

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

Geographic Code		Name of City or Municipality		Elementary School		High School		Vocational Schools		Colleges and Universities		Hospitals		Banks and Financing Institutions	
Number	Character	Public	Private	Total	Public	Private	Total	Number	Number	Number	Number	Number	Number	Number	Number
061901	Cuartero	20		20	2		2								1
061902	Dao	19		19	2	1	3					1			1
061903	Dumalag	20	1	21			1	1							1
061904	Dumarao	31	3	34	3	1	4			1					1
061905	Ivisan	15		15	1		1								1
061906	Jamindan	33		33	3		3					2			1
061907	Ma-ayon	32		32	2		2								1
061908	Mambusao	32	1	33	1	1	2			1					1
061909	Pansay	29		29	2		2								1
061910	Panitan	25		25	2		2			1					1
061911	Pilar	23		23	4		4			1					1
061912	Pontevedra	20	2	22	2		2			1					1
061913	President Roxas	18	3	21	1	1	2								1
061914	Roxas City (Capital)	37	6	43	10	6	16	5		5		4			21
061915	Sapi-an	22		22	1		1								1
061916	Sigma	22		22	1		1								1
061917	Tapaz	47		47	4	1	5								1

Source: PSPT-Capiz, 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 (PW45P)			Prov. Number: 0619			Page 1 of 1						
Content: Health - Morbidity and Mortality			Prov. Name: Capiz			Date: 17 Jan 2000						
Data Collection Level: Provincial			Municipal Number:			Filename: Health.xls						
Region Number: VIII			Municipal Name:			Form Number: P.3.1						
Cause Group Diseases of	Disease No.	Name of Diseases (Group)	Water Related Diseases	Annual Incidence, 1993								
				Morbidity			Mortality			Infant Mortality		
				Male	Female	Total	Male	Female	Total	Male	Female	Total
Infective and Parasitic (001-136)	A 01	2-4 Typhoid Paratyphoid	X	181	212	396						
	A 02	5-7 Dysentery	X									
	A 03	8-10 Intestinal Parasites	X	126	120	246						
	A 04	11-13 Diarrhea	X	3,166	2,175	5,341	30	28	58	9	4	13
	A 05	14-16 Tuberculosis		497	306	793	116	44	160			
	A 06	17-19 Conjunctivitis	X									
	A 07	20-22 Whooping Cough		4	5	9						
	A 08	23-25 Throat Ear Nose		75	125	200						
	A 09	26-28 Tetanus		1		1	4	4	8	2	1	3
	A 10	29-31 Septicemia					26	23	49	11	9	20
	A 11	32-34 Cholera	X									
	A 12	35-37 Varicella, Chickenpox		121	131	252						
	A 13	38-40 Measles		95	106	201	4	5	9	1		1
	A 14	41-43 Dengue Fever	X	505	452	957	20	13	33		1	1
	A 15	44-46 Viral Hepatitis	X	142	94	236						
	A 16	47-49 Malaria	X									
	A 17	50-52 Schistosomiasis	X									
	A 18	53-55 Filariasis	X									
	A 19	56-58 Venereal Diseases		14	12	26						
	A 20	59-61 Other Bacter/Viral Dis		41	42	86						
Neoplasms (140-239)	B 01	62-64 Malignant Neoplasms					220	155	375			
	B 02	65-67 Leukemia										
Endocrine, Nutritional & Metabolic (250-279)	C 01	68-70 Diabetes Mellitus					13	15	28			
	C 02	71-73 Nutritional Deficiencies					31	39	70		1	1
	C 03	74-76 Endocrine Disorder										
Blood & Blood Forming Organs (280-289)	D 01	77-79 Anemias		33	361	394	3	11	14			
Mental Disorder (290-319)	E 01											
Nervous System & Sense Organs (320-359)	F 01	80-82 Meningitis		2		2	8	2	10			
	F 02	83-85 Nervous System					1	1	2	1		1
Circulatory Systems (390-459)	G 01	86-88 Heart Diseases		159	142	301	363	300	663	4	4	8
	G 02	89-91 Vascular Diseases		3,295	3,762	7,057						
Respiratory Systems (460-519)	H 01	92-94 Bronchitis		5,144	5,000	10,144	334	320	654	28	21	49
	H 02	95-97 Pneumonia		1,120	1,207	2,327						
	H 03	98-100 Influenza					63	39	102			
	H 04	101-103 Obstructive Pulmonary										
	H 05	104-106 ARI										
Digestive System (520-579)	I 01	107-109 Appendicitis										
	I 02	110-112 Gastroint. Colitis										
	I 03	113-115 Chronic Liver Disease					16	6	22			
	I 04	116-118 Other Digestive Diseases										
Genito-Urinary System (580-629)	J 01	119-121 Kidney Nephritis					58	20	78	2		2
	J 02	122-124 Urinary Infections					1		1			
Complication of Pregnancy & the Puerperium (630-676)	K 01	125-127 Prematurity								16	19	35
Skin & Subcutaneous Tissue (680-709)	L 01	128-130 Skin Diseases	X	50	65	115						
	L 02	131-133 Scabies	X	13	9	22						
Musculoskeletal & Connective Tissue (710-739)	M 01	134-136 Arthrop., Rheumatism										
Congenital Anomalies (740-759)	N 01	137-139 Congenital Anomalies					8	6	14	5	2	7
Certain Causes of Prenatal Morbidity & Mortality (760-779)	P 01	140-142 Birth Trauma										
	P 02	143-145 Birth Injuries & Difficult Labor								20	12	32
	P 03	146-148 Resp. Fetus-Newborn										
	P 04	149-151 Other Prenatal Causes										
Symptoms & Ill-Defined Condition (780-799)	Q 01	152-154 Senility					5	12	17			
	Q 02	155-157 Ill-Defined Condition										
Accidents, Poisoning & Violence (800-999)	R 01	158-160 Burns										
	R 02	161-163 Suffoc. Foreign Body										
	R 03	164-166 Other Accidents		171	79	250	214	51	268	2	1	3

Source: PHO-Capiz, 1999

3.6 Environmental Conditions

3.6.3 Solid Waste Disposal

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		Filename: Sanitation.xls								
Region Number: VIII		Form Number: P.6.6								
		Prov. Number: 0619								
		Prov. Name: Capiz								
Geographic Code	Name of City or Municipality	With Municipal Service				Without Service				
		Number of Collection Trucks			Disposal		Number of Household by Manner of Disposal			
Number	Character	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	Number	Number	Number	Number	Number	Number	Number	Number
061901	Cuartero	2		2		280		454	3,590	898
061902	Dao	1		1		103		173	5,070	453
061903	Dumalag	1		1		700			4,902	
061904	Dumarao	1		1		616		2,292	4,122	817
061905	Ivisan	1		1		839		2,016	1,480	283
061906	Jamindan							515	5,550	1,377
061907	Ma-ayon	1		1		590		4,777	126	486
061908	Mambusao	1		1		1,166		5,116	294	731
061909	Paray							5,650	1,872	
061910	Panitan	1		1		420		5,114	192	728
061911	Pilar	3		3		1,175		3,967	1,585	507
061912	Pontevedra	2		2		1,114		3,168	2,379	656
061913	President Roxas	1		1		1,852		2,194	790	
061914	Roxas City (Capital)	4	4	8		25,139				
061915	Sapi-an	1	1	1		1,100		108	2,000	1,255
061916	Sigma	1		1		562		3,739	882	
061917	Tapaz	1		1		441		178	654	7,020

Source: PSPT, Capiz, 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 entirety, 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 set forth 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 manage 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.

