintenance of household and community latrines (toilets).

**Article 20. Organization of RWSAs/BWSAs.** RWSAs and BWSAs shall be organized upon initiation of the LGU. A participatory approach shall be adopted in the formation of RWSAs/BWSAs with the LGU concerned taking the lead and non-government organizations (NGOs) providing technical assistance, as necessary. Prior to the formation of RWSAs/BWSAs, dialogues shall be conducted with and among all stakeholders such as women's groups, civic and religious organizations, health practitioners, NGOs and other people's organizations.

**Article 21. Registration Requirements.** RWSAs/BWSAs shall register with DILG. BWSAs shall be encouraged to associate with other BWSAs or with RWSAs prior to registration. DILG shall keep a record of all registration documents.

**Article 22. Powers.** Every duly registered RWSAs/BWSA shall be autonomous and shall have the power and capacity to:

a. Award and enter into a contract(s) with private contractors for the delivery of necessary services or the supply of materials, in the course of managing a public water and sanitation facility, subject to existing laws, rules and regulations;

b. Oversee the implementation of projects undertaken by private contractors;

c. Own and mange the operation of the water facility in a sustainable manner, including providing for adequate reserves for maintenance and repair, setting appropriate levels of user fees, and implementing billing and collection schemes;

d. Handle the activities required of any lawful business transaction entered into by the Association;

e. Enter into agreement with other RWSAs/BWSAs for any merger or consolidation as may be proven advantageous to their operations;

f. Convene meetings of water users for the purpose of information dissemination, consultation, public hearing on water rates and other activities deemed important;

g. Initiate improvements in operations found to be advantageous and favorable to the communities concerned;

h. Decide on matters found to be advantageous and favorable to the communities concerned; and

i. Prepare an annual report on its operations.

**Article 23. Capability Building of RWSAs/BWSAs.** RWSAs and BWSAs may request assistance for capability building form LGUs and/or DILG, DPWH and other concerned agencies, through the LGUs.

## RULE 7
## PROJECT DEVELOPMENT AND IMPLEMENTATION

**Article 24. Sector Planning.** Planning and development of water supply investment shall be made within the framework of national policies, and shall implement specific targets in the provincial and city/municipal sector plans. These plans shall define the strategies, policies and approaches in sector development at different levels of government. A National Sector Plan for Water Supply, Sewerage and Sanitation shall be prepared, and updated, on a regular basis, by the National Economic and Development Authority (NEDA), in coordination with the concerned oversight water agencies, and shall provide the national policy framework. At the provincial level, the LGUs, through their respective Provincial Planning and Development Offices, shall prepare, and update, on an annual basis, the Provincial Water Supply, Sewerage and Sanitation Sector Plans. At the city/municipal level, a similar sector plan shall be prepared and updated, on an annual basis, by the LGUs, through their City/Municipal Planning and Development Offices. The respective Local Councils shall approve the provincial and city/municipal sector plans.

**Article 25. Project Identification.** On the basis of the provincial and city/municipal sector plans, water supply investments shall be identified and developed into a local investment program that includes an appropriate financing plan. The Local Council concerned shall approve the local investment program. The proposed investments shall then be developed according to a demand-driven approach that would allow beneficiaries to select from among cost-effective technical options

and from among financing options. The LGUs may avail of technical assistance from the DILG in the preparation of these project packages (Rule 5).

Water supply investment shall be developed tot he principles of managing water services at the most appropriate level and providing services based on what local consumers want and are willing to pay for. This means that LGU systems shall be constructed on the basis of choosing among technical options that are affordable through the financial resources made available by users, communities and LGUs. The process of determining demand for a particular service delivery shall be concluded through a negotiated agreement between the LGU, water utility and the users, on how the costs will be shared at the town, barangay and household levels.

**Article 26. Technical Aspects.** Technically feasible options shall be developed, particularly for a Level III service level. These options may include varying levels of operation (in terms of operating hours), which may have substantial implications on capital and operating and maintenance costs. In addition, the operation and management (O&M) cost of a technical option is strongly influenced by the management mode chosen by an LGU, economies of scale factors and the size of the service area. Thus, for any Level III service, at least two technical options shall be explored; those of an inter-LGU service delivery organization involving amalgamation of service areas and of singled LGU management systems. The former option shall be explored and developed further only upon agreement with the LGU concerned.

In the conduct of the engineering work (i.e., feasibility studies and detailed design), the LGUs may tap the services of the private sector, using their internal resources or may request the DILG, DPWH and/or LWUA for financial and/or technical assistance.

**Article 27. Financing and Management Options.** A range of options is available to the LGUs on financing and management of Level III systems. They include, but are not limited to, the following options:

Option 1: The LGU may finance the system from its internal resources or may borrow from a financial institution. It may then create a **profit center within the LGU** office with a separate cost accounting system. Under this arrangement, the LGU may directly manage the system or may enter into a **management contract** with a private party or a **service contract** with a private party to handle billing and collection and/or repair and maintenance. In these types of management arrangements, the LGU retains the responsibility for providing the service and assumes the commercial risks. Institutions such as neighboring water districts, cooperatives and other private institutions may be tapped by the LGU for these types of contracts.

Option 2: The LGU may enter into a **lease contract** with private party to operate and manage the system. Under this arrangement, the LGU finances the capital expenditures from its internal resources or from borrowings. The LGU then leases the facility to a private party, which assumes the commercial risks and the responsibility for operation and maintenance. The private party is allowed to recover the costs from user fees, and may also collect, on behalf of the LGU, any other charges contributing to the repayment of a loan which the LGU may have taken on behalf of the users.

Option 3: The LGU may enter into **concession contract** with a private party. Under this arrangement, the private party assumes the operations and management of the assets of the LGU, and undertakes to expand and finance the services according to the terms and conditions of the contract. The private party is then allowed to operate the system, and recover its costs and earn a reasonable return on its investment from user fees. The private party also assumes the commercial risk. After the concession contract expires, the system reverts to the LGU, or may be contracted out again by the LGU.

Option 4: The LGU may create a **local water district,** in accordance with Presidential Decree No. 198, as amended.

Option 5: The **LGU may form a water company** to handle the provision of the service.

The LGU appoints the Board of Directors to be tapped from the private sector who would manage the company along commercial principles.

Options 6: The LGU may enter into contract with a private party under the **Build-Operate-Transfer scheme or any of its variants,** per Republic Act No. 6970, as amended, for the whole water system or a component of it (i.e., source development or distribution).

Option 7: The LGU may enter into a **joint venture agreement** with a private party in providing the service. Under this arrangement, both parties share in the risks of the project, as well as operate the water supply system through a shared management and organization structure.

In the contracts of LGUs with private parties, performance standards shall be stipulated including remedies for non-performance that are consistent with national regulatory laws.

The DILG, in its role of raising awareness of LGUs on opportunities in the sector, shall be responsible for informing the LGUs of these schemes, and in facilitating the implementation of the preferred option. **Annex D** provides a matrix of these various schemes.

## RULE 8
## COORDINATION AND COLLABORATION MECHANISMS

**Article 28. Inter-LGU Collaboration.** Provinces, cities, municipalities and barangays may assist, coordinate and collaborate with each other, as far as practicable, in the effort of improving the delivery of services to the Filipino people. The DILG shall take the lead in coordinating among the LGUs.

**Article 29. Coordination between Local and National Governments.** LGUs may avail of the technical, financial and institutional expertise of national agencies like LWUA, DPWH, DILG, NWRB, DOH and DENR. DILG, as appropriate, shall coordinate with other national agencies on behalf of the LGUs.

