
**FUTURE REQUIREMENTS
AND DEVELOPMENT PLAN**

B

8. FUTURE REQUIREMENTS IN WATER SUPPLY AND SANITATION IMPROVEMENT

8.2 Targets of Provincial Sector Plan

Table 8.2.1 Estimation of Base Year Service Coverage of Water Supply

Name of Municipality	Area	Population (1998)	Population Served by 1998 Facilities				Population Served by Planned On-going Projects				Population Served in the Base Year (1998)				
			Level III	Level II	Level I	Total	Level III	Level II	Level I	Total	Level III	Level II	Level I	Total	Percentage Coverage
Anini-y	Urban	765			499	499							499	499	65
	Rural	19,376		950	10,830	11,780						950	10,830	11,780	61
	Total	20,141		950	11,329	12,279						950	11,329	12,279	61
Barbaza	Urban	2,924	770		1,087	1,857					770		1,087	1,857	64
	Rural	16,251	2,002		8,186	10,188					2,002		8,186	10,188	63
	Total	19,175	2,772		9,273	12,045					2,772		9,273	12,045	63
Belison	Urban	4,809			4,103	4,103							4,103	4,103	85
	Rural	7,252		650	4,891	5,541						650	4,891	5,541	76
	Total	12,061		650	8,994	9,644						650	8,994	9,644	80
Bugasong	Urban	7,034	4,866		991	5,857					4,866		991	5,857	83
	Rural	21,527	4,078	2,375	8,193	14,646					4,078	2,375	8,193	14,646	68
	Total	28,561	8,944	2,375	9,184	20,503					8,944	2,375	9,184	20,503	72
Cahuya	Urban	5,540			5,107	5,107							5,107	5,107	92
	Rural	12,372			7,861	7,861							7,861	7,861	64
	Total	17,912			12,968	12,968							12,968	12,968	72
Culasi	Urban	5,444	4,455			4,455					4,455			4,455	82
	Rural	25,903	2,174	1,200	13,903	17,277					2,174	1,200	13,903	17,277	67
	Total	31,347	6,629	1,200	13,903	21,732					6,629	1,200	13,903	21,732	69
Hamtic	Urban	4,181	1,575	200		1,775					1,575	200		1,775	42
	Rural	33,674	617	2,125	17,937	20,679					617	2,125	17,937	20,679	61
	Total	37,855	2,192	2,325	17,937	22,454					2,192	2,325	17,937	22,454	59
Laua-an	Urban	3,775			3,009	3,009							3,009	3,009	80
	Rural	18,391		3,775	9,038	12,813						3,775	9,038	12,813	70
	Total	22,166		3,775	12,047	15,822						3,775	12,047	15,822	71
Libertad	Urban	2,218			1,693	1,693							1,693	1,693	76
	Rural	12,831		1,975	6,107	8,082						1,975	6,107	8,082	63
	Total	15,049		1,975	7,800	9,775						1,975	7,800	9,775	65
Pandan	Urban	3,126	2,883			2,883					2,883			2,883	92
	Rural	22,925	21,160	875		22,035					21,160	875		22,035	96
	Total	26,051	24,043	875		24,918					24,043	875		24,918	96
Patnongon	Urban	4,739	1,835		1,718	3,553					1,835		1,718	3,553	75
	Rural	26,145	165	4,450	12,069	16,684					165	4,450	12,069	16,684	64
	Total	30,884	2,000	4,450	13,787	20,237					2,000	4,450	13,787	20,237	66
San Jose de Buenavista (Capital)	Urban	41,483	9,960	150	23,145	33,255					9,960	150	23,145	33,255	80
	Rural	3,818		150	3,513	3,663						150	3,513	3,663	96
	Total	45,301	9,960	300	26,658	36,918					9,960	300	26,658	36,918	81
San Remigio	Urban	1,236			989	989							989	989	80
	Rural	22,744		2,450	15,747	18,197						2,450	15,747	18,197	80
	Total	23,980		2,450	16,736	19,186						2,450	16,736	19,186	80
Sebaste	Urban	10,311	2,885	800	5,231	8,916					2,885	800	5,231	8,916	86
	Rural	2,251		75	1,472	1,547						75	1,472	1,547	69
	Total	12,562	2,885	875	6,703	10,463					2,885	875	6,703	10,463	83
Sibalom	Urban	8,354	4,614	75	2,375	7,064					4,614	75	2,375	7,064	85
	Rural	40,776	486	3,000	22,852	26,338					486	3,000	22,852	26,338	65
	Total	49,130	5,100	3,075	25,227	33,402					5,100	3,075	25,227	33,402	68
Tibiao	Urban	4,584	1,228		2,561	3,789					1,228		2,561	3,789	83
	Rural	15,044	1,318	2,650	7,025	10,993					1,318	2,650	7,025	10,993	73
	Total	19,628	2,546	2,650	9,586	14,782					2,546	2,650	9,586	14,782	75
Tobias Fornier	Urban	4,407	3,683	150		3,833					3,683	150		3,833	87
	Rural	22,364	394	3,950	9,651	13,995					394	3,950	9,651	13,995	63
	Total	26,771	4,077	4,100	9,651	17,828					4,077	4,100	9,651	17,828	67
Valderrama	Urban	3,561			2,178	2,178							2,178	2,178	61
	Rural	12,917			7,214	7,214							7,214	7,214	56
	Total	16,478			9,392	9,392							9,392	9,392	57
Provincial Total	Urban	118,491	38,754	1,375	54,686	94,815					38,754	1,375	54,686	94,815	80
	Rural	336,561	32,394	30,650	166,489	229,533					32,394	30,650	166,489	229,533	68
	Total	455,052	71,148	32,025	221,175	324,348					71,148	32,025	221,175	324,348	71

Table 8.2.2 Population Coverage in Phase I Provided by Served Population in the Base Year (Water Supply)