4.2 Sanitation and Sewerage

4.2.3 Sanitation Facilities and Service Coverage

Table 4.2.1 Number of Household Toilets, by Type

Provincial Water Supply, Sewerage and Sanitation Sector Plan (PWASP)		Page: 1 of 1														
Content: Environment Sanitation - Household Toilet		Date: 19 Jan. 2000														
Data Collection Level: Provincial		Filename: Sanitation.xls														
Region Number: VI		Form Number: P.6.1														
Prov. Name: Capiz		Prov. Number: 0619														
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		Total	
		Urban Number	Rural Number	Urban Number	Rural Number	Urban Number	Rural Number	Urban Number	Rural Number	Urban Number	Rural Number	Urban Number	Rural Number	Urban Number	Rural Number	Urban Number
061901	Quartero	152	250	12	21	676	271	36	4,238	4,274						
061902	Dao	38	1,571		2,635	1,009	4,206	75	510	585						
061903	Dumalag	13	2,585		1,779	383	4,364	194	633	827						
061904	Dumarao	40	801	241	4,813	1,047	5,066	47	1,547	1,594						
061905	Ivisan		804		2,540	804	2,540	61	101	162						
061906	Jamindan		450		1,290	490	6,146	14	157	171						
061907	Ma-avon		682		2,459	163	1,125	845	3,584	1,499						
061908	Mambusao		439		2	642	5,390	92	742	834						
061909	Panay		568		5,699	568	5,699	20	1,000	1,020						
061910	Panitan		366		1,742	385	1,742	118	4,209	4,327						
061911	Pilar		918		1,092	918	5,498	90	539	629						
061912	Pontevedra	379	488	4,104	93	1,036	5,528	80	373	453						
061913	President Roxas		635		2,217	339	774	128	369	497						
061914	Roxas City (Capital)	4,148	2,802	6,934	179	521	11,281	12,714	101	545						
061915	Sapi-an		742		2,895	742	2,895	56	423	479						
061916	Sigma		201		173	383	3,463	64	1,256	1,320						
061917	Tanay		371		1,856	371	3,392	32	4,279	4,511						

Source: PSPT, Capiz, 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: <b>Environment Sanitation - School and Student</b>							
Data Collection Level: <b>Provincial</b>		Prov. Number: 0619					
Region Number: VI		Prov. Name: Capiz					
Geographic Code	Name of City or Municipality	Number of School			Number of Student		
		Public Number	Private Number	Total Number	Public Number	Private Number	Total Number
Number	Character	Number	Number	Number	Number	Number	Number
061901	Cuartero	22		22	6,699		6,699
061902	Dao	21	1	22	6,146	495	6,641
061903	Dumalag	20	2	22	5,510	222	5,732
061904	Dumarao	34	4	38	10,120	781	10,901
061905	Ivisan	16		16	6,269		6,269
061906	Jamindan	36		36	9,196		9,196
061907	Ma-ayon	34		34	9,600		9,600
061908	Mambusao	33	2	35	7,311	604	7,915
061909	Panay	31		31	8,778		8,778
061910	Panitan	27		27	8,282		8,282
061911	Pilar	27		27	10,277		10,277
061912	Pontevedra	22	2	24	10,201	455	10,656
061913	President Roxas	19	4	23	6,224	1,456	7,680
061914	Roxas City (Capital)	47	12	59	27,754	2,184	29,938
061915	Sapi-an	23		23	6,237		6,237
061916	Sigma	23		23	4,873		4,873
061917	Tapaz	51	1	52	10,472	347	10,819

Source: PSPT, Capiz, 1999

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

Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP)		Page: 2 of 2						
Content: <b>Environment Sanitation - School Toilets</b>		Date: 19 Jan. 2000						
Data Collection Level: <b>Provincial</b>		Prov. Number: 0619						
Region Number: VI		Prov. Name: Capiz						
Region Number: VI		Form Number: P.6.3						
Geographic Code	Name of City or Municipality	Number of School Toilets						Total Units
		Sanitary		Unsanitary		Total		
Number	Character	Public Number	Private Number	Public Number	Private Number	Public Number	Private Number	Number
061901	Cuartero	16		16				16
061902	Dao	24	2	26				26
061903	Dumalag	40	2	42		4		46
061904	Dumarao	98	4	102		29	2	133
061905	Ivisan	36		36				36
061906	Jamindan	62		62				62
061907	Ma-ayon	80		80				80
061908	Mambusao	41	6	47		39		86
061909	Panay	30		30		32		62
061910	Panitan	54		54				54
061911	Pilar	52		52				52
061912	Pontevedra	46	14	60				60
061913	President Roxas	32	12	44				44
061914	Roxas City (Capital)	159	24	183				183
061915	Sapi-an	48		48				48
061916	Sigma	32		32				32
061917	Tapaz	53	4	57		35		92

Source: MPDO and MHO

Table 4.2.3 Number of Public Toilets by Type Facility

Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP)		Page: 1 of 3					
Content: <b>Environment Sanitation - Public Toilets(Public Market)</b>		Date: 19 Jan. 2000					
Data Collection Level: <b>Provincial</b>		Prov. Number: 0619					
Region Number: VI		Prov. Name: Capiz					
Geographic Code	Name of City or Municipality	Number	Public Markets				
			Sanitary		Unsanitary		Total
			Male Number	Female Number	Male Number	Female Number	
Number	Character	Number	Number	Number	Number	Number	Number
061901	Quartero	2	1	1			1
061902	Dao	1	1	1			1
061903	Dumalag	1	1	1			1
061904	Dumarao	1	1				1
061905	Ivisan	1	1	1			1
061906	Jamindan	1	1	1			1
061907	Ma-ayon	1	1	1			1
061908	Mambusao	1	1		1		1
061909	Panay	1	1	1			1
061910	Panitan	1	1	1			1
061911	Pilar	2	1	1			1
061912	Pontevedra	1	1	1			1
061913	President Roxas	1	1	1			1
061914	Roxas City (Capital)	2	5	5			5
061915	Sapi-an	1	1	1			1
061916	Sigma	1	1	1			1
061917	Tapaz	2	2	1			2

Source: PSPT, Capiz, 1999

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

Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP)		Page: 2 of 3					
Content: Environment Sanitation - Public Toilets (Jeepney/Bus Terminal)							
Data Collection Level: Provincial		Prov. Number: 0619					
Region Number: VI		Prov. Name: Capiz					
Geographic Code	Name of City or Municipality	Number	Jeepney/Bus Terminal				
			Sanitary		Unsanitary		Total
			Male Number	Female Number	Male Number	Female Number	
Number	Character	Male Number	Female Number	Male Number	Female Number		
061901	Cuartero						
061902	Dao						
061903	Dumalag						
061904	Dumarao						
061905	Ivisan						
061906	Jamindan						
061907	Ma-ayon						
061908	Mambusao						
061909	Panay						
061910	Panitan						
061911	Pilar						
061912	Pontevedra						
061913	President Roxas						
061914	Roxas City (Capital)	3	2	1	2	1	
061915	Sapi-an						
061916	Sigma						
061917	Tapaz						