## RULE 9
## TRANSITION ARRANGEMENTS

**Article 30. Ongoing Projects.** The DPWH, DOH and DILG shall continue to implement ongoing foreign-assisted Level I projects until the completion of such projects.

**Article 31. Pipeline Projects.** Projects in the pipeline shall conform to the provisions of this IRR to the extent possible.

## RULE 10
## MISCELLANEOUS PROVISIONS

**Article 32. Applicability Clause.** The application of this IRR shall be without prejudice to existing and future laws, rules, regulations, and/or international agreements entered into by the Philippine Government.

**Article 33. Effectivity of the IRR.** These Implementing Rules and Regulations shall take effect upon its approval by the NEDA Board, on recommendation by the Infrastructure Committee. It shall then be published in at least two national newspapers of general circulation.

Annex A

**NEDA Board Resolution No. 5 (series of 1998)**

**APPROVING THE IRR ON THE DELINEATION OF RESPONSIBILITIES IN THE DEVELOPMENT AND IMPLEMENTATION OF WATER SUPPLY PROJECTS**

On motion duly seconded,

BE IT RESOLVED, as it is hereby resolved, to approve as it is hereby approved, the Implementing Rules and Regulations (IRR) on the Delineation of Responsibilities in the Development and Implementation of Water Supply Projects.

**UNANIMOUSLY APPROVED, 17 March 1998.**

Annex B

**NEDA Board Resolution No. 4 (series of 1994)**

**APPROVING THE RECOMMENDATION OF THE INFRASTRUCTURE COMMITTEE (INFRACOM) ON THE REFORMS IN THE WATER SUPPLY SECTOR**

On motion duly seconded,

BE ITS RESOLVED, as it is hereby resolved, to approve and confirm, as the same is hereby approved and confirmed the following recommendations of the INFRACOM:

a. Registration with the National Water Resources board (NWRB) of all drilling and the extraction of water therefrom, irrespective of the use of extracted water and ownership of the land where the well is to be drilled. Amendment to Article 6 of the Water Code (PD No. 1067) shall be initiated by NWRB to this effect. Subsequently, NWRB shall formulate rules and regulations for the effective enforcement of this requirement within sixty (60) days after approval of the proposed amendment.

b. Strengthening of the NWRB staff in order to effectively cope with the planning, monitoring and implementation activities of the water resources sector. NWRB shall submit an action plan to this effect to INFRACOM for review and endorsement to the President of the NEDA Board.

c. Reorientation of the Local Water Utilities Administration (LWUA) to its original corporate mission as a "specialized lending institution" financing only viable water supply projects with tariff levels formulated towards full cost recovery. LWUA shall therefore upgrade its banking and finance expertise and immediately complete its financial restructuring. Further, it should radically improve its collection efficiency as well as its database and accounting systems.

d. Privatization of all existing Water Districts (WDs) should be vigorously pursued whenever feasible and large commercially viable water services areas like Metro Manila, Cebu, Zamboanga, Davao should be formed or converted into SEC-style private water corporations, independent of LWUA and other government funding institutions but subject to regulation by NWRB.

e. Procurement needs of WDs should be provided based on a competitive basis and not centrally imposed.

f. LWUA shall submit an action plan to INFRACOM to effect the recommended reforms for review and endorsement.

g. With respect to the delineation of responsibilities in the sector, NEDA Board Resolution No. 5 (series of 1998) is proposed to be amended to allow local government units (LGUs) to implement all levels of water supply projects consistent with government's decentralization and devolution process, mandating LWUA to implement only financially viable projects and further defining the roles of the agencies in the sector. The proposed amendment is as follows:

"Level I (point source system), Level II (communal faucet) and Level III (house connections) water supply projects may be implemented by the concerned LGUs within their jurisdiction. LWUA shall implement only financially viable Level III water supply projects in areas outside the MWSS jurisdiction. DILG's participation will consist of general administration and institution building, such as assistance to the LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) as well as in the identification of water supply systems. MWSS will be responsible for Level III water systems in Metro Manila and adjacent areas. DPWH, together with DILG and DOH, will provide technical assistance (within a period of about 2 years) to LGUs in the planning, implementation and operation and maintenance of water supply facilities".

**UNANIMOUSLY APPROVED, 15 March 1994.**

Annex C

**NEDA Board Resolution No. 6 (series of 1996)**

**APPROVING THE RECOMMENDATIONS OF THE INFRASTRUCTURE COMMITTEE (INFRACOM) ON THE EXECUTING AGENCY ARRANGEMENT FOR THE DEVOLVED INFRASTRUCTURE ACTIVITIES/FACILITIES**

On motion duly seconded,

BE IT RESOLVED as it is hereby resolved, to approve and confirm as the same is hereby approved and confirmed, the following recommendations of INFRACOM on national government (NG) assistance to Local Government Units (LGUs) in the implementation of devolved infrastructure activities/facilities under the Local Government Code in support of national priority programs in order to ensure efficiency, effectivity and more focused implementation consistent with the Government's decentralization and devolution objectives:

a. DILG, which has administrative supervision over LGUs, shall be the lead national government agency (NGA) to oversee/administer NG assistance to LGUs in the implementation of devolved infrastructure programs/projects with the collaboration/participation of other concerned agencies. The identification and formulation of infrastructure programs/projects devolved to LGUs proposed for NG assistance shall therefore be coordinated with DILG to rationalize their development;

b. The implementation of identified devolved infrastructure programs/projects shall be undertaken by the LGUs with DILG providing assistance in institution, capacity and capability building of the LGUs and with DPWH and other technical agencies providing and transferring technical expertise to the LGUs as necessary. The levels of capacities and capabilities of LGUs shall be determined by the DILG in coordination and collaboration with DPWH and other concerned agencies to determine, among others, the extent of support and assistance that these national agencies should provide in order to effect the successful implementation of devolved NG-assisted infrastructure programs/projects;

c. DILG, as the lead agency, shall include in its annual budget the financial requirements necessary for the implementation of the identified and approved devolved infrastructure programs/projects.

This shall be without prejudice to any future funds arrangement that the national government may adopt with regard to NG assistance to LGUs for devolved projects particularly funds source from foreign loans and grants;

d. For on-going and already committed devolved infrastructure programs/projects with NG assistance, the same shall be implemented with the previously identified NGA as lead in order not to disrupt is prosecution. However, there shall be phasing in at DILG and LGUs in the implementation arrangements for these devolved infrastructure projects in accordance with the provisions of this Resolution for purposes of policy and operational consistency and thus, effect a smooth transition;

e. To efficiently and effectively implement the provisions of this Resolution, the INFRACOM shall formulate and periodically review the guidelines, rules and regulations that will clearly define the specific roles of the various concerned agencies in the implementation of NG assistance to LGUs for devolved infrastructure activities/utilities as well as the appropriate implementing mechanisms. In addition, INFRACOM shall likewise formulate the criteria and program for phasing out NG assistance to LGUs for devolved infrastructure activities/facilities;

f. To carry out its tasks, the INFRACOM may request for financial and technical assistance from participating government agencies as well as from multilateral and bilateral sources; and

g. The provisions of this Resolution shall apply to all NG assistance for devolved infrastructure activities/utilities unless otherwise explicitly provided for under the existing and future laws, such as the General Appropriations Act (GAA).