Name of Municipality	Area	Population Served by 1998 Facilities				1998		2005	
		Level III	Level II	Level I	Total	Total Population	Coverage (%)	Total Population	Coverage (%)
Anini-y	Urban			499	499	765	65	909	55
	Rural		950	10,830	11,780	19,376	61	23,023	51
	Total		950	11,329	12,279	20,141	61	23,932	51
Barbaza	Urban	770		1,087	1,857	2,924	64	3,688	50
	Rural	2,002		8,186	10,188	16,251	63	20,498	50
	Total	2,772		9,273	12,045	19,175	63	24,186	50
Belison	Urban			4,103	4,103	4,809	85	5,712	72
	Rural		650	4,891	5,541	7,252	76	8,614	64
	Total		650	8,994	9,644	12,061	80	14,326	67
Bugasong	Urban	4,866		991	5,857	7,034	83	8,167	72
	Rural	4,078	2,375	8,193	14,646	21,527	68	24,993	59
	Total	8,944	2,375	9,184	20,503	28,561	72	33,160	62
Caluya	Urban			5,107	5,107	5,540	92	6,135	83
	Rural			7,861	7,861	12,372	64	13,700	57
	Total			12,968	12,968	17,912	72	19,835	65
Culasi	Urban	4,455			4,455	5,444	82	5,798	77
	Rural	2,174	1,200	13,903	17,277	25,903	67	27,590	63
	Total	6,629	1,200	13,903	21,732	31,347	69	33,388	65
Hamtic	Urban	1,575	200		1,775	4,181	42	4,623	38
	Rural	617	2,125	17,937	20,679	33,674	61	37,225	56
	Total	2,192	2,325	17,937	22,454	37,855	59	41,848	54
Laua-an	Urban			3,009	3,009	3,775	80	4,223	71
	Rural		3,775	9,038	12,813	18,391	70	20,577	62
	Total		3,775	12,047	15,822	22,166	71	24,800	64
Libertad	Urban			1,693	1,693	2,218	76	2,954	57
	Rural		1,975	6,107	8,082	12,831	63	17,094	47
	Total		1,975	7,800	9,775	15,049	65	20,048	49
Pandan	Urban	2,883			2,883	3,126	92	3,427	84
	Rural	21,160	875		22,035	22,925	96	25,136	88
	Total	24,043	875		24,918	26,051	96	28,563	87
Patnongon	Urban	1,835		1,718	3,553	4,739	75	5,353	66
	Rural	165	4,450	12,069	16,684	26,145	64	29,535	56
	Total	2,000	4,450	13,787	20,237	30,884	66	34,888	58
San Jose de Buenavista (Capital)	Urban	9,960	150	23,145	33,255	41,483	80	46,748	71
	Rural		150	3,513	3,663	3,818	96	4,302	85
	Total	9,960	300	26,658	36,918	45,301	81	51,050	72
San Remigio	Urban			989	989	1,236	80	1,373	72
	Rural		2,450	15,747	18,197	22,744	80	25,249	72
	Total		2,450	16,736	19,186	23,980	80	26,622	72
Sebaste	Urban	2,885	800	5,231	8,916	10,311	86	10,488	85
	Rural		75	1,472	1,547	2,251	69	2,290	68
	Total	2,885	875	6,703	10,463	12,562	83	12,778	82
Sibalom	Urban	4,614	75	2,375	7,064	8,354	85	9,611	73
	Rural	486	3,000	22,852	26,338	40,776	65	46,915	56
	Total	5,100	3,075	25,227	33,402	49,130	68	56,526	59
Tibiao	Urban	1,228		2,561	3,789	4,584	83	4,584	83
	Rural	1,318	2,650	7,025	10,993	15,044	73	15,044	73
	Total	2,546	2,650	9,586	14,782	19,628	75	19,628	75
Tobias Fornier	Urban	3,683	150		3,833	4,407	87	4,625	83
	Rural	394	3,950	9,651	13,995	22,364	63	23,468	60
	Total	4,077	4,100	9,651	17,828	26,771	67	28,093	63
Valderrama	Urban			2,178	2,178	3,561	61	4,124	53
	Rural			7,214	7,214	12,917	56	14,960	48
	Total			9,392	9,392	16,478	57	19,084	49
Provincial Total	Urban	38,754	1,375	54,686	94,815	118,491	80	132,542	72
	Rural	32,394	30,650	166,489	229,533	336,561	68	380,213	60
	Total	71,148	32,025	221,175	324,348	455,052	71	512,755	63

Table 8.2.3 Number of Households Served by Sanitary Toilets in the Base Year (1998)

Name of Municipality	Area	Population (1998)	Number of Households (1998)	Households Using Sanitary Toilets in 1998				Recipient Hts of Planned/Ongoing Projects				Households Using Sanitary Toilets in the Base Year (1998)					
				Flush Toilets	Pour Flush	VIP/Dry	Total	Flush	Pour Flush	VIP/Dry	Total	Flush	Pour Flush	VIP/Dry	Total	Coverage (%)	
																Pour	Total
Atimiy	Urban	765	135	10	102		112					10	102		112	76	83
	Rural	19,378	3,497	14	2,343	225	2,562					14	2,343	225	2,562	67	74
	Total	20,143	3,632	24	2,445	225	2,694					24	2,445	225	2,694	6	74
Barbaza	Urban	2,924	549	39	401	42	482					39	401	42	482	73	88
	Rural	16,251	3,156	65	1,811	236	2,112					65	1,811	236	2,112	57	67
	Total	19,175	3,705	104	2,212	278	2,594					104	2,212	278	2,594	8	70
Belison	Urban	4,809	907	10	677	115	802					10	677	115	802	75	88
	Rural	7,252	1,448	11	914	305	1,230					11	914	305	1,230	63	85
	Total	12,061	2,355	21	1,591	420	2,032					21	1,591	420	2,032	18	86
Bugasong	Urban	7,034	1,374	28	474	408	910					28	474	408	910	34	66
	Rural	21,527	4,229	110	1,632	586	2,328					110	1,632	586	2,328	39	55
	Total	28,561	5,603	138	2,106	994	3,238					138	2,106	994	3,238	38	58
Caluya	Urban	5,540	1,045	104	618	3	725					104	618	3	725	59	69
	Rural	12,372	2,330		1,332	23	1,355						1,332	23	1,355	57	58
	Total	17,912	3,375	104	1,950	26	2,080					104	1,950	26	2,080	58	62
Culasi	Urban	5,444	1,076		812	60	872						812	60	872	75	81
	Rural	25,903	5,150	314	1,715	548	2,577					314	1,715	548	2,577	33	50
	Total	31,347	6,226	314	2,527	608	3,449					314	2,527	608	3,449	41	55
Hamtic	Urban	4,181	821	73	586	23	682					73	586	23	682	9	83
	Rural	33,674	6,463	49	3,720	688	4,457					49	3,720	688	4,457	58	69
	Total	37,855	7,284	122	4,306	711	5,139					122	4,306	711	5,139	59	71
Lauan	Urban	3,775	749	5	371		376					5	371		376	50	50
	Rural	18,391	3,808	2	1,896	918	2,816					2	1,896	918	2,816	50	74
	Total	22,166	4,557	7	2,267	918	3,192					7	2,267	918	3,192	50	70
Libertad	Urban	2,218	421	9	336		345					9	336		345	80	82
	Rural	12,831	2,329	4	849	748	1,601					4	849	748	1,601	36	69
	Total	15,049	2,750	13	1,185	748	1,946					13	1,185	748	1,946	43	71
Pandan	Urban	3,126	643	112	364	32	508					112	364	32	508	57	79
	Rural	22,925	4,603	256	3,206	214	3,676					256	3,206	214	3,676	70	80
	Total	26,051	5,246	368	3,570	246	4,184					368	3,570	246	4,184	68	80
Pamomgon	Urban	4,739	938	25	792		817					25	792		817	84	87
	Rural	26,145	5,303	94	3,311	821	4,226					94	3,311	821	4,226	62	80
	Total	30,884	6,241	119	4,103	821	5,043					119	4,103	821	5,043	66	81
San Jose de Buenavista (Capital)	Urban	41,493	8,039	819	5,233	553	6,605					819	5,233	553	6,605	65	82
	Rural	3,818	779	220	418	85	723					220	418	85	723	54	93
	Total	45,311	8,818	1,039	5,651	638	7,328					1,039	5,651	638	7,328	64	83
San Remigio	Urban	1,226	257		145	20	165						145	20	165	56	64
	Rural	22,744	4,267	243	1,635	456	2,334					243	1,635	456	2,334	38	55
	Total	23,980	4,524	243	1,780	476	2,499					243	1,780	476	2,499	39	55
Sebasti	Urban	10,311	2,054	25	1,700	20	1,745					25	1,700	20	1,745	83	85
	Rural	2,251	441		194	138	332						194	138	332	44	75
	Total	12,562	2,495	25	1,894	158	2,077					25	1,894	158	2,077	76	83