Source: PSPT, Capiz, 1999

Table 4.2.3 Number of Public Toilets by Type 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: 0619					
Region Number: VI		Prov. Name: Capiz					
Geographic Code	Name of City or Municipality	Number	Parks/Playground				
			Number	Sanitary		Unsanitary	
				Male Number	Female Number	Male Number	Female Number
Number	Character	Number	Male Number	Female Number	Male Number	Female Number	
061901	Cuartero	1					
061902	Dao	1	1	1	1	1	
061903	Dumalag	1	1	1	1	1	
061904	Dumarao	1		1	1	1	
061905	Ivisan	1					
061906	Jamindan	1	1	1	1	1	
061907	Ma-ayon	1	1	1	1	1	
061908	Mambusao	1		1	1	1	
061909	Panay	1					
061910	Panitan	1	1	1	1	1	
061911	Pilar	1					
061912	Pontevedra	1					
061913	President Roxas	1					
061914	Roxas City (Capital)	2					
061915	Sapi-an	1					
061916	Sigma	1					
061917	Tapaz	1	1	1	1	1	

Source: PSPT, Capiz, 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<sup>1</sup>. 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

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<sup>1</sup> 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.<sup>2</sup>

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<sup>3</sup>, 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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<sup>2</sup> This policy has been approved by the Investment Coordination Committee of the NEDA Board.

<sup>3</sup> 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<sup>4</sup>. 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

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<sup>4</sup> 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.<sup>5</sup>

## **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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<sup>5</sup> 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 manage 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 from 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 to the 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.**

**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.



- c. 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.**

**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.**

MATRIX OF FINANCING AND MANAGEMENT OPTIONS

<u>O P T I O N</u>	<u>D E S C R I P T I O N</u>
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.: 0619	Filename: Water Source.xls		
Region Number: VI		Province Name: Capiz	Form Number: P.4.1		
	Type of Water Source		Shallow Well	Deep Well	Spring
	Total number of water sources	Number	5,724	1,102	78
Imple- mentor	Government Agency	Number	1,605	483	78
	Private	Number	4,119	619	
Level	Level I	Number	5,724	1,093	55
	Level II	Number		5	19
	Level III	Number		4	4
Ownership	Water District	Number		5	3
	MEO/CEO	Number			
	RWSA	Number			
	BWSA	Number		4	9
	Institution	Number			
	Commercial Establishment	Number			
	Industrial/Agricultural Undertaking	Number			
	Public (Domestic)	Number	1,605	474	66
Private (Domestic)	Number	4,119	619		
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 <sup>3</sup> /day	Number	41	60	7
	Average Capacity ≥ 240 m <sup>3</sup> /day	Number	5,683	1,042	71
	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.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Cuartero			Dao		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	146	9	1	753		
Implementor	Government Agency	Number	59	9	1	200		
	Private	Number	87			553		
Level	Level I	Number	146	9		753		
	Level II	Number			1			
	Level III	Number						
Ownership	Water District	Number						
	MEO/CEO	Number						
	RWSA	Number						
	BWSA	Number			1			
	Institution	Number						
	Commercial Establishment	Number						
	Industrial/Agricultural Undertaking	Number						
	Public (Domestic)	Number	59	9		200		
Private (Domestic)	Number	87			553			
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 <sup>3</sup> /day	Number						
	Average Capacity >= 240 m <sup>3</sup> /day	Number	146	9	1	753		
	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.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Dumalag			Dumarao		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	399	56	14	370	357	7
Implementor	Government Agency	Number	47	4	15	44	7	6
	Private	Number	352	52		326	350	
Level	Level I	Number	399	56	12	370	357	4
	Level II	Number			1			2
	Level III	Number			1			1
Ownership	Water District	Number						1
	MEO/CEO	Number						
	RWSA	Number						
	BWSA	Number			3			
	Institution	Number						
	Commercial Establishment	Number						
	Industrial/Agricultural Undertaking	Number						
	Public (Domestic)	Number	47	4	12	44	7	5
	Private (Domestic)	Number	352	52		326	350	
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 <sup>3</sup> /day	Number						
	Average Capacity >= 240 m <sup>3</sup> /day	Number	399	56	15	370	357	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: 4 of 10	
Content: Water Source - General Information						Date:		
Data Collection Level: Provincial			Province No.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Ivisan			Jamindan		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	224	34	4	102	39	7
Imple- mentor	Government Agency	Number	104	18	4	22	8	7
	Private	Number	120	16		80	31	
Level	Level I	Number	224	34	2	102	39	6
	Level II	Number			2			1
	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	104	18	4	22	8	7
	Private (Domestic)	Number	120	16		80	31	
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 <sup>3</sup> /day	Number			1			
	Average Capacity >= 240 m <sup>3</sup> /day	Number	224	34	3	102	39	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: 5 of 10	
Content: Water Source - General Information						Date:		
Data Collection Level: Provincial			Province No.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Ma-ayon			Manibusao		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	576	12	9	771	119	3
Implementor	Government Agency	Number	257	12	9	255	41	3
	Private	Number	319			516	78	
Level	Level I	Number	576	12	6	771	118	2
	Level II	Number			3			1
	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	257	12	9	255	40	3
Private (Domestic)	Number	319			516	78		
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 <sup>3</sup> /day	Number			1			
	Average Capacity >= 240 m <sup>3</sup> /day	Number	576	12	8	771	119	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: 6 of 10		
Content: Water Source - General Information						Date:			
Data Collection Level: Provincial			Province No.: 0619			Filename: Water Source.xls			
Region Number: VI			Province Name: Capiz			Form Number: P.4.1			
	Name of Municipalities		Panay			Panitan			
	Type of Water Source	Character	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring	
	Total number of water sources	Number	3	33		830	56	1	
Imple-mentor	Government Agency	Number	3	33		32	56	1	
	Private	Number				798			
Level	Level I	Number	3	33		830	55		
	Level II	Number					1	1	
	Level III	Number							
Ownership	Water District	Number					1		
	MEO/CEO	Number							
	RWSA	Number							
	BWSA	Number							
	Institution	Number							
	Commercial Establishment	Number							
	Industrial/Agricultural Undertaking	Number							
	Public (Domestic)	Number	3	33		32	55	1	
	Private (Domestic)	Number				798			
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 <sup>3</sup> /day	Number						1	
	Average Capacity >= 240 m <sup>3</sup> /day	Number	3	33		830	56		
	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.: 0619			Filename: Water Source.xls		
Region Number:VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Pilar			Pontevedra		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	154	21	6	375	47	2
Imple- mentor	Government Agency	Number	14	14	6	208	45	2
	Private	Number	140	7		167	2	
Level	Level I	Number	154	20	2	375	45	1
	Level II	Number		1	2			1
	Level III	Number			2		2	
Ownership	Water District	Number			2		2	
	MEO/CEO	Number						
	RWSA	Number						
	BWSA	Number		1	1			1
	Institution	Number						
	Commercial Establishment	Number						
	Industrial/Agricultural Undertaking	Number						
	Public (Domestic)	Number	14	13	3	208	43	1
	Private (Domestic)	Number	140	7		167	2	
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 <sup>3</sup> /day	Number		1	2		2	
	Average Capacity >= 240 m <sup>3</sup> /day	Number	154	20	4	375	45	2
	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.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Pres. Roxas			Roxas city		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	42	18	4	130	140	
Imple- mentor	Government Agency	Number	19	13	4	21	114	
	Private	Number	23	5		109	26	
Level	Level I	Number	42	17	3	130	138	
	Level II	Number		1	1		1	
	Level III	Number					1	
Ownership	Water District	Number					1	
	MEO/CEO	Number						
	RWSA	Number						
	BWSA	Number		1	1		1	
	Institution	Number						
	Commercial Establishment	Number						
	Industrial/Agricultural Undertaking	Number						
	Public (Domestic)	Number	19	12	3	21	112	
Private (Domestic)	Number	23	5		109	26		
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 <sup>3</sup> /day	Number			1		1	
	Average Capacity >= 240 m <sup>3</sup> /day	Number	42	18	3	130	139	
	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.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Sapian			Sigma		
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	321	82	6	390	15	1
Imple- mentor	Government Agency	Number	165	39	6	114	14	1
	Private	Number	156	43		276	1	
Level	Level I	Number	321	82	5	390	14	
	Level II	Number			1		1	1
	Level III	Number						
Ownership	Water District	Number						
	MEO/CEO	Number						
	RWSA	Number						
	BWSA	Number			1		1	1
	Institution	Number						
	Commercial Establishment	Number						
	Industrial/Agricultural Undertaking	Number						
	Public (Domestic)	Number	165	39	5	114	13	
Private (Domestic)	Number	156	43		276	1		
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 <sup>3</sup> /day	Number						1
	Average Capacity >= 240 m <sup>3</sup> /day	Number	321	82	6	390	15	
	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.: 0619			Filename: Water Source.xls		
Region Number: VI			Province Name: Capiz			Form Number: P.4.1		
	Name of Municipalities	Character	Tapaz					
	Type of Water Source	Number	Shallow Well	Deep Well	Spring	Shallow Well	Deep Well	Spring
	Total number of water sources	Number	138	64	13			
Imple- memor	Government Agency	Number	41	56	13			
	Private	Number	97	8				
Level	Level I	Number	138	64	12			
	Level II	Number			1			
	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	41	56	13			
	Private (Domestic)	Number	97	8				
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 <sup>3</sup> /day	Number	41	56				
	Average Capacity >= 240 m <sup>3</sup> /day	Number	97	8	13			
	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)	
Cuartero	Agcabugao	Level I	SW	19.0	-	0.1	
		Private	SW	19.0	-	0.2	
	Agnaga	Private	SW	19.0	-	0.2	
	Angub	Level I	SW	15.0	-	0.2	
	Balingasag	Private	SW	19.0	-	0.2	
	Bito-on Ilawod	Private	SW	18.0	-	0.2	
		Level I	SW	12.0	-	0.2	
	Bito-on Ilaya	Private	SW	19.0	-	0.2	
		Level I	SW	17.0	-	0.2	
	Bun-od	Private	SW	18.0	-	0.2	
	Carataya	Level I	SW	18.0	-	0.2	
		Private	SW	17.0	-	0.2	
	Lunayan	Private	SW	19.0	-	0.2	
	Mahunodhunod	Private	SW	17.0	-	0.2	
	Maindang	Level I	SW	18.0	-	0.1	
		Private	SW	18.0	-	0.2	
	Malagab-i	Private	SW	19.0	-	0.2	
		Level I	SW	18.0	-	0.2	
	Nagba	Level I	DW	20.0	-	0.2	
		Private	SW	17.0	-	0.2	
	Poblacion Ilawod	Level I	SW	14.0	-	0.2	
		Private	SW	13.0	-	0.2	
	Poblacion Ilaya	Level I	SW	18.0	-	0.2	
		Private	SW	14.0	-	0.2	
	Poblacion Takas	Level I	SW	16.0	-	0.2	
		Private	SW	16.0	-	0.2	
	Puti-an	Level I	DW	20.0	-	0.2	
		Private	SW	19.0	-	0.2	
	San Antonio	Private	SW	19.0	-	0.2	
		Level I	SW	17.0	-	0.2	
	Sinabsaban	Private	SW	18.0	-	0.2	
	Dao	Aganan	Private	SW	16.0	-	0.2
			Level I	SW	12.0	-	0.2
Agtambi		Private	SW	16.0	-	0.2	
		Level I	SW	12.0	-	0.2	
Agtanguay		Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
Balucuan		Private	SW	18.0	-	0.2	
		Level I	SW	12.0	-	0.2	
Bita		Private	SW	12.5	-	0.2	
		Level I	SW	12.0	-	0.2	
Centro		Private	SW	14.0	-	0.2	
		Level I	SW	12.0	-	0.2	
Daplas		Private	SW	18.0	-	0.1	
		Level I	SW	15.0	-	0.1	
Duyoc		Level I	SW	18.0	-	0.2	
		Private	SW	16.0	-	0.2	