**UNANIMOUSLY APPROVED, 12 March 1996.**

Annex D

## MATRIX OF FINANCING AND MANAGEMENT OPTIONS

| OPTION | DESCRIPTION |
|---|---|
| LGU-Financed and Managed | The LGU finances the investment from its income and other resources available to it (e.g., URA, locally-generated taxes, grants) or borrows from a financial institution. It then establishes a profit center within the LGU office with a separate cost accounting system. Under this arrangement, the LGU directly manages the operations of the system. The LGU assumes the commercial risk. |
| Service Contract | The LGU finances the investment and directly operates and manages the system. It enters into contract with a private party to undertake billing and collection and/or repair and maintenance activities for a fee. The LGU maintains a profit center within the LGU office and assumes the commercial risk. |
| Management Contract | The LGU finances the investment and enters into contract with a private party to manage the system. The private party collects the water tariffs set by the LGU, operates and manages the system and in turn, is paid a management fee by the LGU. The LGU maintains a profit center within the LGU office and assumes the commercial risk. |
| Lease Contract | The LGU finances the capital expenditures and leases the facility to the private sector. The private sector assumes the commercial risks and the responsibility for operation and maintenance. To recover its costs, the private party is allowed to collect user fees as well as any other charges on behalf of the LGU. |
| Concession Contract | The LGU enters into contract with a private party to |

| | |
|---|---|
| | undertake the investment. The private party assumes the assets of the LGU and undertakes to expand the services according to the terms and conditions of the contract. The private party is allowed to operate the system and to collect user fees to recover its costs and earn a reasonable return on its investment. After the contract expires, the system reverts to the LGU or may be contracted out again by the LGU. |
| Creation of a Local Water District | The LGU may create a local water district. The local water district finances the investment from a loan from the Local Water Utilities Administration (LWUA) and operates and manages the system. The local water district is then supervised by LWUA. |
| LGU Company | The LGU may form a water company to handle the provision of the service. The water company shall be duly registered with the Securities and Exchange Commission (SEC) and shall have share holdings which can be sold to the private sector in the future. The LGU appoints the board members to be selected from the private sector who would then manage the company along commercial principles. |
| Build-Operate-Transfer or any of its variants (per RA 6970 as amended) | Under the BOT scheme, the private sector finances the investment, operates it for a certain period of time after which the asset is transferred to the LGU. The private party is allowed to collect user fees to recover its costs and earn a reasonable rate of return on its investment. The LGU and the BOT proponent negotiate on the risk sharing. |
| Joint Venture Agreement | Under a joint venture agreement, the LGU and the private party share in the risks of the project and operate the system through a shared management and organizational structure. |

NEDA BOARD RESOLUTION
No. 5 (s. 1994)

# APPROVING THE RECOMMENDATION OF THE INFRASTRUCTURE COMMITTEE (INFRACOM) ON THE NATIONAL POLICY, STRATEGY AND ACTION PLAN FOR URBAN SEWERAGE (LIQUID WASTE) AND SANITATION

On motion duly seconded,

BE IT RESOLVED, as it hereby resolved to approve as the same is hereby approved and confirmed the following recommendations of the INFRACOM:

## A. NATIONAL POLICY

1. Provision of improved sewerage/sanitation services in urban areas shall be considered a high priority.
2. On-site sanitation facilities for all urban households / establishments readily adaptable to further sewerage systems shall be required.
3. All new subdivisions/housing developments shall provide simplified or conventional sewerage system/sanitation facilities.
4. Conventional or low-cost sewerage for central business districts and for potentially high-income residential areas where economically and financially viable shall be provided.
5. Treatment of industrial as well as collected city/municipality wastewater to established standards set forth by the DENR prior to disposal into the drainage system shall be required.
6. Provision of services shall be based on consumer demand and willingness to pay.

## B. NATIONAL STRATEGY

1. A sanitation/sewerage program and a Central Sanitation/Sewerage program Support Office (CPSO) to coordinate subsector activities at the national level and to assist LGUs to plan and manage sanitation/sewerage programs at the community level shall be established.

2. External sources of assistance shall be explored provided as may be appropriate to enable Municipal Development Fund (MDF) facility or other financing sources to extend loans to LGUs for sanitation and sewerage projects.

3. LGUs shall primarily be the implementors of the sanitation/sewerage programs with the national government providing assistance to develop their capacities in the following areas: community participation, sub-sector planning, program management, regulation of development, selection of technologies, financial management, construction supervision, O&M, monitoring and reporting.

C. ACTION PLAN

1. A CPSO shall be created and housed at LWUA with the LWUA Board exercising over-all jurisdiction over its operations. An Inter-departmental Advisory Committee (IAC) composed of representatives from DPWH, DOH, DILG, DOF, DBM, LWUA, DENR, MWSS and NEDA shall likewise be created and act as the coordination body in the implementation and monitoring of urban sewerage and sanitation programs particularly the five (5) pilot areas (Davao City, Calamba, Dagupan City, Roxas City and Cotabato City). The representatives to the IAC shall preferably be Asst. Sec. or Dir. level. The Chairman of the IAC and the Dir. of the CPSO shall be appointed by the LWUA Board.

2. LWUA shall fully staff the CPSO from within its existing manpower as soon as possible. An international institutional development consultant shall be engaged to assist the CPSO to design and implement the activities. The CPSO shall exist for a period of about 3 to 5 years or until after its functions have been fully devolved to the LGUs.

UNANIMOUSLY APPROVED, 15 March 1994.

Certified true copy:

**FORTUNATO R. ABRENILLA**
Acting Board Secretary
and Director, Legal Staff

# 7. WATER SOURCE DEVELOPMENT

## 7.1 General

### Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | Page: 1 of 10 |
|---|---|---|---|---|
| Content: **Water Source - General Information** | | | Date: | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | Filename: Water Source.xls | |
| Region Number: VI | | Province Name: Antique | | Form Number: P.4.1 |
| | Type of Water Source | | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 15,719 | 569 | 279 |
| Implementor | Government Agency | Number | 2,567 | 329 | 279 |
| | Private | Number | 13,152 | 240 | |
| Level | Level I | Number | 15,719 | 563 | 60 |
| | Level II | Number | | 2 | 212 |
| | Level III | Number | | 4 | 7 |
| Ownership | Water District | Number | | 3 | 4 |
| | MEO/CEO | Number | | | |
| | RWSA | Number | | | 3 |
| | BWSA | Number | | 3 | 29 |
| | Institution | Number | | | |
| | Commercial Establishment | Number | | | |
| | Industrial/Agricultural Undertaking | Number | | | |
| | Public (Domestic) | Number | 2,567 | 323 | 225 |
| | Private (Domestic) | Number | 13,152 | 240 | 18 |
| Abstraction | Submersible/Turbine | Number | | | |
| | Centrifugal | Number | | | |
| | Handpump | Number | | | |
| | Bucket & Rope | Number | | | |
| | Free Flowing | Number | | | |
| Usage | Drinking | Number | | | |
| | Washing/Bathing | Number | | | |
| | Gardening/Irrigation | Number | | | |
| | Big-Scale Irrigation | Number | | | |
| | Production | Number | | | |
| Water Quality | No Quality Problem | Number | | | |
| | High Iron/Mag. Content | Number | | | |
| | High Chloride Content | Number | | | |
| | Turbidity/Colored/Smell | Number | | | |
| | Polluted/Contaminated | Number | | | |
| | Chlorinated | Number | | | |
| | Treated | Number | | | |
| Production | Seasonal Production | Number | | | |
| | Average Capacity < 240 $m^3$/day | Number | | 4 | 28 |
| | Average Capacity >= 240 $m^3$/day | Number | 15,719 | 565 | 251 |
| | Number of Household < 5 | Number | | | |
| | Number of Household >= 5 | Number | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | Page: 2 of 10 | | | |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | Date: | | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | Filename: Water Source.xls | | | |
| Region Number: VI | | Province Name: Antique | | | Form Number: P.4.1 | | | |
| | Name of Municipalities | Character | Anini-y | | | Barbaza | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 571 | 2 | 14 | 332 | 14 | 4 |
| Imple-mentor | Government Agency | Number | 255 | 2 | 14 | 103 | 14 | 4 |
| | Private | Number | 316 | | | 229 | | |
| Level | Level I | Number | 571 | 2 | 2 | 332 | 14 | 4 |
| | Level II | Number | | | 10 | | | |
| | Level III | Number | | | 2 | | | |
| Ownership | Water District | Number | | | 2 | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 255 | 2 | 12 | 103 | 14 | 4 |
| | Private (Domestic) | Number | 316 | | | 229 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | 2 | | | |
| | Average Capacity >= 240 $m^3$/day | Number | 571 | 2 | 12 | 332 | 14 | 4 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | | | Page: 3 of 10 | |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | | Date: | | |
| Data Collection Level: **Provincial** | | | Province No.: 0606 | | | Filename: Water Source.xls | | |
| Region Number: VI | | | Province Name: Antique | | | Form Number: P.4.1 | | |
| | Name of Municipalities | Character | Belison | | | Bugasong | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 983 | 12 | 1 | 508 | 1 | 8 |
| Imple-mentor | Government Agency | Number | 222 | 12 | 1 | 37 | 1 | 8 |
| | Private | Number | 761 | | | 471 | | |
| Level | Level I | Number | 983 | 10 | | 508 | | 4 |
| | Level II | Number | | 2 | 1 | | | 4 |
| | Level III | Number | | | | | 1 | |
| Ownership | Water District | Number | | | | | 1 | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | 2 | 1 | | | 2 |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 222 | 10 | | 37 | | 6 |
| | Private (Domestic) | Number | 761 | | | 471 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | | | 1 | |
| | Average Capacity >= 240 $m^3$/day | Number | 983 | 12 | 1 | 508 | | 8 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | | | | Page: 4 of 10 |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | | Date: | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | | Filename: Water Source.xls | | |
| Region Number: VI | | Province Name: Antique | | | | Form Number: P.4.1 | | |
| | Name of Municipalities | Character | Caluya | | | Culasi | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 24 | 81 | | 1,091 | 10 | 11 |
| Implementor | Government Agency | Number | 7 | 8 | | 163 | 10 | 11 |
| | Private | Number | 17 | 73 | | 928 | | |
| Level | Level I | Number | 24 | 81 | | 1,091 | 10 | 1 |
| | Level II | Number | | | | | | 9 |
| | Level III | Number | | | | | | 1 |
| Ownership | Water District | Number | | | | | | 1 |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 7 | 8 | | 163 | 10 | 10 |
| | Private (Domestic) | Number | 17 | 73 | | 928 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | | | | 8 |
| | Average Capacity >= 240 $m^3$/day | Number | 24 | 81 | | 1,091 | 10 | 3 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | | | | Page: 5 of 10 |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | | Date: | | |
| Data Collection Level: **Provincial** | | | Province No.: 0606 | | | Filename: Water Source.xls | | |
| Region Number: VI | | | Province Name: Antique | | | | | Form Number: P.4.1 |
| | Name of Municipalities | Character | Hamtic | | | Laua-an | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 926 | 23 | 29 | 2,376 | 195 | 21 |
| Imple-mentor | Government Agency | Number | 286 | 23 | 29 | 25 | 185 | 21 |
| | Private | Number | 640 | | | 2,351 | 10 | |
| Level | Level I | Number | 926 | 21 | 12 | 2,376 | 195 | 1 |
| | Level II | Number | | | 17 | | | 20 |
| | Level III | Number | | 2 | | | | |
| Ownership | Water District | Number | | 1 | | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | 1 | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 286 | 21 | 29 | 25 | 185 | 21 |
| | Private (Domestic) | Number | 640 | | | 2,351 | 10 | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | 2 | | | | |
| | Average Capacity >= 240 $m^3$/day | Number | 926 | 21 | 29 | 2,376 | 195 | 21 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | Page: 6 of 10 | | | |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | Date: | | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | Filename: Water Source.xls | | | |
| Region Number: VI | | Province Name: Antique | | | Form Number: P.4.1 | | | |
| | Name of Municipalities | Character | Libertad | | | Pandan | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 554 | | 16 | 828 | | 8 |
| Implementor | Government Agency | Number | 108 | | 16 | 142 | | 8 |
| | Private | Number | 446 | | | 686 | | |
| Level | Level I | Number | 554 | | 7 | 828 | | 1 |
| | Level II | Number | | | 9 | | | 7 |
| | Level III | Number | | | | | | |
| Ownership | Water District | Number | | | | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 108 | | 7 | 142 | | 8 |
| | Private (Domestic) | Number | 446 | | 9 | 686 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | 2 | | | 1 |
| | Average Capacity >= 240 $m^3$/day | Number | 554 | | 14 | 828 | | 7 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | | Page: 7 of 10 | | |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | | Date: | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | | Filename: Water Source.xls | | |
| Region Number: VI | | Province Name: Antique | | | | Form Number: P.4.1 | | |
| | Name of Municipalities | Character | Patnongon | | | San Jose | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 632 | 16 | 32 | 1,255 | 8 | 7 |
| Imple-mentor | Government Agency | Number | 110 | 6 | 32 | 210 | 8 | 7 |
| | Private | Number | 522 | 10 | | 1,045 | | |
| Level | Level I | Number | 632 | 15 | 5 | 1,255 | 8 | 1 |
| | Level II | Number | | | 27 | | | 3 |
| | Level III | Number | | 1 | | | | 3 |
| Ownership | Water District | Number | | 1 | | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | 3 |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 110 | 5 | 32 | 210 | 8 | 4 |
| | Private (Domestic) | Number | 522 | 10 | | 1,045 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | 1 | | | | 3 |
| | Average Capacity >= 240 $m^3$/day | Number | 632 | 15 | 32 | 1,255 | 8 | 4 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | Page: 8 of 10 | | |
|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | Date: | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | Filename: Water Source.xls | | |
| Region Number: **VI** | | Province Name: Antique | | | Form Number: P.4.1 | | |
| | Name of Municipalities | Character | San Remigio | | | Sebaste | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | | 157 | 14 | 1,033 | | 6 |
| Imple-mentor | Government Agency | Number | | 10 | 14 | 239 | | 6 |
| | Private | Number | | 147 | | 794 | | |
| Level | Level I | Number | | 157 | 5 | 1,033 | | 1 |
| | Level II | Number | | | 9 | | | 5 |
| | Level III | Number | | | | | | |
| Ownership | Water District | Number | | | | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | | 10 | 5 | 239 | | 6 |
| | Private (Domestic) | Number | | 147 | 9 | 794 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | 1 | | | |
| | Average Capacity >= 240 $m^3$/day | Number | | 157 | 13 | 1,033 | | 6 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | Page: 9 of 10 | | | |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | Date: | | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | Filename: Water Source.xls | | | |
| Region Number: VI | | Province Name: Antique | | | Form Number: P.4.1 | | | |
| | Name of Municipalities | Character | Sibalom | | | Tibiao | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 2,202 | 1 | 38 | 1,682 | 31 | 14 |
| Implementor | Government Agency | Number | 311 | 1 | 38 | 274 | 31 | 14 |
| | Private | Number | 1,891 | | | 1,408 | | |
| Level | Level I | Number | 2,202 | 1 | 7 | 1,682 | 31 | 2 |
| | Level II | Number | | | 31 | | | 12 |
| | Level III | Number | | | | | | |
| Ownership | Water District | Number | | | | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | | | | |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 311 | 1 | 38 | 274 | 31 | 14 |
| | Private (Domestic) | Number | 1,891 | | | 1,408 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | | | | 1 |
| | Average Capacity >= 240 $m^3$/day | Number | 2,202 | 1 | 38 | 1,682 | 31 | 13 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