Table 8.2.3 Number of Households Served by Sanitary Toilets in the Base Year (1998) (Cont'd)

Name of Municipality	Area	Population (1998)	Number of Households (1998)	Households Using Sanitary Toilets in 1998				Recipient HHs of Planned/Ongoing				Households Using Sanitary Toilets in the Base Year (1998)					
				Flush Toilets	Pour Flush	VIP/Dry	Total	Flush	Pour Flush			Flush	Pour Flush	VIP/Dry	Total	Flush	Pour Flush
Sibolom	Urban	8,354	1,579	16	1,213	168	1,397					16	1,213	168	1,397	1	77
	Rural	40,276	2,872	13	4,799	1,570	6,382					13	4,799	1,570	6,382		61
	Total	48,630	4,451	29	6,012	1,738	7,779					29	6,012	1,738	7,779		138
	Urban	4,584	982	106	645	39	790					106	645	39	790	11	66
Tibiao	Rural	15,044	3,076		1,938	164	2,122						1,938	164	2,122		64
	Total	19,628	4,058	106	2,603	203	2,912					106	2,603	203	2,912	3	64
	Urban	4,407	825	25	195	288	508					25	195	288	508	3	24
	Rural	22,364	4,455	18	1,614	2,322	3,954					18	1,614	2,322	3,954		36
Tobias Fornier	Total	26,771	5,280	43	1,809	2,610	4,462					43	1,809	2,610	4,462	1	34
	Urban	3,561	712		539		539						539		539		76
	Rural	12,917	2,553		427	1,264	1,691						427	1,264	1,691		17
	Total	16,478	3,265		966	1,264	2,230						966	1,264	2,230		30
Valderrama	Urban	118,491	23,106	1,406	15,203	1,771	18,380					1,406	15,203	1,771	18,380	6	66
	Rural	336,561	65,759	1,413	33,774	11,311	46,498					1,413	33,774	11,311	46,498	2	51
	Total	455,052	88,865	2,819	48,977	13,082	64,878					2,819	48,977	13,082	64,878	3	55
	Provincial Total																

Table 8.2.4 Number of Public School Student Served by School Toilets in Base Year (1998)

Name of Municipality	1998 Total Number of Public School Student	Standard No. of Student that can be Served by 1998	No. of Student to be Served by Planned /On- going Projects	Standard No. of Students that can be Served by Toilets in Base Year (1998)	Coverage (%)
Anini-y	3,892	3,892		3,892	100
Barbaza	4,095	1,440		1,440	35
Belison	2,294	2,294		2,294	100
Bugasong	5,602	3,920		3,920	70
Caluya	4,809	1,440		1,440	30
Culasi	6,888	3,200		3,200	46
Hamtic	9,232	4,800		4,800	52
Laua-an	4,933	2,160		2,160	44
Libertad	3,071	1,200		1,200	39
Pandan	6,936	2,720		2,720	39
Patnongon	15,266	3,920		3,920	26
San Jose de Buenavista (Capital)	7,415	6,640		6,640	90
San Remigio	6,222	2,160		2,160	35
Sebaste-	2,737	2,737		2,737	100
Sibalom	11,883	8,480		8,480	71
Tibiao	4,581	2,000		2,000	44
Tobias Fornier	5,338	5,338		5,338	100
Valderrama	3,876	560		560	14
Provincial Total	109,070	58,901		58,901	54

Table 8.2.5 Number of Public Utilities with Sanitary Toilets in the Base Year (1998)

Name of Municipality	Type	No. of PU with Toilets in 1998	No. of PU with Sanitary Toilets in 1998	No. of PU with Toilets in Planned/Ongoing Project	No. of PU with Sanitary Toilets in Planned/Ongoing Projects	No. of PU with Toilets in Base Year 1998	No. of PU with Sanitary Toilets in Base year 1998	Coverage (%)
Anini-y	Public Market	6	6			6	6	100
	Bus/Jeepney Terminal							
	Parks/Playground	4	4			4	4	100
	Total	10	10			10	10	100
Barbara	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2				2		
Belison	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2				2		
Bugasong	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Caluya	Public Market							
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total							
Culasi	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Hamtic	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Laua-an	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Libertad	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground	2	2			2	2	100
	Total	4	2			4	2	50
Pandan	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Patnongon	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
San Jose de Buenavista (Capital)	Public Market	4	4			4	4	100
	Bus/Jeepney Terminal	2				2		
	Parks/Playground							
	Total	6	4			6	4	67
San Remigio	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2				2		
Sebaste	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2				2		
Sibalom	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Tibiao	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Tobias Fornier	Public Market	2				2		
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2				2		
Valderrama	Public Market	2	2			2	2	100
	Bus/Jeepney Terminal							
	Parks/Playground							
	Total	2	2			2	2	100
Provincial Total	Public Market	40	28			40	28	70
	Bus/Jeepney Terminal	2				2		
	Parks/Playground	6	6			6	6	100
	Total	48	34			48	34	71

Table 8.2.6 Households Coverage in Phase I Provided by Existing Facilities in the Base Year (Household Toilets)