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)	
Dao	Ilas Sur	Private	SW	18.0	-	0.1	
		Level I	SW	12.0	-	0.1	
	Lacaron	Private	SW	18.0	-	0.2	
		Level I	SW	13.0	-	0.2	
	Malonoy	Private	SW	16.0	-	0.2	
		Level I	SW	14.0	-	0.2	
	Manhoy	Level I	SW	12.5	-	0.2	
		Private	SW	12.0	-	0.2	
	Mapulang Bato	Private	SW	12.5	-	0.2	
		Level I	SW	12.0	-	0.2	
	Matagnop	Private	SW	14.0	-	0.2	
		Level I	SW	12.5	-	0.2	
	Nasunogan	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Poblacion Ilawod	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Poblacion Ilaya	Level I	SW	12.5	-	0.2	
		Private	SW	12.0	-	0.2	
	Quinabcaban	Level I	SW	18.0	-	0.2	
		Private	SW	18.0	-	0.2	
	Quinayuya	Level I	SW	18.0	-	0.2	
		Private	SW	18.0	-	0.2	
	San Agustin (Ilas Norte)	Private	SW	18.0	-	0.2	
		Level I	SW	12.0	-	0.1	
	Dumalag	Concepcion	Level I	SW	6.0	-	0.2
			Private	SW	6.0	-	0.2
		Consolacion	Level I	SW	6.0	-	0.2
			Private	SW	6.0	-	0.2
Duran		Level I	SW	6.0	-	0.2	
		Private	SW	1.8	-	0.2	
Poblacion		Private	DW	-	-	0.2	
San Jose		Private	SW	6.0	-	0.2	
		Level I	SW	1.8	-	0.2	
San Miguel		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
San Rafael		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
Santa Carmen		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
Santa Cruz		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
Santa Monica		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
Santa Rita		Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
Santa Teresa		Level I	SW	6.0	-	0.2	
Santo Angel		Level I	SW	6.0	-	0.2	