## Table 7.1.1 Water Sources Information

| Provincial Water Supply, Sewerage And Sanitation Sector Plan (PW4SP) | | | | | | | | Page: 10 of 10 |
|---|---|---|---|---|---|---|---|---|
| Content: **Water Source - General Information** | | | | | | Date: | | |
| Data Collection Level: **Provincial** | | Province No.: 0606 | | | | Filename: Water Source.xls | | |
| Region Number: VI | | Province Name: Antique | | | | Form Number: P.4.1 | | |
| | Name of Municipalities | Character | Tobias Fornier | | | Valderrama | | |
| | Type of Water Source | Number | Shallow Well | Deep Well | Spring | Shallow Well | Deep Well | Spring |
| | Total number of water sources | Number | 499 | 15 | 32 | 223 | 3 | 24 |
| Imple-mentor | Government Agency | Number | 65 | 15 | 32 | 10 | 3 | 24 |
| | Private | Number | 434 | | | 213 | | |
| Level | Level I | Number | 499 | 15 | 5 | 223 | 3 | 2 |
| | Level II | Number | | | 26 | | | 22 |
| | Level III | Number | | | 1 | | | |
| Ownership | Water District | Number | | | 1 | | | |
| | MEO/CEO | Number | | | | | | |
| | RWSA | Number | | | | | | |
| | BWSA | Number | | | 25 | | | 1 |
| | Institution | Number | | | | | | |
| | Commercial Establishment | Number | | | | | | |
| | Industrial/Agricultural Undertaking | Number | | | | | | |
| | Public (Domestic) | Number | 65 | 15 | 6 | 10 | 3 | 23 |
| | Private (Domestic) | Number | 434 | | | 213 | | |
| Abstraction | Submersible/Turbine | Number | | | | | | |
| | Centrifugal | Number | | | | | | |
| | Handpump | Number | | | | | | |
| | Bucket & Rope | Number | | | | | | |
| | Free Flowing | Number | | | | | | |
| Usage | Drinking | Number | | | | | | |
| | Washing/Bathing | Number | | | | | | |
| | Gardening/Irrigation | Number | | | | | | |
| | Big-Scale Irrigation | Number | | | | | | |
| | Production | Number | | | | | | |
| Water Quality | No Quality Problem | Number | | | | | | |
| | High Iron/Manganese Content | Number | | | | | | |
| | High Chloride Content | Number | | | | | | |
| | Turbidity/Colored/Smell | Number | | | | | | |
| | Polluted/Contaminated | Number | | | | | | |
| | Chlorinated | Number | | | | | | |
| | Treated | Number | | | | | | |
| Production | Seasonal Production | Number | | | | | | |
| | Average Capacity < 240 $m^3$/day | Number | | | 3 | | | 7 |
| | Average Capacity >= 240 $m^3$/day | Number | 499 | 15 | 29 | 223 | 3 | 17 |
| | Number of Household < 5 | Number | | | | | | |
| | Number of Household >= 5 | Number | | | | | | |

**Table 7.1.2 Major References**

| Report/Information | Agency/Author | Contents | Reference Data/Description | Output |
|---|---|---|---|---|
| 1. Topographic Map (1:250,000) | NAMRIA | political boundary, topographic contour, river, road, etc. | major river basins & road | Location Map (Base Map of the Province) |
| 2. Rapid Assessment of Water Supply Sources | NWRB | groundwater availability, well inventory | well depth, static water level, specific capacity, etc. | Groundwater Availability Map |
| 3. Individual Well Information Database | NWRB | location & well inventory | location with well depths & water levels | Individual Well Location Map |
| 4. Groundwater Resources Investigation | NWRB | groundwater potential | high yielding and water quality problem areas | Groundwater Availability Map |
| 5. Geological Map of the Philippines | BMGS | lithologic distribution and structures | aquifers distribution | Groundwater Availability Map |
| 6. Philippine Water Resources Summary Data | NWRB | location map & runoff records | runoff record & statistical data | River Flow Duration Curve & Probability of Surface Water |
| 7. Road Network Map of the Province | PPDC | major road & municipality boundaries | municipal boundaries | Distribution Map of Urban & Rural Areas |
| 8. Feasibility Study Reports of the Water Districts | LWUA | well field information | groundwater potential & quality | Groundwater Availability Map |
| 9. Water Quality Analysis Result | Water Districts | water quality results | water sources quality | Groundwater Availability Map & Groundwater Quality |
| 10. Water Quality Analysis Result | PHO, PSPT | water quality results | water sources quality | Groundwater Availability Map & Water Sources Quality |
| 11. Assessment of the Mineral Production | DENR | location, activity of the mining sites | location & activity of the mining sites | River Network Map |
| 12. General Information of Groundwater | DEO, PSPT | groundwater availability | low yielding and water quality problem area | Groundwater Availability Map |
| 13. Well Inventory | DEO, PSPT | location and well information | well depth, static water level, specific capacity, etc. | Existing Well Inventory |
| 14. Spring Inventory | DEO, PSPT | location and spring information | discharge, distance & elevation | Water Sources Information |
| 15. Pumping Test Data | DEO | pumping test results | well capacity | Groundwater Availability Map |