Name of Municipality	Area	No. of Household Served by Existing Facilities				Coverage in 1998								Coverage in 2005					
		Facilities			Total	No. of HHs	Percentage of Served Households			Served Population		No. of HHs	Percentage of Served Households			Served Population			
		Flush	Pour Flush	VIP/Dry			Flush	Pour Flush	VIP/Dry	Flush	Total		Number	%	Flush	Pour Flush	VIP/Dry	Total	Number
Anini-y	Urban	10	102		112	135	7	76	6	83	635	83	160	6	64	5	70	710	70
	Rural	14	2,343	225	2,582	3,497		67	6	74	566	74	4,156		56	5	62	15,938	62
	Total	24	2,445	225	2,694	3,632	1	67	6	74	1,201	74	4,316	1	57	5	62	16,648	62
	Urban	39	401	42	482	549	7	73	8	88	2,573	88	692	6	58	6	70	2,727	70
Barbaza	Rural	65	1,811	236	2,112	3,156	2	57	7	67	1,959	67	3,980	2	46	6	53	11,497	53
	Total	104	2,212	278	2,594	3,705	3	60	8	70	4,532	70	4,672	2	47	6	56	14,224	56
	Urban	10	677	115	802	907	1	75	13	88	4,232	88	1,078	1	63	11	74	4,607	74
	Rural	11	914	305	1,230	1,448	1	63	21	85	4,088	85	1,719	1	53	18	72	6,782	72
Belison	Total	21	1,591	420	2,032	2,355	1	68	18	86	8,320	86	2,797	1	57	15	73	11,389	73
	Urban	28	474	408	910	1,374	2	34	30	66	4,642	66	1,595	2	30	26	57	4,996	57
	Rural	110	1,632	586	2,328	4,229	3	39	14	55	3,869	55	4,910	2	33	12	47	12,637	47
	Total	138	2,106	994	3,238	5,603	2	38	18	58	8,511	58	6,505	2	32	15	50	17,633	50
Bugasong	Urban	104	618	3	725	1,045	10	59	69	3,823	69	1,158	9	53			63	4,491	63
	Rural		1,332	23	1,355	2,330		57	1	58	3,213	58	2,580		52	1	53	8,460	53
	Total	104	1,950	26	2,080	3,375	3	58	1	62	7,036	62	3,738	3	52	1	56	12,951	56
	Urban		812	60	872	1,076		75	6	81	4,410	81	1,146		71	5	76	4,664	76
Culasi	Rural	314	1,715	548	2,577	5,150	6	33	11	50	2,722	50	5,485	6	31	10	47	13,754	47
	Total	314	2,527	608	3,449	6,226	5	41	10	55	7,132	55	6,631	5	38	9	52	18,418	52
	Urban	73	586	23	682	821	9	71	3	83	3,470	83	908	8	65	3	75	3,752	75
	Rural	49	3,720	688	4,457	6,463	1	58	11	69	2,885	69	7,145	1	52	10	62	25,033	62
Hamtic	Total	122	4,306	711	5,139	7,284	2	59	10	71	6,355	71	8,053	2	53	9	64	28,785	64
	Urban	5	371		376	749	1	50	50	24	74	1,888	50	838	1	44	45	1,975	45
	Rural	2	1,896	918	2,816	3,808		50	20	70	2,794	74	4,260		45	22	66	14,142	66
	Total	7	2,267	918	3,192	4,557		50	20	70	4,682	70	5,098		44	18	63	16,117	63
Laua-an	Urban	9	336		345	421	2	80	82	1,819	82	561	2	60			61	1,989	61
	Rural	4	849	748	1,601	2,329		36	32	69	1,530	69	3,102		27	24	52	9,833	52
	Total	13	1,185	748	1,946	2,750		43	27	71	3,349	71	3,663		32	20	53	11,822	53
	Urban	112	364	32	508	643	17	57	5	79	2,470	79	705	16	52	5	72	2,640	72
Pandun	Rural	256	3,206	214	3,676	4,603	6	70	5	80	2,501	80	5,047	5	64	4	73	19,673	73
	Total	368	3,570	246	4,184	5,246	7	68	5	80	4,971	80	5,752	6	62	4	73	22,313	73
	Urban	25	792		817	938	3	84	87	4,123	87	1,060	2	75			77	4,387	77
	Rural	94	3,311	821	4,226	5,303	2	62	15	80	3,791	80	5,991	2	55	14	71	22,363	71
Pamomgon	Total	119	4,103	821	5,043	6,241	2	66	13	81	7,914	81	7,051	2	58	12	72	26,750	72
	Urban	819	5,233	553	6,005	8,039	10	65	7	82	34,016	82	9,060	9	58	6	73	38,342	73
	Rural	220	418	85	723	779	28	54	11	93	38,579	93	878	25	48	10	82	4,052	82
	Total	1,039	5,651	638	7,328	8,818	12	64	7	83	72,595	83	9,938	10	57	6	74	42,394	74
San Jose de Buenavista (Capital)	Urban		145	20	165	257		56	8	64	791	64	285		51	7	58	844	58
	Rural	243	1,635	456	2,334	4,267	6	38	11	55	680	55	4,737	5	35	10	49	13,139	49
	Total	243	1,780	476	2,499	4,524	5	39	11	55	1,471	55	5,022	5	35	9	50	13,983	50
	San Remigio																		

Table 8.2.7 Public School Students and Public Utilities Coverage in Phase I by Existing Facilities in the Base Year

Name of Municipalities	Public School Toilets				Public Toilets			
	Std. No. of Student that can be Served by Base Year	Coverage in 1998		Total No. of Public School Student	Coverage in 2005		No. of PU with Toilets in Base Year	No. of PU with Sanitary Toilets in Base Year
		Total No. of Public School Students	%		%	No. of PU with Toilets in Base Year		
Anini-y	3,892	3,892	100	4,979	78	10	6	10
Barbaza	1,440	4,095	35	5,395	27	2	3	
Belison	2,294	2,294	100	2,786	82	2	3	
Bugasong	3,920	5,602	70	7,071	55	2	4	2
Caluya	1,440	4,809	30	5,029	29		2	
Culasi	3,200	6,888	46	7,790	41	2	3	2
Hamtic	4,800	9,232	52	10,705	45	2	3	2
Laua-an	2,160	4,933	44	5,873	37	2	2	2
Libertad	1,200	3,071	39	4,367	27	4	3	2
Pandan	2,720	6,936	39	7,156	38	2	3	2
Patnongon	3,920	15,266	26	13,660	29	2	3	2
San Jose de Buenavista	6,640	7,415	90	8,861	75	6	5	4
San Remigio	2,160	6,222	35	7,054	31	2	3	
Sebaste	2,737	2,737	100	3,035	90	2	3	
Sibalom	8,480	11,883	71	14,126	60	2	3	2
Tibiao	2,000	4,581	44	4,559	44	2	3	2
Tobias Fornier	5,338	5,338	100	5,447	98	2	3	
Valderrama	560	3,876	14	4,464	13	2	3	2
Provincial Total	58,901	109,070	54	122,357	48	48	58	34
								59

8.3 Projection of Frame Values

8.3.1 Review of Past Population Development and Population Projection

The future population of the region and the province has been projected by the NSO. However, the NSO does not prepare municipal population. With regard to this, the municipal population for the years 1998 (planning base year), 2005 (medium-term target year) and 2010 (long-term target year) was projected in this study. Available information for the study at present is as follows:

- NSO population census results from 1980 to 1995
- 1995 Census-based Regional and Provincial Population Projection prepared by the NSO
- Provincial Physical Framework Plan/Comprehensive Provincial Land Use Plan (1996-2005) prepared by the Provincial Office (hereafter referred to as "the Land Use Plan")

(1) 1995 Census-Based Regional and Provincial Population Projections: NSO

The NSO conducted regional and provincial projections for the period 1995-2020. The assumptions take into account future trends in the demographic processes of fertility, mortality and migration required by the cohort-component method for projecting population. The 1995 Population Census was used as the basis for the projection.

In the regional population projection, the subject region for this study; Region VI is classified as the medium-sized region (at least 5 million but less than 10 million by year 2000). The following are the result of projection for the region and the province of Antique in 2000, 2005 and 2010.

Table 8.3.1 Regional and Provincial Population Projection by NSO

Year		1980	1990	1995	2000	2005	2010
Region VI	Population	4,525,615	5,393,333	5,756,623	6,328,671	6,890,447	7,428,329
	Growth Rate	-	1.77%	1.31%	1.91%	1.72%	1.51%
Antique	Population	344,879	406,361	430,363	471,514	512,755	554,797
	Growth Rate	-	1.65%	1.15%	1.84%	1.69%	1.59%

Note: Average annual growth rates: geometric growth rate

Population of the province in 1995 as of September 1, 1995 was 431,713 (1995 Census)

In the past development, annual growth rates of the region and Province between 1990 and 1995 decreased compared with those of previous census period. The growth rates for respective census period (1980-1990 and 1990-1995) in regional and provincial population show almost same tendency of decreases (about 30%). For the population projection, however, the NSO considered the experiences in the previous development both for regional and province. Thus, the growth rates of the region with 5-year interval

between 1995 and 2010 are assumed at 1.91%, 1.72% and 1.51%, respectively. Likewise, those of the province are assumed at 1.84%, 1.69% and 1.59%, respectively.