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Dumalag	Santo Angel	Private	SW	6.0	-	0.2
	Santo Niño	Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
	Santo Rosario	Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
Dumarao	Agbatuan	Level I	SW	7.3	-	0.2
		Private	SW	6.0	-	0.2
	Aglalana	Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
	Aglanot	Level I	DW	20.0	-	0.1
		Private	SW	9.1	-	0.1
	Agsirab	Level I	SW	6.0	-	0.2
		Private	SW	4.5	-	0.2
	Alipasiawan	Private	SW	19.0	-	0.2
		Level I	SW	4.5	-	0.2
	Astorga	Private	SW	18.0	-	0.2
		Level I	SW	9.1	-	0.1
	Bayog	Private	DW	20.0	-	0.2
		Level I	SW	12.2	-	0.2
	Bungsuan	Level I	DW	24.4	-	0.1
		Private	SW	9.0	-	0.2
	Calapawan	Level I	SW	5.4	-	0.2
		Private	SW	5.4	-	0.2
	Codingle	Level I	SW	9.0	-	0.1
		Private	SW	6.0	-	0.2
	Cubi	Level I	SW	6.0	-	0.1
		Private	SW	5.4	-	0.1
	Dacuton	Private	DW	21.3	-	0.2
		Level I	SW	6.0	-	0.1
	Dangula	Level I	SW	18.0	-	0.1
		Private	SW	18.0	-	0.1
	Gibato	Private	SW	4.5	-	0.2
	Guinotos	Private	SW	9.0	-	0.2
		Level I	SW	6.0	-	0.1
	Jambad	Level I	SW	15.0	-	0.2
		Private	SW	10.0	-	0.2
	Janguslob	Level I	SW	5.0	-	0.1
	Lawaan	Private	SW	9.0	-	0.2
		Level I	SW	6.1	-	0.1
	Malonoy	Private	SW	6.0	-	0.1
		Level I	SW	6.0	-	0.2
	Nagsulang	Level I	SW	12.0	-	0.1
		Private	SW	9.0	-	0.2
	Ongol Hawod	Private	SW	10.0	-	0.2
	Ongol Haya	Private	SW	15.0	-	0.2
		Level I	SW	12.2	-	0.2
	Poblacion Ilawod	Private	SW	10.0	-	0.2

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)	
Dumarao	Poblacion Ilawod	Level I	SW	9.0	-	0.2	
	Poblacion Haya	Private	SW	19.2	-	0.1	
		Level I	SW	9.1	-	0.2	
	Sagrada Familia	Level I	SW	18.0	-	0.2	
		Private	SW	9.1	-	0.2	
	Salcedo	Level I	SW	12.0	-	0.2	
		Private	SW	6.0	-	0.1	
	San Juan	Level I	SW	18.0	-	0.2	
	Sibariwan	Level I	SW	6.8	-	0.2	
		Private	SW	6.4	-	0.2	
	Tamulalod	Level I	SW	12.0	-	0.1	
		Private	SW	12.0	-	0.1	
	Taslan	Private	SW	4.8	-	0.2	
		Level I	SW	4.5	-	0.1	
	Tina	Level I	SW	9.0	-	0.2	
		Private	SW	9.0	-	0.2	
	Tinaytayan	Level I	SW	6.0	-	0.2	
		Private	SW	6.0	-	0.2	
	Traciano	Private	DW	20.0	-	0.2	
		Level I	SW	6.0	-	0.2	
	Ivisan	Agmalobo	Private	SW	19.1	-	0.1
			Level I	SW	12.2	-	0.2
		Agustin Navarra	Level I	SW	12.2	-	0.2
Private			SW	9.1	-	0.2	
Balaring		Level I	SW	11.6	-	0.1	
		Private	SW	7.6	-	0.1	
Basiao		Level I	SW	9.1	-	0.1	
		Private	SW	7.6	-	0.1	
Cabugao		Level I	SW	9.1	-	0.2	
		Private	SW	9.1	-	0.2	
Cudian		Private	SW	10.7	-	0.1	
		Level I	SW	8.4	-	0.1	
Haya-Ivisan		Private	SW	10.7	-	0.1	
		Level I	SW	9.2	-	0.2	
Malocloc Norte		Private	SW	9.1	-	0.1	
		Level I	SW	9.1	-	0.2	
Malocloc Sur		Level I	SW	12.2	-	0.2	
		Private	SW	9.1	-	0.1	
Matnog		Level I	SW	9.2	-	-	
		Private	SW	9.1	-	0.1	
Mianay		Level I	SW	12.2	-	-	
		Private	SW	7.6	-	0.1	
Ondoy		Level I	SW	11.6	-	0.2	
		Private	SW	7.1	-	0.2	
Poblacion Norte		Private	SW	9.1	-	0.1	
		Level I	SW	7.4	-	-	
Poblacion Sur		Private	SW	9.1	-	0.1	

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Ivisan	Poblacion Sur	Level I	SW	9.0 -		0.1
	Santa Cruz	Level I	SW	9.0 -		0.1
Jamindan	Agambulong	Level I	SW	9.0 -		0.2
	Agbun-od	Level I	SW	3.0 -		0.1
	Agcagay	Level I	SW	6.0 -		0.1
	Aglibacao	Level I	SW	6.0 -		0.2
		Private	SW	6.0 -		
	Bayebaye	Private	SW	12.0 -		0.2
		Level I	SW	3.0 -		0.1
	Caridad	Level I	SW	9.0 -		0.2
		Private	SW	9.0 -		0.2
	Fe	Level I	SW	6.0 -		0.1
		Private	SW	6.0 -		0.2
	Ganzon	Level I	SW	6.0 -		0.1
		Private	SW	6.0 -		0.1
	Jaena Norte	Private	SW	9.0 -		0.2
		Level I	SW	6.1 -		0.1
	Jagnaya	Private	SW	18.0 -		0.2
		Level I	SW	12.0 -		0.2
	Lapaz	Private	SW	6.0 -		0.2
	Linambasan	Level I	SW	6.0 -		0.1
		Private	SW	4.0 -		0.2
	Lucero	Private	SW	12.0 -		0.2
		Level I	SW	3.0 -		0.2
	Maantol	Private	SW	10.0 -		0.2
	Masgrau	Level I	SW	5.0 -		0.1
	Milan	Level I	SW	5.0 -		0.2
	Pangabat	Level I	DW	20.0 -		0.2
		Private	SW	12.0 -		0.2
	Pangabuan	Level I	SW	3.0 -		0.1
	Pasol-o	Level I	SW	5.0 -		0.1
	Poblacion	Private	SW	12.2 -		0.2
		Level I	SW	6.0 -		0.2
	San Jose	Private	SW	12.0 -		0.2
		Level I	SW	6.0 -		0.1
San Juan	Level I	SW	6.1 -		0.1	
San Vicente	Private	SW	7.0 -		0.2	
Santo Rosario	Level I	SW	9.0 -		0.2	
Ma-ayon	Aglimocon	Level I	SW	9.1 -		0.2
		Private	SW	9.1 -		0.2
	Alasaging	Level I	SW	7.0 -		0.2
		Private	SW	7.0 -		0.2
	Alayunan	Level I	SW	6.7 -		0.2
		Private	SW	6.7 -		0.2
	Balighot	Level I	SW	8.5 -		0.2
		Private	SW	8.5 -		0.2
Batabat	Level I	SW	8.5 -		0.2	



Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Ma-ayon	Batabat	Private	SW	8.5	-	0.2
	Bongbongan	Level I	SW	7.3	-	0.2
		Private	SW	7.3	-	0.2
	Cabungahan	Level I	SW	11.6	-	0.2
		Private	SW	11.6	-	0.2
	Canapian	Level I	SW	11.0	-	0.2
		Private	SW	11.0	-	0.2
	Carataya	Level I	SW	10.7	-	0.2
		Private	SW	10.7	-	0.2
	Duluan	Level I	SW	8.5	-	0.2
		Private	SW	8.5	-	0.2
	East Villaflores	Level I	SW	8.0	-	0.2
	Fernandez	Level I	SW	11.6	-	0.2
		Private	SW	11.6	-	0.2
	Guinbi-alan	Level I	SW	6.1	-	0.2
		Private	SW	6.1	-	0.2
	Indayagan	Level I	SW	7.6	-	0.2
		Private	SW	7.6	-	0.2
	Jebaca	Level I	SW	3.7	-	0.2
		Private	SW	3.7	-	0.2
	Maalan	Level I	SW	9.1	-	0.2
		Private	SW	9.1	-	0.2
	Manayupit	Level I	DW	20.2	-	0.2
		Private	DW	20.2	-	0.2
	New Guia	Level I	SW	8.5	-	0.2
		Private	SW	8.5	-	0.2
	Old Guia	Level I	SW	12.0	-	0.2
		Private	SW	12.0	-	0.2
	Palaguian	Level I	SW	11.0	-	0.2
		Private	SW	11.0	-	0.2
	Parallan	Level I	SW	9.2	-	0.2
		Private	SW	9.2	-	0.2
	Piña	Level I	SW	12.0	-	0.2
	Poblacion Ilawod	Level I	SW	10.9	-	0.2
		Private	SW	10.9	-	0.2
	Poblacion Ilaya	Level I	SW	12.1	-	0.2
		Private	SW	12.1	-	0.2
	Poblacion Tabuc	Level I	SW	13.7	-	0.2
		Private	SW	13.7	-	0.2
	Quevedo (Ngalan)	Level I	SW	10.7	-	0.2
		Private	SW	10.7	-	0.2
	Quinabonglan	Level I	SW	11.0	-	0.2
Private		SW	11.0	-	0.2	
Quinat-uyan	Level I	SW	8.5	-	0.2	
Salgan	Level I	SW	11.0	-	0.2	
Tapulang	Level I	SW	8.5	-	0.2	
Tuburan	Level I	SW	8.5	-	0.2	

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)	
Ma-ayon	West Villaflores	Level I	SW	8.2	-	0.2	
Mambusao	Atiplo	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Balat-an	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Balit	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Batiano	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bating	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bato Bato	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bayc	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bergante	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bula	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bunga	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Bungsi		Private	SW	12.0	-	0.2
	Burias	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Caidquid	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Cala-agus	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Libo-o	Level I	SW	12.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Manibad	Level I	DW	23.0	-	0.2	
		Private	SW	12.0	-	0.2	
	Maralag	Level I	SW	12.0	-	0.2	
Private		SW	12.0	-	0.2		
Najus-an	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		
Pangpang Norte	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		
Pangpang Sur	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		
Pinay	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		
Poblacion Proper	Level III	DW	-	-	2.4		
	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		
Poblacion Tabuc	Level I	SW	12.0	-	0.2		
	Private	SW	12.0	-	0.2		

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Mambusao	Sinondojan	Level I	SW	12.0	-	0.2
		Private	SW	12.0	-	0.2
	Tugas	Level I	SW	12.0	-	0.2
		Private	SW	12.0	-	0.2
	Tumalalud	Level I	SW	12.0	-	0.2
Panay	Agojo	Level I	SW	18.0	-	0.1
	Bago Chiquito	Level I	SW	6.1	-	-
	Bago Grande	Level I	DW	-	-	0.2
	Bato	Level I	SW	6.1	-	0.1
	Binangig	Level I	SW	6.1	-	0.1
	Bonga	Level I	SW	6.1	-	0.1
	Buntod	Level I	SW	6.1	-	0.1
	Cabugao Este	Level I	SW	6.1	-	0.1
	Cabugao Oeste	Level I	SW	6.1	-	0.1
	Calitan	Level I	SW	18.3	-	0.1
	Cogon	Level I	SW	6.1	-	0.2
	Daga	Level I	SW	6.1	-	-
	Linao	Level I	SW	18.3	-	0.1
	Lomboy	Level I	SW	6.1	-	-
	Lus-Onan	Level I	SW	18.3	-	0.1
	Panitan	Agbabadiang	Level I	SW	6.0	-
Agkilo		Level I	SW	7.0	-	0.2
Agloway		Level II	SW	12.3	-	1.1
		Level I	SW	9.0	-	0.2
Ambilay		Level I	SW	10.0	-	0.2
Bahit		Level I	SW	6.0	-	0.2
Balatucan		Level I	SW	8.0	-	0.2
Banga-an		Level I	SW	9.0	-	0.2
Cabangahan		Level I	SW	12.0	-	0.2
Cabugao		Level I	SW	8.0	-	0.2
Cadio		Level I	SW	9.0	-	0.2
Cala-an		Level I	SW	10.0	-	0.2
Capagao		Level I	SW	11.0	-	0.2
Cogon		Level I	SW	9.0	-	0.2
Conciencia		Level I	SW	8.0	-	0.2
Ensenagan		Level I	SW	9.0	-	0.2
Intampilan		Level I	SW	8.0	-	0.2
Pasugue		Level I	SW	9.0	-	0.2
Poblacion Ilawod		Level I	SW	10.0	-	0.2
Poblacion Haya		Level I	SW	9.0	-	0.2
Quios		Level I	SW	6.0	-	0.2
Salocan		Level I	SW	8.0	-	0.2
Tabuc Norte		Level I	SW	10.0	-	0.2
Tabuc Sur		Level I	SW	11.0	-	0.2
Timpas		Level I	SW	14.0	-	0.1
Tincupon		Level I	SW	8.0	-	0.1
Tinigban		Level I	SW	8.0	-	0.2