## 7.3 Groundwater Sources

### 7.3.1 Classification of Groundwater Availability

**Table 7.3.1 Well Inventory by Municipality**

| Municipality | Barangay | Utilization | Type | Depth (m) | SWL (mbgs) | Spe. Cap. (lpsm) |
|---|---|---|---|---|---|---|
| Anini-y | Bayo Grande | Level I | SW | 8.2 | - | 0.2 |
| | Bayo Pequeño | Level I | SW | 8.2 | - | 0.2 |
| | Butuan | Level I | SW | 4.6 | - | 0.2 |
| | Casay | Level II | DW | 54.9 | - | 4.9 |
| | Casay Viejo | Level I | SW | 8.2 | - | 0.2 |
| | Iba | Level I | SW | 6.4 | - | 0.2 |
| | Igpalge | Level I | SW | 8.2 | - | 0.2 |
| | Lisub A | Level I | SW | 8.2 | - | 0.2 |
| | Lisub B | Level I | SW | 7.3 | - | 0.2 |
| | Mabuyong | Level I | SW | 11.0 | - | 0.2 |
| | Magdalena | Level I | SW | 11.0 | - | 0.2 |
| | Milagrosa | Level I | SW | 8.2 | - | 0.2 |
| | Nasuli C | Level I | SW | 11.0 | - | 0.2 |
| | Nato | Level I | SW | 6.4 | - | 0.2 |
| | Poblacion | Level I | SW | 6.4 | - | 0.2 |
| | Sagua | Level I | SW | 6.4 | - | 0.2 |
| | Salvacion | Level I | SW | 9.2 | - | 0.2 |
| | San Francisco | Level I | SW | 8.2 | - | 0.2 |
| | San Ramon | Level I | SW | 7.3 | - | 0.2 |
| | San Roque | Level I | SW | 6.4 | - | 0.2 |
| | Talisayan | Level I | SW | 6.4 | - | 0.2 |
| Belison | Borocboroc | Level I | SW | 19.0 | - | 0.2 |
| | Buenavista | Level I | SW | 7.0 | - | 0.2 |
| | Concepcion | Level I | DW | 22.0 | - | 0.2 |
| | Delima | Level I | SW | 16.0 | - | 0.2 |
| | Ipil | Level I | SW | 11.0 | - | 0.2 |
| | Maradiona | Level I | DW | 30.0 | - | 0.2 |
| | Mojon | Level I | SW | 5.0 | - | 0.2 |
| | Poblacion | Level I | DW | 96.0 | - | 0.2 |
| | Rombang | Level I | DW | 21.0 | - | 0.2 |
| | Salvacion | Level I | SW | 6.0 | - | 0.2 |
| | Sinaja | Level I | SW | 14.0 | - | 0.2 |
| Culasi | Alojipan | Level II | SW | 18.0 | - | 0.4 |
| | Bagacay | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Balac-balac | Level III | SW | 18.0 | - | 0.4 |
| | Batbatan Island | Level I | SW | 9.0 | 4.0 | 0.2 |
| | Batonan Norte | Level II | DW | 30.0 | - | 0.3 |
| | Batonan Sur | Level II | DW | 30.0 | - | 0.3 |
| | Bita | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Bitadton Norte | Level III | SW | 6.0 | 4.0 | 7.2 |
| | Bitadton Sur | Level III | SW | 6.0 | 4.0 | 0.4 |
| | Buenavista | Level II | SW | 9.0 | 5.0 | 0.4 |
| | Buhi | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Camancijan | Level III | SW | 6.0 | 5.0 | 0.7 |
| | Caridad | Level III | SW | 6.0 | 5.0 | 0.7 |
| | Carit-an | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Centro Norte (Pob.) | Level III | SW | 6.0 | 4.0 | 0.7 |

## Table 7.3.1 Well Inventory by Municipality

| Municipality | Barangay | Utilization | Type | Depth (m) | SWL (mbgs) | Spe. Cap. (lpsm) |
|---|---|---|---|---|---|---|
| Culasi | Centro Poblacion | Level III | SW | 6.0 | 4.0 | 0.7 |
| | Centro Sur (Pob.) | Level III | SW | 6.0 | 4.0 | 0.7 |
| | Condes | Level II | DW | 30.0 | 6.0 | 0.3 |
| | Esperanza | Level II | SW | 6.0 | 4.0 | 0.3 |
| | Fe | Level I | SW | 6.0 | 4.0 | 0.2 |
| | Flores | Level II | SW | 18.0 | - | 0.3 |
| | Jalandoni | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Lamputong | Level I | SW | 6.0 | 4.0 | 0.2 |
| | Lipata | Level I | SW | 12.0 | 4.0 | 0.2 |
| | Magsaysay (Balua) | Level III | SW | 18.0 | - | 0.4 |
| | Malacaŧang | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Malalison Island | Level II | SW | 6.0 | 4.0 | 0.2 |
| | Maniguin | Level II | SW | 6.0 | - | 0.2 |
| | Naba | Level II | SW | 6.0 | 4.0 | 0.3 |
| | Osorio | Level III | SW | 6.0 | - | 0.4 |
| | Paningayan | Level II | SW | 6.0 | - | 0.4 |
| | Salde | Level II | SW | 6.0 | - | 0.3 |
| | San Antonio | Level I | SW | 6.0 | 3.0 | 0.2 |
| | San Gregorio | Level II | SW | 3.0 | - | 0.3 |
| | San Juan | Level III | SW | 6.0 | 4.0 | 0.3 |
| | San Luis | Level III | SW | 6.0 | 4.0 | 0.3 |
| | San Pascual | Level III | SW | 6.0 | - | 0.4 |
| | San Vicente | Level III | SW | 6.0 | - | 0.4 |
| | Simbola | Level III | SW | 6.0 | - | 0.3 |
| | Tigbobolo | Level III | SW | 6.0 | - | 0.3 |
| | Tinabusan | Level III | SW | 6.0 | - | 0.3 |
| | Tomao | Level I | SW | 6.0 | 4.0 | 0.2 |
| | Valderama | Level I | SW | 6.0 | 4.0 | 0.2 |
| Hamtic | Apdo | Level I | SW | 6.1 | - | 0.2 |
| | Asluman | Level I | SW | 6.1 | - | 0.2 |
| | Banawon | Level I | SW | 9.2 | - | 0.2 |
| | Bia-an | Level I | SW | 6.1 | - | 0.2 |
| | Bongbongan I-II | Level I | SW | 9.2 | - | 0.2 |
| | Buhang | Level I | SW | 9.2 | - | 0.2 |
| | Calacja II | Level I | SW | 6.1 | - | 0.2 |
| | Calala | Level I | SW | 6.1 | - | 0.2 |
| | Caridad | Level I | SW | 6.1 | - | 0.2 |
| | Dangcalan | Level I | SW | 6.1 | - | 0.2 |
| | Funda | Level I | SW | 6.1 | - | 0.2 |
| | Guintas | Level I | SW | 6.1 | - | 0.2 |
| | Igbical | Level I | SW | 7.6 | - | 0.2 |
| | Inabasan | Level I | SW | 7.6 | - | 0.2 |
| | Ingwan-Batangan | Level I | SW | 7.6 | - | 0.2 |
| | La Paz | Level I | SW | 6.1 | - | 0.2 |
| | Malandog | Level I | SW | 9.2 | - | 0.2 |
| | Masanag | Level I | SW | 9.2 | - | 0.2 |
| | Piape I | Level I | SW | 9.2 | - | 0.2 |