(2) The Land Use Plan: Province of Antique (Planning period 1996-2005)

The population projection on the provincial total and component municipalities together with the regional population was made with a base year 1990. The population for the year 2005 was projected using a uniform growth rate between 1990 and 2005 referring to the experience from 1980 to 1990 (census years). The regional and provincial growth rate between 1980 and 1990 were 1.65% and 1.15%, respectively.

The following are comparison of the projected population for year 2005 between the Land Use Plan and NSO.

	<u>Land Use Plan</u>	<u>NSO</u>	<u>Comparison</u>
Regional Population	7,023,661	6,890,447	1.9% higher than NSO
Provincial Population	525,593	512,755	2.5% higher than NSO

In comparison between Land Use Plan and NSO's projection for year 2005, there is no significant difference both in regional and provincial population.

While Table 8.3.2 shows past population developments in census years (1980-1995) and projections for the years 1995 and 2005 by municipality as a base year 1990 in application of assumed annual growth rates for the period 1990 to 2005 in the said Land Use Plan.

Regarding the projected municipal population in 1995, that of eleven (11) out of 18 municipalities is higher than census results with a range of 1% to 16%, while that of remaining seven (7) municipalities is lower with a range of -2% to -13%.

Thus, future projection shall be made using 1995 census results as a base year. While, the regional and provincial population projected by the NSO may be adopted in this PW4SP, since the differences between population projected for the medium-term by Land Use Plan and by the NSO is less than 3%.

(3) Population Projection of the Province

The following conditions are considered in the population projection.

Regional and Provincial Population

For the regional and provincial population in the study, the projection conducted by NSO shall be adopted. Table 8.3.3 shows the projected population of the region VI and component provinces.

Table 8.3.2 Census Population and Projected Population in Land Use Plan

Municipality	Census Population					Land Use Plan			
	1980	1990	Growth Rate (1980-1990)	1995	Growth Rate (1990-1995)	1995*	Comparison w/ Census (%)	2005	Growth Rate (1980-2005)
Anini-y	13,480	16,851	2.26%	18,657	2.06%	18,841	0.98%	23,552	2.26%
Barbaza	14,703	14,984	0.19%	17,313	2.93%	15,127	-12.63%	15,416	0.19%
Belison	8,626	10,095	1.59%	11,174	2.05%	10,921	-2.26%	12,781	1.59%
Bugasong	21,619	24,537	1.27%	26,721	1.72%	26,141	-2.17%	29,669	1.27%
Caluya	10,901	16,243	4.07%	17,101	1.03%	19,827	15.94%	29,544	4.07%
Culasi	25,674	29,719	1.47%	30,431	0.47%	31,974	5.07%	37,012	1.47%
T. Fomier	22,511	25,816	1.38%	26,155	0.26%	27,646	5.70%	31,705	1.38%
Hamtic	28,526	34,394	1.89%	36,167	1.01%	37,766	4.42%	45,535	1.89%
Laua-an	18,785	19,865	0.56%	21,069	1.18%	20,428	-3.04%	21,602	0.56%
Libertad	9,870	11,049	1.13%	13,274	3.74%	11,690	-11.93%	13,087	1.13%
Pandan	20,396	23,894	1.60%	24,978	0.89%	25,862	3.54%	30,297	1.60%
Patnongan	24,262	27,376	1.21%	29,235	1.32%	29,080	-0.53%	32,812	1.21%
San Jose	30,266	40,267	2.90%	42,927	1.29%	46,446	8.20%	61,793	2.90%
San Remigio	19,208	21,682	1.22%	22,869	1.07%	23,036	0.73%	26,003	1.22%
Sebaste	10,369	12,553	1.93%	12,438	-0.18%	13,812	11.05%	16,721	1.93%
Sibalom	35,515	42,647	1.85%	46,143	1.59%	46,733	1.28%	56,118	1.85%
Tibiao	17,200	20,192	1.62%	19,628	-0.56%	21,878	11.46%	25,684	1.62%
Varderrama	12,968	14,197	0.91%	15,433	1.68%	14,854	-3.75%	16,262	0.91%
Province	344,879	406,361	1.65%	431,713	1.22%	442,062	2.40%	525,593	1.73%

Note: * Population in 1995 was estimated using average annual growth rate (1990-2002) employed in Land Use Plan
Population of the province in 1995 as of September 1, 1995 was 431,713 (1995 Census)

Table 8.3.3 Projected Population by the NSO

Province	Census	Projected Population/Growth Rate					
	Population	Population			Average Annual Growth Rate		
	1995	1998	2005	2010	1995-2000	2000-2005	2005-2010
Aklan	408,949	432,359	487,839	528,072	1.84%	1.72%	1.60%
Antique	430,363 (431,713)	455,051 (451,156)	512,755 (501,514)	554,797 (540,540)	1.84% (1.51%)	1.69% (1.51%)	1.59% (1.51%)
Capiz	622,034	657,975	742,312	801,742	1.86%	1.71%	1.55%
Guimaras	126,034	133,422	150,680	162,774	1.88%	1.72%	1.56%
Iloilo	1,743,302	1,847,328	2,086,833	2,249,494	1.91%	1.72%	1.51%
Negros Occidental	2,425,941	2,573,658	2,910,028	3,131,450	1.95%	1.72%	1.48%
Region VI	5,756,623	6,099,793	6,890,447	7,428,329	1.91%	1.72%	1.51%

(): PPDO Projection using uniform growth rate (1.51%)

Municipal Population

- 1) The total population of the province in 1998, 2005 and 2010 was fixed.
- 2) Municipal population for short/medium-term target years (1998 and 2005) is estimated using the experienced growth rates between 1990 and 1995. The municipal population estimated initially is adjusted in proportion to the population size of each municipality to the total provincial population, to meet the above mentioned provincial population fixed for the years 1998 and 2005. In this adjustment, the population of Tibiao in 1995 was fixed to avoid negative population growth.

For the year 2010 in the long-term, it is assumed that the tendency of population growth of respective municipalities between 1980 and 1995 will be stable reflecting the experiences in the past long term between 1980 and 1995. Thus, recorded growth rate between 1980 and 1995 by municipality is firstly applied to project 2010 population from the year 2005. Then, the municipal population estimated initially is adjusted in the same manner mentioned above.

Table 8.3.4 presents census results (1980, 1990 and 1995) and projected population of the municipalities.