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Pilar	Casanayan	Level II	DW	20.0	-	1.9
Pontevedra	Agbanog	Level I	SW	9.2	-	0.2
		Private	SW	9.2	-	0.2
	Agdalipe	Private	SW	7.6	-	0.2
		Level I	SW	7.4	-	0.2
	Ameligan	Level I	SW	9.2	-	0.1
		Private	SW	9.2	-	0.1
	Bailan	Level I	SW	7.6	-	0.2
		Private	SW	7.6	-	0.2
	Banate	Level I	SW	8.5	-	0.1
		Private	SW	8.5	-	0.1
	Bimuntucan	Level I	SW	9.2	-	0.1
	Cabugao	Level I	SW	7.6	-	0.1
		Private	SW	7.6	-	0.1
	Guba	Level I	SW	9.2	-	0.1
		Private	SW	9.2	-	0.1
	Hipona	Level I	SW	7.6	-	0.2
		Private	SW	7.6	-	0.2
		Level III	SW	2.7	-	4.0
	Ilawod (Pob.)	Level I	SW	9.2	-	0.2
		Private	SW	9.2	-	0.2
	Ilaya (Pob.)	Level I	SW	9.2	-	0.1
		Private	SW	9.2	-	0.1
	Intungcan	Level I	SW	8.5	-	0.2
		Private	SW	8.5	-	0.2
	Jolongajog	Level I	SW	9.2	-	0.2
		Private	SW	9.2	-	0.2
	Lantangan	Level I	SW	7.6	-	0.2
		Private	SW	7.6	-	0.2
	Linampongan	Private	SW	9.2	-	0.1
		Level I	SW	9.2	-	0.2
	Malag-it	Level I	SW	9.2	-	0.1
		Private	SW	9.2	-	0.1
	Manapao	Level I	SW	9.2	-	0.2
Rizal	Level I	SW	9.2	-	0.1	
	Private	SW	9.2	-	0.1	
San Pedro	Level I	SW	9.2	-	0.1	
	Private	SW	9.2	-	0.1	
Solo	Level I	SW	8.5	-	0.2	
	Private	SW	8.5	-	0.2	
Sublangon	Level III	SW	14.3	-	5.7	
	Level I	SW	9.2	-	0.1	
	Private	SW	9.2	-	0.1	
Tabuc	Level I	SW	7.4	-	0.2	
	Private	SW	7.4	-	0.2	
Tacas	Level I	SW	9.2	-	0.1	
Yatingan	Level I	SW	9.2	-	0.1	

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
President Roxas	Aranguel	Level I	SW	9.0	-	0.2
		Private	SW	6.0	-	0.2
	Badiangon	Level I	SW	7.0	-	0.1
		Private	SW	6.0	-	0.1
	Bayuyan	Level I	SW	7.0	-	0.1
		Private	SW	6.0	-	0.1
	Cabugcabug	Level I	SW	12.0	-	0.2
		Private	SW	9.0	-	0.2
	Carmencita	Level I	SW	10.0	-	0.1
		Private	SW	6.0	-	0.1
	Cubay	Level I	SW	12.0	-	0.2
		Private	SW	6.0	-	0.2
	Culilang	Level I	SW	9.0	-	0.1
		Private	SW	6.0	-	0.2
	Goce	Level I	SW	5.0	-	0.1
		Private	SW	5.0	-	0.1
	Hanglid	Level I	SW	10.0	-	0.2
		Private	SW	9.0	-	0.2
	Ibaca	Level I	SW	12.0	-	0.2
		Private	SW	6.0	-	0.1
	Manoling	Level I	SW	6.0	-	0.2
		Private	SW	5.0	-	0.1
	Pantalan Cabugcabug	Private	SW	9.0	-	0.1
		Level I	SW	9.0	-	0.2
	Poblacion (Elizalde)	Level I	SW	12.0	-	0.2
		Private	SW	12.0	-	0.2
	Pondol	Level I	SW	9.0	-	0.2
		Private	SW	6.0	-	0.2
	Santo Niño	Level I	SW	9.0	-	0.1
		Private	SW	5.0	-	0.1
Vizcaya	Level I	SW	12.0	-	0.2	
	Private	SW	6.0	-	0.2	
Roxas City	Adlawan	Level I	SW	14.0	-	6.0
	Bago	Level I	SW	9.0	-	3.0
	Balijuagan	Level I	DW	26.0	-	-
	Barra	Level I	SW	5.0	-	-
	Baybay	Level I	SW	9.0	-	-
	Bolo	Level I	SW	1.0	-	5.0
	Cabugao	Level III	DW	68.0	-	7.2
		Level I	SW	2.0	-	6.0
	Cagay	Level I	SW	1.0	-	-
	Cogon	Level I	SW	1.0	-	-
	Culasi	Level I	SW	6.0	-	-
	Dayao	Level I	SW	12.0	-	-
	Dinginán	Level I	DW	55.0	-	-
	Dumolog	Level I	SW	8.0	-	-
	Jumaguicjic	Level I	SW	2.0	-	0.4

Table 7.3.1 Well Inventory by Municipality

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Spe. Cap. (lpsm)
Roxas City	Lanot	Level III	DW	95.0	-	7.2
		Level I	DW	34.0	-	0.4
	Lawa-an	Level I	SW	4.0	-	-
	Libas	Level I	SW	6.0	-	-
	Liong	Level I	SW	7.0	-	0.4
	Loctugan	Level I	SW	14.0	-	0.4
	Lonoy	Level III	DW	93.0	-	7.2
	Lonoy	Level I	SW	2.0	-	0.4
	Milibili	Level I	SW	13.0	-	-
	Olotayan	Level I	SW	5.0	-	-
	Punta Cogon	Level I	SW	1.0	-	-
	San Jose	Level I	SW	2.0	-	0.4
	Sibaguan	Level I	DW	35.0	-	-
	Talon	Level I	DW	22.0	-	-
	Tanque	Level I	SW	6.0	-	-
	Tiza	Level I	SW	8.0	-	-
	Sapi-an	Agsilab	Level I	SW	9.0	-
Private			SW	9.0	-	0.2
Agtatacay Norte		Level I	SW	9.0	-	0.2
		Private	SW	8.0	-	0.2
Agtatacay Sur		Level I	SW	9.0	-	0.2
		Private	SW	9.0	-	0.2
Bilao		Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
Damayan		Level I	SW	10.0	-	0.2
Dapdapan		Level I	SW	7.0	-	0.2
		Private	SW	6.0	-	0.2
Lonoy		Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
Majanlud		Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
Maninang		Level I	SW	6.0	-	0.2
		Private	SW	6.0	-	0.2
Poblacion		Private	SW	9.0	-	0.2
		Level I	SW	6.0	-	0.2
Sigma	Acbo	Level I	SW	12.0	-	0.1
	Amaga	Level I	SW	11.5	-	0.2
	Bangonbangon	Level I	SW	7.5	-	0.1
	Capuyhan	Level I	SW	12.0	-	0.2
	Cogon	Level I	SW	12.0	-	0.2
	Dayhagon	Level I	SW	9.0	-	0.2
	Guintas	Level I	SW	16.0	-	0.2
	Malapad Cogon	Level I	SW	8.0	-	0.2
	Mangoso	Level I	SW	12.0	-	0.2
	Mansacul	Level I	SW	12.0	-	0.2
	Matangcong	Level I	SW	10.5	-	0.2
	Matinabus	Level I	SW	10.5	-	0.2

**Table 7.3.1 Well Inventory by Municipality**

Municipality	Barangay	Utilization	Type	Depth (m)	SWL (mbgs)	Sp. Cap. (lpsm)
Sigma	Mianay	Level II	DW	27.0	-	0.8
		Level I	SW	13.0	-	0.2
	Oyong	Level I	SW	8.0	-	0.2
	Pagbunitan	Level I	SW	12.0	-	0.2
	Parian	Level I	SW	9.0	-	0.2
	Pinamalatican	Level I	SW	12.0	-	0.2
	Poblacion Norte	Level I	SW	10.5	-	0.2
	Poblacion Sur	Level I	SW	18.0	-	0.2
	Tawog	Level I	SW	18.0	-	0.2