## Table 7.3.1 Well Inventory by Municipality

| Municipality | Barangay | Utilization | Type | Depth (m) | SWL (mbgs) | Spe. Cap. (lpsm) |
|---|---|---|---|---|---|---|
| Hamtic | Piape II | Level I | SW | 9.2 | - | 0.2 |
| | Piape III | Level I | SW | 9.2 | - | 0.2 |
| | Pu-ao | Level I | SW | 7.6 | - | 0.2 |
| | Villavert-Jimenez | Level I | DW | 40.0 | - | 0.2 |
| Laua-an | Bagongbayan | Level I | SW | 6.0 | 1.0 | 0.2 |
| | Banban | Level I | SW | 6.0 | 1.0 | 0.2 |
| | Bongbongan | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Cabariwan | Level I | SW | 6.1 | 1.2 | 0.2 |
| | Cadajug | Level I | SW | 6.0 | 1.0 | 0.2 |
| | Canituan | Level I | SW | 9.1 | 1.0 | 0.2 |
| | Capnayan | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Casit-an | Level I | SW | 9.1 | 1.2 | 0.2 |
| | Guiamon | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Guinbanga-an | Level I | SW | 9.1 | 1.2 | 0.2 |
| | Guisijan | Level I | SW | 6.5 | 1.0 | 0.2 |
| | Igtadiao | Level I | SW | 19.6 | 1.0 | 0.2 |
| | Intao | Level I | SW | 9.1 | 2.0 | 0.2 |
| | Jaguikican | Level I | SW | 9.1 | 1.0 | 0.2 |
| | Lactudan | Level I | SW | 9.2 | 1.0 | 0.2 |
| | Latazon | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Laua-an | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Leon | Level I | SW | 9.4 | 1.0 | 0.2 |
| | Liberato | Level I | SW | 9.5 | 1.0 | 0.2 |
| | Lindero | Level I | SW | 6.0 | 1.5 | 0.2 |
| | Liya-liya | Level I | SW | 6.1 | 1.0 | 0.2 |
| | Lugta | Level I | SW | 15.2 | 1.0 | 0.2 |
| | Lupa-an | Level I | SW | 9.2 | 1.0 | 0.2 |
| | Magyapo | Level I | SW | 6.0 | 1.0 | 0.2 |
| | Maria | Level I | SW | 19.0 | 1.2 | 0.2 |
| | Mauno | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Maybunga | Level I | SW | 18.0 | 1.0 | 0.2 |
| | Necesito (Paniatan) | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Oloc | Level I | SW | 6.0 | 1.0 | 0.2 |
| | Omlot | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Pandanan | Level I | SW | 10.0 | 1.0 | 0.2 |
| | Paningayan | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Pascuala | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Poblacion (Centro) | Level I | SW | 12.0 | 1.2 | 0.2 |
| | San Ramon | Level I | SW | 12.0 | 1.0 | 0.2 |
| | Santiago | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Tibacan | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Tigunhao | Level I | SW | 9.0 | 1.0 | 0.2 |
| | Virginia | Level I | SW | 10.0 | 1.0 | 0.2 |
| Libertad | Barusbus | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Bulanao | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Codiong | Level I | DW | 25.0 | 6.0 | 0.2 |
| | Cubay | Level I | DW | 20.0 | 5.0 | 0.2 |

## Table 7.3.1 Well Inventory by Municipality

| Municipality | Barangay | Utilization | Type | Depth (m) | SWL (mbgs) | Spe. Cap. (lpsm) |
|---|---|---|---|---|---|---|
| Libertad | Igcagay | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Inyawan | Level I | DW | 20.0 | 6.0 | 0.2 |
| | Lindero | Level I | DW | 50.0 | 10.0 | 0.2 |
| | Maramig | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Pajo | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Panangkilon | Level I | DW | 25.0 | 6.0 | 0.2 |
| | Paz | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Pucio | Level I | DW | 20.0 | 5.0 | 0.2 |
| | San Roque | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Taboc | Level I | DW | 30.0 | 6.0 | 0.2 |
| | Tinigbas | Level I | DW | 20.0 | 5.0 | 0.2 |
| | Tinindugan | Level I | DW | 60.0 | 10.0 | 0.2 |
| | Union | Level I | DW | 20.0 | 5.0 | 0.2 |
| Patnongon | Amparo | Level I | SW | 5.0 | 2.0 | 0.2 |
| | Apgahan | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Aureliana | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Badiangan | Level I | SW | 5.0 | 2.0 | 0.2 |
| | Carit-an | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Igbarawan | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Igbobon | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Igburi | Level I | SW | 15.0 | 2.0 | 0.2 |
| | La Rioja | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Mabasa | Level I | SW | 5.0 | 2.0 | 0.2 |
| | Magsaysay | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Padang | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Pandanan | Level I | SW | 6.0 | 2.0 | 0.2 |
| | Poblacion | Level I | SW | 6.0 | 2.0 | 0.2 |
| | San Rafael | Level I | SW | 5.0 | 2.0 | 0.2 |
| | Tamayoc | Level I | SW | 6.0 | 2.0 | 0.2 |
| San Remigio | Aningalan | Level I | SW | 12.0 | 5.0 | 0.2 |
| | Bagumbayan | Level I | SW | 6.0 | 5.0 | 0.2 |
| | Baladjay | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Barangbang | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Bugo | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Cadolonan | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Carawisan II | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Carmelo I | Level I | SW | 6.0 | 3.0 | 0.2 |
| | General Fullon | Level I | SW | 12.0 | 3.0 | 0.2 |
| | Iguirindon | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Magdalena | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Maragubdub | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Nasuli | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Poblacion (Calag-itan) | Level I | SW | 12.0 | 5.0 | 0.2 |
| | Ramon Magsaysay | Level I | SW | 6.0 | 3.0 | 0.2 |
| | San Rafael | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Sinundolan | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Trinidad | Level I | SW | 6.0 | 3.0 | 0.2 |

## Table 7.3.1 Well Inventory by Municipality

| Municipality | Barangay | Utilization | Type | Depth (m) | SWL (mbgs) | Spe. Cap. (lpsm) |
|---|---|---|---|---|---|---|
| San Remigio | Vilvar | Level I | SW | 6.0 | 3.0 | 0.2 |
| Sebaste | Abiera | Level I | SW | 16.0 | 3.0 | 0.2 |
| | Aguila | Level I | SW | 15.0 | 2.0 | 0.2 |
| | Alegre | Level I | SW | 7.6 | 5.0 | 0.2 |
| | Aras-Asan | Level I | SW | 15.0 | 2.0 | 0.2 |
| | Bacalan | Level I | SW | 15.0 | 2.0 | 0.2 |
| | Callan | Level I | SW | 18.0 | 3.0 | 0.2 |
| | Idio | Level I | SW | 15.0 | 2.0 | 0.2 |
| | Nauhon | Level I | SW | 18.0 | 3.0 | 0.2 |
| | Poblacion | Level II | SW | 18.0 | 3.0 | 0.6 |
| Tibiao | Amar | Level I | SW | 5.0 | - | 0.2 |
| | Bandoja (Lupa-an) | Level I | SW | 12.0 | - | 0.2 |
| | Esparagoza | Level I | SW | 5.4 | 6.1 | 0.2 |
| | Importante | Level I | SW | 5.0 | 3.0 | 0.2 |
| | La Paz | Level I | SW | 6.0 | 4.6 | 0.2 |
| | Malabor | Level I | SW | 6.0 | 3.0 | 0.2 |
| | Martinez | Level I | SW | 4.5 | - | 0.2 |
| | Natividad | Level I | SW | 5.4 | - | 0.2 |
| | Poblacion | Level I | SW | 4.5 | - | 0.2 |
| | Salazar | Level I | SW | 9.0 | - | 0.2 |
| | San Francisco Norte | Level I | SW | 6.0 | - | 0.2 |
| | San Francisco Sur | Level I | SW | 7.5 | - | 0.2 |
| | San Isidro | Level I | SW | 9.0 | - | 0.2 |
| | Santa Ana | Level I | SW | 7.5 | - | 0.2 |
| | Santa Justa | Level I | SW | 12.0 | 9.1 | 0.2 |
| | Santo Rosario | Level I | SW | 6.0 | - | 0.2 |
| Valderrama | Borocboroc | Level II | SW | 6.5 | 3.4 | 0.1 |
| | Buluangan I | Level II | SW | 5.0 | 3.0 | 0.1 |
| | Bunsod | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Canipayan | Level II | SW | 6.5 | 3.0 | 0.1 |
| | Iglinab | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Igmasandig | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Lublub | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Manlacbo | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Pandanan | Level II | SW | 6.0 | 3.0 | 0.1 |
| | Takas (Pob.) | Level II | SW | 7.5 | 3.0 | 0.1 |
| | Tigmamale | Level II | SW | 7.0 | 3.0 | 0.1 |
| | Ubos (Pob.) | Level II | SW | 6.0 | 3.0 | 0.1 |

## Table 7.3.2 Groundwater Quality

| Municipality | Type | Bacterio. | | Physical Analysis | | | | | | Chemical Analysis | | | | Major Cations | | | | Major Anions | | | | Trace Ele. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Coli. Cnt. | Bact. Cnt. | T C | NTU - | TCU - | Odor - | TDS mg/l | EC mmpc | pH - | TH mg/l | Alka. mg/l | Acid. mg/l | Na mg/l | K mg/l | Ca mg/l | Mg mg/l | CO3 mg/l | HCO3 mg/l | Cl mg/l | SO4 mg/l | Fe mg/l | Mn mg/l |
| Philippine National Standard for Drinking Water -1994- | | 0 | 0 | - | 5> | 5> | unobj. | 500> | - | 6.5 to 8.5 | 300> | - | - | - | 200> | - | - | - | - | 200> | 250> | 1> | 0.5> |
| 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | |

Source; Water quality results were collected from respective Water Districts or analyzed by PSPT on site in the field survey using procured instruments.