Table 8.3.4 Census results and Projected Population of Municipalities

Municipality	Census Result					Projected Population/Growth Rate								
	1980	1990	1995	GR		1998			2005			2010		
				1990-1995	1980-1995	Population		GR	Initial	Adjust	GR	Initial	Adjust	GR
						Initial	Adjust							
Anini-y	13,480	16,851	18,657	2.06%	2.19%	19,832	20,141	2.58%	22,870	23,932	2.52%	26,670	26,720	2.23%
Barbara	14,703	14,984	17,313	2.93%	1.10%	18,881	19,175	3.46%	23,113	24,186	3.40%	25,540	25,588	1.13%
Belison	8,626	10,095	11,174	2.05%	1.74%	11,876	12,061	2.58%	13,690	14,326	2.52%	15,617	15,646	1.78%
Bugasong	21,619	24,537	26,711	1.72%	1.42%	28,124	28,561	2.25%	31,639	33,160	2.18%	35,587	35,653	1.46%
Caluya	10,901	16,243	17,101	1.03%	3.05%	17,637	17,912	1.56%	18,955	19,835	1.49%	23,047	23,090	3.09%
Culasi	25,674	29,719	30,431	0.47%	1.14%	30,866	31,347	0.99%	31,907	33,388	0.93%	35,334	35,400	1.18%
T. Foruler	22,511	25,816	26,155	0.26%	1.01%	26,361	26,771	0.78%	26,846	28,093	0.72%	29,533	29,588	1.04%
Hamtic	28,526	34,394	36,167	1.01%	1.59%	37,274	37,855	1.53%	39,992	41,848	1.47%	45,293	45,378	1.63%
Laua-an	18,785	19,865	21,069	1.18%	0.77%	21,826	22,166	1.71%	23,700	24,800	1.64%	25,767	25,815	0.81%
Libertad	9,870	11,049	13,274	3.74%	2.00%	14,819	15,049	4.27%	19,158	20,048	4.21%	22,129	22,170	2.03%
Pandan	20,396	23,894	24,978	0.89%	1.36%	25,652	26,051	1.41%	27,296	28,563	1.35%	30,559	30,616	1.40%
Patnongon	24,262	27,376	29,235	1.32%	1.25%	30,410	30,884	1.85%	33,340	34,888	1.78%	37,125	37,194	1.19%
San Jose	30,266	40,267	42,927	1.19%	2.36%	44,607	45,301	1.81%	48,786	51,050	1.75%	57,357	57,464	2.40%
San Remigio	19,208	21,682	22,869	1.07%	1.17%	23,612	23,980	1.59%	25,442	26,621	1.53%	28,216	28,269	1.21%
Sebasto	10,369	12,553	12,438	-0.18%	1.22%	12,370	12,562	0.33%	12,211	12,778	0.27%	13,577	13,602	1.26%
Sibalom	35,515	42,647	46,143	1.59%	1.76%	48,377	49,130	2.11%	54,018	56,526	2.05%	61,680	61,795	1.80%
Tibiao	17,209	20,192	19,628	-0.56%	0.88%	19,297	19,628	0.00%	18,547	19,628	0.00%	20,511	20,549	0.92%
Varderrama	12,968	14,197	15,433	1.68%	1.17%	16,226	16,478	2.21%	18,237	19,084	2.15%	20,223	20,261	1.10%
Province	344,879	406,361	431,713	1.22%	1.51%	448,046	455,051	1.77%	489,799	512,755	1.74%	553,768	554,797	1.59%

Note: Growth rates in 1998, 2005 and 2010 were calculated using geometric formula.

Population by Urban and Rural Area

1) Past population development

Table 8.3.5 shows the urban and rural population with growth rates in census years (1980-1995) by municipality. With regards to the ratios of the urban population of the province to the total population, the provincial averages in 1980 and 1990 were 20.7% and 28.9%, respectively. While it decreased to 26.1% in 1995. The provincial growth rate of 5.14% between 1980 and 1990 also decreased to -0.83% in 1995. On the contrary, the growth rates of rural population as the provincial average increased from 0.54% (1980 - 1990) to 2.01% (1990 - 1995).

The reason of the negative population growth of urban area between 1990 and 1995 is explained that classification of urban/rural barangays in the municipalities of Hamtic, Pandan, San Jose, etc. was considerably changed from that in 1990 Census time.

Table 8.3.5 Past Population Development by Urban and Rural Area

Municipality		1980			1990				1995				
		Total	Urban / Rural	Share (%)	Total	Urban / Rural	G.R. 1980-1990 (%)	Share (%)	Total	Urban / Rural	G.R. 1990-1995 (%)	G.R. 1980-1995 (%)	Share (%)
Urban Area	Anini-y	13,480	683	5.1%	16,851	733	0.71%	4.3%	18,657	709	-0.66%	2.19%	3.8%
	Barbaza	14,703	968	6.6%	14,984	1,248	2.57%	8.3%	17,313	2,640	16.17%	1.10%	15.2%
	Belison	8,626	3,482	40.4%	10,095	3,969	1.32%	39.3%	11,174	4,455	2.34%	1.74%	39.9%
	Bugasong	21,619	4,000	18.5%	24,537	6,287	4.63%	25.6%	26,721	6,581	0.92%	1.42%	24.6%
	Caluya	10,901	910	8.3%	16,243	4,808	18.11%	29.6%	17,101	5,289	1.93%	3.05%	30.9%
	Culasi	25,674	4,128	16.1%	29,719	5,754	3.38%	19.4%	30,431	5,285	-1.69%	1.14%	17.4%
	T. Fomier	22,511	2,200	9.8%	25,816	2,304	0.46%	8.9%	26,155	4,306	13.32%	1.01%	16.5%
	Hamtic	28,526	3,214	11.3%	34,394	10,936	13.03%	31.8%	36,167	3,995	-18.24%	1.59%	11.0%
	Laua-an	18,785	1,065	5.7%	19,865	2,778	10.06%	14.0%	21,069	3,588	5.25%	0.77%	17.0%
	Libertad	9,870	1,492	15.1%	11,049	1,680	1.19%	15.2%	13,274	1,956	3.09%	2.60%	14.7%
	Pandan	20,396	1,730	8.5%	23,894	4,807	10.76%	20.1%	24,978	2,997	-9.02%	1.36%	12.0%
	Patnongon	24,262	3,713	15.3%	27,376	4,195	1.23%	15.3%	29,235	4,486	1.35%	1.25%	15.3%
	San Jose	30,266	30,266	100.0%	40,267	40,267	2.90%	100.0%	42,927	39,309	-0.48%	2.36%	91.6%
	San Remigio	19,208	1,023	5.3%	21,682	1,186	1.49%	5.5%	22,869	1,179	-0.12%	1.17%	5.2%
	Sebaste	10,369	2,222	21.4%	12,553	9,338	15.44%	74.4%	12,438	10,209	1.80%	1.22%	82.1%
	Sibalom	35,515	4,699	13.2%	42,647	8,903	6.60%	20.9%	46,143	7,846	-2.50%	1.76%	17.0%
	Tibiao	17,200	2,746	16.0%	20,192	5,004	6.18%	24.8%	19,628	4,584	-1.74%	0.88%	23.4%
	Varderrama	12,968	2,689	20.7%	14,197	3,352	2.23%	23.6%	15,433	3,335	-0.10%	1.17%	21.6%
	Province	344,879	71,230	20.7%	406,361	117,549	5.14%	28.9%	431,713	112,749	-0.83%	1.51%	26.1%
Rural Area	Anini-y	13,480	12,797	94.9%	16,851	16,118	2.33%	95.7%	18,657	17,948	2.17%	2.28%	96.2%
	Barbaza	14,703	13,735	93.4%	14,984	13,736	0.60%	91.7%	17,313	14,673	1.33%	0.44%	84.8%
	Belison	8,626	5,144	59.6%	10,095	6,126	1.76%	60.7%	11,174	6,719	1.87%	1.80%	60.1%
	Bugasong	21,619	17,619	81.5%	24,537	18,250	0.35%	74.4%	26,721	20,140	1.99%	0.90%	75.4%
	Caluya	10,901	9,991	91.7%	16,243	11,435	1.36%	70.4%	17,101	11,812	0.65%	1.12%	69.1%
	Culasi	25,674	21,546	83.9%	29,719	23,965	1.07%	80.6%	30,431	25,146	0.97%	1.04%	82.6%
	T. Fomier	22,511	20,311	90.2%	25,816	23,512	1.47%	91.1%	26,155	21,849	-1.46%	0.49%	83.5%
	Hamtic	28,526	25,312	88.7%	34,394	23,458	-0.76%	68.2%	36,167	32,172	6.52%	1.61%	89.0%
	Laua-an	18,785	17,720	94.3%	19,865	17,087	-0.36%	86.0%	21,069	17,481	0.46%	-0.09%	83.0%
	Libertad	9,870	8,378	84.9%	11,049	9,369	1.12%	84.8%	13,274	11,318	3.85%	2.03%	85.3%
	Pandan	20,396	18,666	91.5%	23,894	19,087	0.22%	79.9%	24,978	21,981	2.86%	1.10%	88.0%
	Patnongon	24,262	20,549	84.7%	27,376	23,181	1.21%	84.7%	29,235	24,749	1.32%	1.25%	84.7%
	San Jose	30,266	0	0.0%	40,267	0	-	0.0%	42,927	3,618	-	-	8.4%
	San Remigio	19,208	18,185	94.7%	21,682	20,496	1.20%	94.5%	22,869	21,690	1.14%	1.18%	94.8%
	Sebaste	10,369	8,147	78.6%	12,553	3,215	-8.88%	25.6%	12,438	2,229	-7.06%	-8.26%	17.9%
	Sibalom	35,515	30,816	86.8%	42,647	33,744	0.91%	79.1%	46,143	38,297	2.56%	1.46%	83.0%
	Tibiao	17,200	14,454	84.0%	20,192	15,188	0.50%	75.2%	19,628	15,044	-0.19%	0.27%	76.6%
	Varderrama	12,968	10,279	79.3%	14,197	10,845	0.54%	76.4%	15,433	12,098	2.21%	1.69%	78.4%
	Province	344,879	273,649	79.3%	406,361	288,812	0.54%	71.1%	431,713	318,964	2.01%	1.03%	73.9%