7.3.3 Groundwater Quality

Table 7.3.2 Groundwater Quality

Municipality	Type	Bacterio.		Physical Analysis					Chemical Analysis				Major Cations				Major Anions			Trace Ele.			
		Coli. Cnt.	Bact. Cnt.	T	NTU	TCU	Odor	TDS	EC	pH	TH	Alka.	Acid.	Na	K	Ca	Mg	CO3	HCO3	Cl	SO4	Fe	Mn
				C		S		mg/l	mmpe		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Philippine National Standard for Drinking Water -1994-		0	0	-		S>	unobj.	500>	-	6.5		-	-	200>	-	-	-	-	200>	250>	1>	0.5>	
1 Cuartero	DW			0.0	45					7.2													>0.4
2 Dao	DW			38.8	350					7.2													>0.4
3 Dumaig	DW			0.0	5					6.8													>0.4
4 Dumarao	DW			52.6	45					6.7													>0.4
5 Ma-ayon	DW			40.0	47					7.0													0.2
6 Mambusao	DW			33.5	434					7.2													>0.4
7 Panit-an	DW			0.0	0					7.4													>0.4
8 Pontevedra	DW			0.0	19					7.3													>0.4
9 Roxas City	DW			0.0	0					7.0													0.0
10 Sigma	DW			50.8	0					6.0													>0.4
11 Tapaz	DW			0.0	9					7.2													0.3
12 Cuartero	USP																						
13 Dumarao	USP	0	100	0.0	0					7.2													>0.4
14 Ma-ayon	USP	0	0	0.0	56					7.2													0.1
15 Pilar	USP	Posi.	TNT	0.0	0					7.1													0.0
16 Pres. Roxas	USP	Posi.	TNT	0.0	44					6.2													0.1
17 Dumarao	WD																						
18 Panit-an	WD																						
19 Pilar	WD																						
20 Pontevedra	WD																						
21 Metro Roxas	WD																						

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).



7.5 Surface Water Sources

Table 7.5.1 Surface Water Quality

Major River	Surface Water Information			Parameter																PNSDW, 1994		Surface Water Pollutants in upstream		
	Inletary Systems	Location	Sampling Date (m/d/y)	Color TCU	pH	D.Oxy. mg/l	BOD mg/l	SS mg/l	TDS mg/l	MBAS mg/l	O/G ml	N mg/l	P mg/l	Coli. MPN/100ml	Cl mg/l	Cu mg/l	Tur. NTU	Fe mg/l	Mn mg/l					
																				Class AA	Class A		50	10
Panay	Badbarn	Dunarno		550	7.8													100.0	>0.4					
		Cuartero																						
Mambusao	Mambusao	Jamindan																						
		Mambusao		224	7.8														26.1	0.40				
		Sigma																						
		Duo																						
Ma-ayon	Ma-ayon	Panit-an		533	7.7														2.8	>0.4				
		Tapaz																						
Main	Dumalag	Cuartero		550	8.2														1.0	>0.4				
		Duo																						
		Panit-an																						
		Pontevedra																						
		Pamy																						
		Ivisan																						
		Roxas City																						

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.  
 Remarks: Class AA - Public Water Supply Class-1; 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-2; Sources of water supply that will require complete treatment (coagulation, sedimentation, filtration & disinfection) in order to meet the PNSDW.

7.6 Future Development Potential of Water Sources

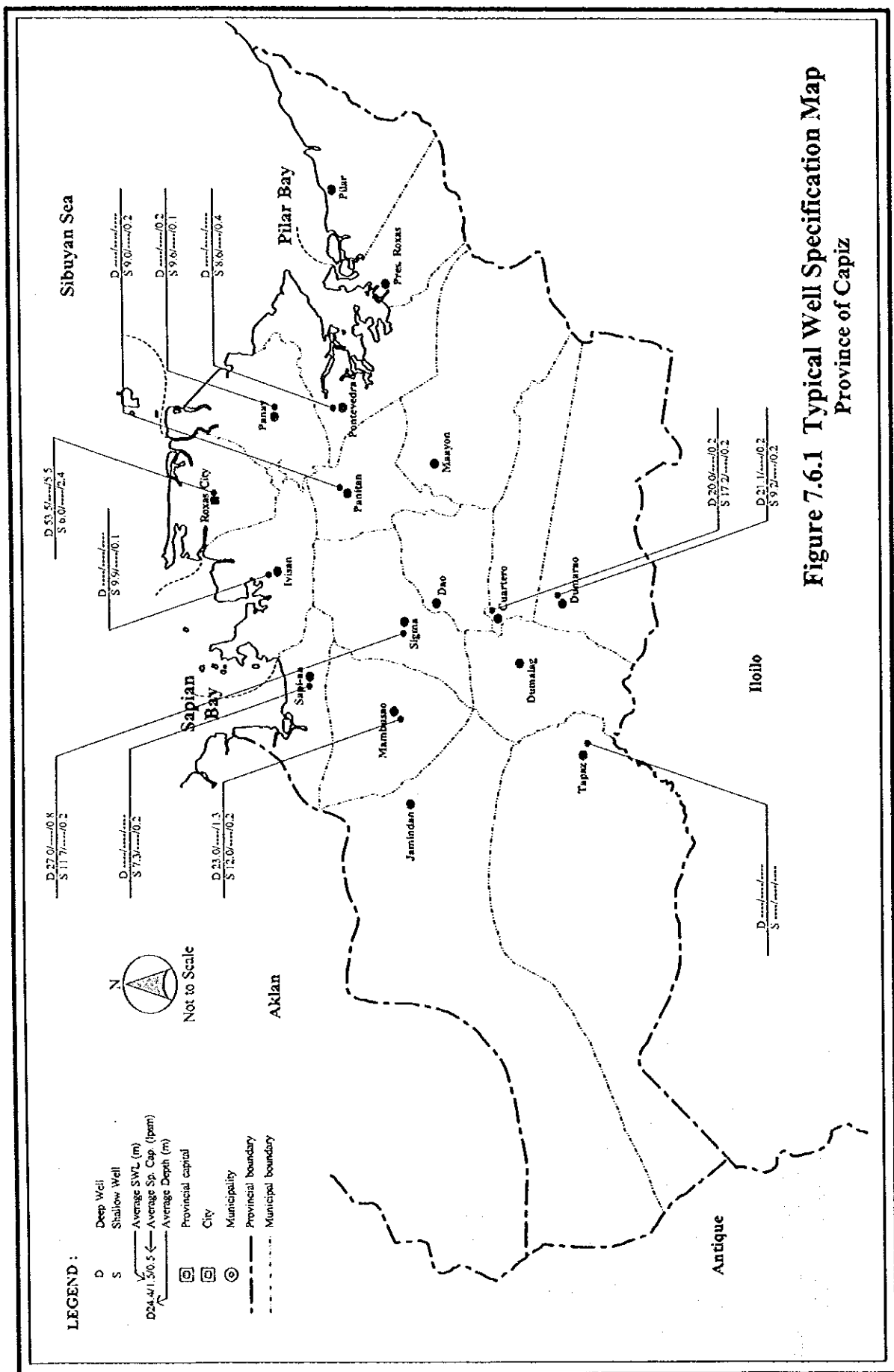


Figure 7.6.1 Typical Well Specification Map Province of Capiz







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