Notes; Sampling point is located at handpump (L-I) or submersible pump (L-II/III).

Remarks; Water quality result was not available at present. Above parameters with shadow shall be examined by the period of design stage.

## Table 7.5.1 Surface Water Quality

| Surface Water Information | | | Parameter | | | | | | | | | | | | PNSDW-1994- | | | Surface Water Pollutants |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Major River | Sampling Location | Date (m/d/y) | Color | pH | D.Oxy. | BOD | SS | TDS | MBAS | O/G | N | P | Coli. | Cl | Cu | Tur. | Fe | Mn | |
| | | | TCU | - | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | MPN/100ml | mg/l | mg/l | NTU | mg/l | mg/l | |
| DENR Water Quality Criteria | | Class AA | 15 | 6.5-8.5 | 70 | 1 | 25 | 500 | nil | nil | 1 | nil | 50 | 250 | 1 | 5> | 1> | 0.5> | in upstream |
| | | Class A | 50 | 6.5-8.5 | 70 | 5 | 50 | 1,000 | 0.2 | 1 | 10 | 0.1 | 1,000 | 250 | 1 | | | | |
| Bacong | Culasi | | | | | | | | | | | | | | | | | | |
| Paliwan | Bugasong | | | | | | | | | | | | | | | | | | |
| Cangaranan | San Remigio | | | | | | | | | | | | | | | | | | |
| | Valderrama | | | | | | | | | | | | | | | | | | |
| | Bugasong | | | | | | | | | | | | | | | | | | |
| Sibalom | San Remigio | | | | | | | | | | | | | | | | | | |
| | Sibalom | | | | | | | | | | | | | | | | | | |
| | San Jose de Buenavista | | | | | | | | | | | | | | | | | | |

Source; Water quality results were collected from respective Water Districts or analyzed by PSPT on site in the field survey using procured instruments.
Notes; Sampling point is located at upstream boundary of each river in respective municipalities.
If several streams are present in an area, the stream nearest from populated area was selected.
If these is no upstream, sampling point was selected near populated area.
Remarks Class AA - Public Water Supply Class-I. ; Intended for waters having watersheds which are uninhabited and otherwise protected and which require only approved disinfection in order to meet the PNSDW.
Class A - Public Water Supply Class-II. ; Sources of water supply that will require complete treatment (coagulation, sedimentation, filtration & disinfection) in order to meet the PNSDW.
Water quality result was not available at present. Above parameters with shadow shall be examined by the period of design stage.

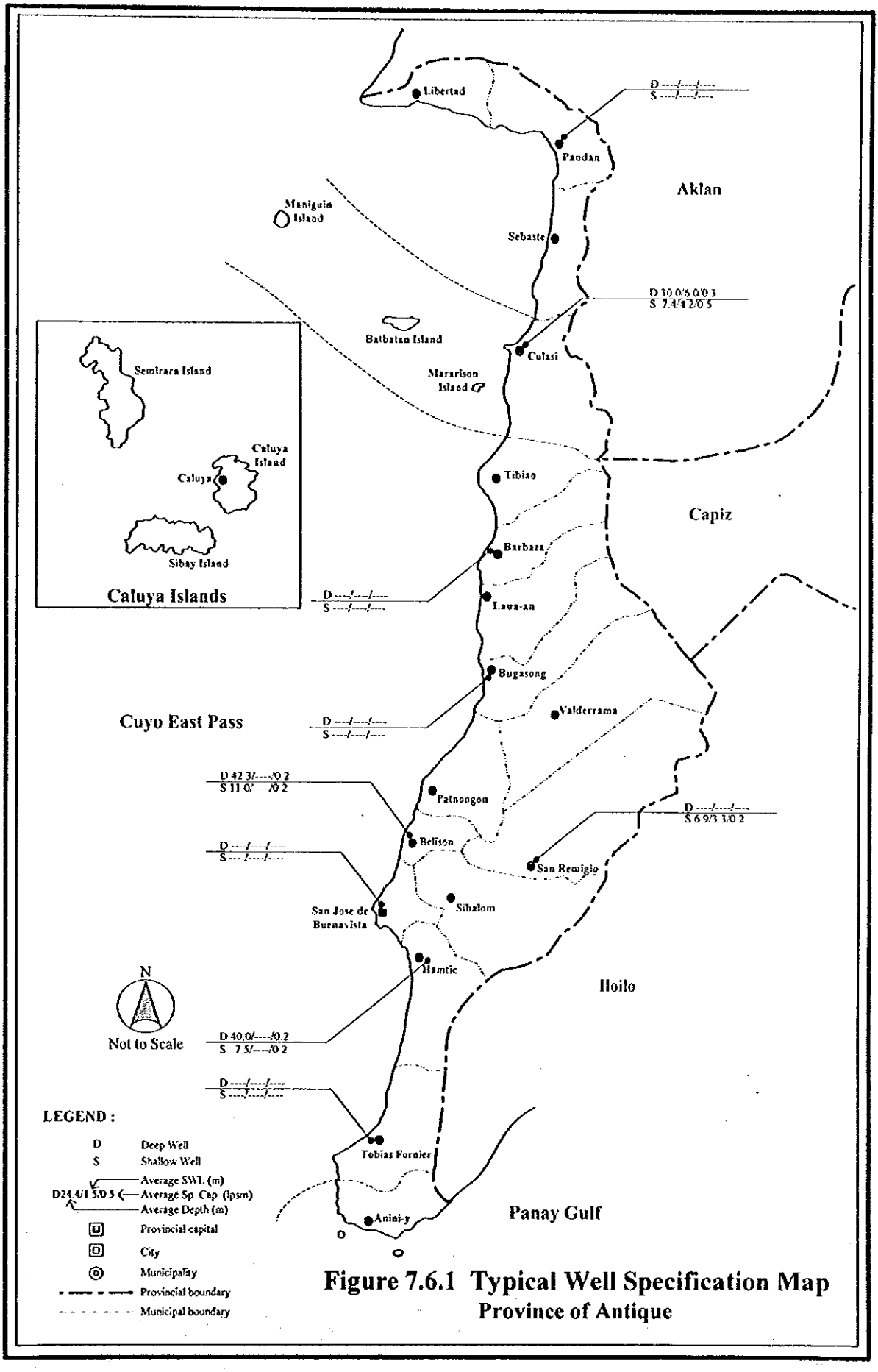


**Figure 7.6.1 Typical Well Specification Map**
**Province of Antique**