2) Projection of urban and rural population for the years 1998, 2005 and 2010

Urban population by municipality for the target years was at first projected and rural population was calculated to meet aforementioned total population fixing the urban population.

In the projection of municipal urban population, the following are assumed by short/medium-term and long-term.

Short/Medium-term target: 1998 and 2005

The share of urban population in 1995 in terms of the profile of urban population to total population by municipality were basically adopted, assuming that the latest

profile will not change drastically in short/medium-term period.

Long-term target: 2010

For the long-term projection, the recorded growth rates of urban population between 1980 and 1995 may be applied for the municipal population in 2010, assuming that the tendency of urban population in the long-term period will be stable reflecting the experiences in the past long term.

Under the above assumptions, provincial average share of urban population for the year 2010 arrived at 26.1%, same as the share in 1995. Table 8.3.6 presents projected urban and rural population. The growth rates and shares on rural population are calculated using estimated rural population.

Table 8.3.6 Population Projection by Urban and Rural Area:1998, 2005 and 2010

Municipality		1998		2005			2010			
		Total	Urban/ Rural	Total	Urban/ Rural	Share (%)	Total	Urban/ Rural	G.R. (%)	Share (%)
Urban Area	Anini-y	20,141	765	23,932	909	3.8%	26,720	1,014	2.19%	3.8%
	Barbaza	19,175	2,924	24,186	3,688	15.2%	25,588	3,895	1.10%	15.2%
	Belison	12,061	4,809	14,326	5,712	39.9%	15,646	6,226	1.74%	39.8%
	Bugasong	28,561	7,034	33,160	8,167	24.6%	35,653	8,765	1.42%	24.6%
	Caluya	17,912	5,540	19,835	6,135	30.9%	23,090	7,128	3.05%	30.9%
	Culasi	31,347	5,444	33,388	5,798	17.4%	35,400	6,137	1.14%	17.3%
	T. Fomier	26,771	4,407	28,093	4,625	16.5%	29,588	4,862	1.01%	16.4%
	Hamtic	37,855	4,181	41,848	4,623	11.0%	45,378	5,003	1.59%	11.0%
	Laua-an	22,166	3,775	24,800	4,223	17.0%	25,815	4,388	0.77%	17.0%
	Libertad	15,049	2,218	20,048	2,954	14.7%	22,170	3,261	2.00%	14.7%
	Pandan	26,051	3,126	28,563	3,427	12.0%	30,616	3,667	1.36%	12.0%
	Patnongon	30,884	4,739	34,888	5,353	15.3%	37,194	5,697	1.25%	15.3%
	San Jose	45,301	41,483	51,050	46,748	91.6%	57,464	52,523	2.36%	91.4%
	San Remigio	23,980	1,236	26,622	1,373	5.2%	28,269	1,455	1.17%	5.1%
	Sebaste	12,562	10,311	12,778	10,488	82.1%	13,602	11,144	1.22%	81.9%
	Sibalom	49,130	8,354	56,526	9,611	17.0%	61,795	10,488	1.76%	17.0%
	Tibiao	19,628	4,584	19,628	4,584	23.4%	20,549	4,790	0.88%	23.3%
Varderrama	16,478	3,561	19,084	4,124	21.6%	20,261	4,370	1.17%	21.6%	
Province		455,051	118,491	512,755	132,542	25.8%	554,797	144,811	1.79%	26.1%
Rural Area	Anini-y	20,141	19,376	23,932	23,023	96.2%	26,720	25,706	2.23%	96.2%
	Barbaza	19,175	16,251	24,186	20,498	84.8%	25,588	21,693	1.14%	84.8%
	Belison	12,061	7,252	14,326	8,614	60.1%	15,646	9,419	1.80%	60.2%
	Bugasong	28,561	21,527	33,160	24,994	75.4%	35,653	26,889	1.47%	75.4%
	Caluya	17,912	12,372	19,835	13,701	69.1%	23,090	15,962	3.10%	69.1%
	Culasi	31,347	25,903	33,388	27,589	82.6%	35,400	29,263	1.19%	82.7%
	T. Fomier	26,771	22,363	28,093	23,468	83.5%	29,588	24,726	1.05%	83.6%
	Hamtic	37,855	33,673	41,848	37,226	89.0%	45,378	40,374	1.64%	89.0%
	Laua-an	22,166	18,391	24,800	20,577	83.0%	25,815	21,427	0.81%	83.0%
	Libertad	15,049	12,832	20,048	17,094	85.3%	22,170	18,909	2.04%	85.3%
	Pandan	26,051	22,925	28,563	25,136	88.0%	30,616	26,949	1.40%	88.0%
	Patnongon	30,884	26,145	34,888	29,534	84.7%	37,194	31,497	1.30%	84.7%
	San Jose	45,301	3,818	51,050	4,303	8.4%	57,464	4,941	2.80%	8.6%
	San Remigio	23,980	22,743	26,622	25,250	94.8%	28,269	26,814	1.21%	94.9%
	Sebaste	12,562	2,251	12,778	2,290	17.9%	13,602	2,458	1.43%	18.1%
	Sibalom	49,130	40,776	56,526	46,914	83.0%	61,795	51,307	1.81%	83.0%
	Tibiao	19,628	15,044	19,628	15,044	76.6%	20,549	15,759	0.93%	76.7%
Varderrama	16,478	12,917	19,084	14,960	78.4%	20,261	15,891	1.21%	78.4%	
Province		455,051	336,560	512,755	380,213	74.2%	554,797	409,986	1.52%	73.9%

Table 8.3.9 Projected Number of Households by Urban and Rural Area by Municipality by Target Year

Name of Municipality	Household Size			Number of Households											
	1995			1995			1998			2005			2010		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Anini-y	5.67	5.54	5.55	125	3,238	3,363	135	3,497	3,632	160	4,156	4,316	254	6,427	6,681
Barbaza	5.33	5.15	5.17	495	2,851	3,346	549	3,156	3,705	692	3,980	4,672	974	5,423	6,397
Belison	5.30	5.01	5.12	841	1,342	2,183	907	1,448	2,355	1,078	1,719	2,797	1,557	2,355	3,912
Bugasong	5.12	5.09	5.09	1,286	3,960	5,246	1,374	4,229	5,603	1,595	4,910	6,505	2,191	6,722	8,913
Caluya	5.30	5.31	5.31	997	2,224	3,221	1,045	2,330	3,375	1,158	2,580	3,738	1,782	3,991	5,773
Culasi	5.06	5.03	5.03	1,045	5,004	6,049	1,076	5,150	6,226	1,146	5,485	6,631	1,534	7,316	8,850
Hambic	5.09	5.21	5.19	785	6,177	6,962	821	6,463	7,284	908	7,145	8,053	1,251	10,094	11,345
Laua-an	5.04	4.83	4.87	712	3,617	4,329	749	3,808	4,557	838	4,260	5,098	1,097	5,357	6,454
Libertad	5.27	5.51	5.47	371	2,054	2,425	421	2,329	2,750	561	3,102	3,663	815	4,727	5,542
Pandan	4.86	4.98	4.97	617	4,412	5,029	643	4,603	5,246	705	5,047	5,752	917	6,737	7,654
Pamongo	5.05	4.93	4.95	889	5,020	5,909	938	5,303	6,241	1,060	5,991	7,051	1,424	7,874	9,298
San Jose de Buenavista (Capita	5.16	4.90	5.14	7,619	738	8,357	8,039	779	8,818	9,060	878	9,938	13,131	1,235	14,366
San Remigio	4.81	5.33	5.30	245	4,072	4,317	257	4,267	4,524	285	4,737	5,022	364	6,704	7,068
Sebaste	5.02	5.11	5.03	2,035	436	2,471	2,054	441	2,495	2,089	448	2,537	2,786	615	3,401
Sibalom	5.29	5.18	5.20	1,484	7,398	8,882	1,579	7,872	9,451	1,817	9,057	10,874	2,622	12,827	15,449
Tibiao	4.67	4.89	4.84	982	3,075	4,057	982	3,076	4,058	982	3,076	4,058	1,198	3,940	5,138
Tobias Fornier	5.34	5.02	5.07	806	4,353	5,159	825	4,455	5,280	866	4,675	5,541	1,216	6,182	7,398
Valderrama	5.00	5.06	5.04	667	2,393	3,060	712	2,553	3,265	825	2,957	3,782	1,093	3,973	5,066
Provincial Total	5.12	5.11	5.12	22,001	62,364	84,365	23,106	65,759	88,865	25,825	74,203	100,028	36,206	102,499	138,705

8.3.2 School Enrollment Projection

Table 8.3.10 Projected School Enrollment by Municipality by Target Year

Name of Municipality	1998			2005				2010							
	School Age Population	Total Enrollment		Public Sch. Enrollment n Rate	School Age Population	Total Enrollment		Public Sch. Enrollment n Rate	School Age Population	Total Enrollment					
		Number	Participation n Rate			Number	Participation n Rate			Number	Participation n Rate				
Amnuey	5,238	4,767	91	3,892	74	6,224	5,913	95	4,979	80	6,810	98	6,254	90	
Barbaza	5,032	4,567	91	4,095	81	6,347	6,030	95	5,395	85	6,581	98	6,044	90	
Belison	3,128	2,294	73	2,294	73	3,715	2,786	75	2,786	75	3,246	80	3,246	80	
Bugasong	7,613	6,039	79	5,602	74	8,839	7,513	85	7,071	80	8,554	90	8,078	85	
Caluya	5,046	5,082	101	4,809	95	5,588	5,309	95	5,029	90	6,375	98	5,355	90	
Culasi	8,605	7,407	86	6,888	80	9,165	8,249	90	7,790	85	9,717	95	8,745	90	
Hamtic	10,759	9,232	86	9,232	86	11,894	10,705	90	10,705	90	12,897	122,552	95	12,252	95
Laua-an	5,832	4,933	85	4,933	85	6,525	5,873	90	5,873	90	6,792	95	6,452	95	
Libertad	3,857	3,263	85	3,071	80	5,138	4,624	90	4,367	85	5,682	95	5,114	90	
Pandan	7,252	7,548	104	6,936	96	7,951	7,553	95	7,156	90	8,522	8,352	98	7,670	90
Patongon	8,340	15,669	188	15,266	183	9,421	14,132	150	13,660	145	10,044	10,044	100	9,040	90
San Jose de Buenavista (Cap	12,098	7,801	64	7,415	61	13,633	9,543	70	8,861	65	15,346	12,777	80	10,742	70
San Remigio	6,688	6,396	96	6,222	93	7,425	7,277	98	7,054	95	7,884	7,726	98	7,490	95
Sebaste	3,511	3,168	90	2,737	78	3,571	3,392	95	3,035	85	3,801	3,725	98	3,421	90
Sibalom	13,642	12,022	88	11,883	87	15,696	14,911	95	14,126	90	17,159	16,816	98	15,443	90
Tibiao	5,364	4,865	91	4,581	85	5,364	4,828	90	4,559	85	5,616	5,335	95	5,054	90
Tobias Fornier	6,921	5,619	81	5,338	77	7,263	5,810	80	5,447	75	7,650	6,503	85	6,120	80
Valderama	4,818	4,111	85	3,876	80	5,580	4,743	85	4,464	80	5,924	5,332	90	5,035	85
Provincial Total	123,744	114,783	93	109,070	88	139,339	129,191	93	122,357	88	150,764	141,009	94	132,053	88

8.3.3 Projection of the Number of Public Utilities

Table 8.3.11 Projected Number of Public Utilities by Municipality by Target Year

Name of Municipality	Type	1998	2005		2010	
		No. of Public Utilities	Proposed Construction	Total	Proposed Construction	Total
Anini-y	Public Market	3		3		3
	Bus/Jeepney Terminal				1	1
	Parks/Playground	2	1	3		3
	Total	5	1	6	1	7
Barbaza	Public Market	1	1	2		2
	Bus/Jeepney Terminal					
	Parks/Playground	1		1	1	2
	Total	2	1	3	1	4
Belison	Public Market	1		1		1
	Bus/Jeepney Terminal		1	1		1
	Parks/Playground	1		1	1	2
	Total	2	1	3	1	4
Bugasong	Public Market	1	1	2	1	3
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	2	4	1	5
Cahuya	Public Market					
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	1	1	2		2
Culasi	Public Market	1		1		1
	Bus/Jeepney Terminal				1	1
	Parks/Playground	1	1	2		2
	Total	2	1	3	1	4
Hamtic	Public Market	1		1		1
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	1	3		3
Laua-an	Public Market	1		1	1	2
	Bus/Jeepney Terminal					
	Parks/Playground	1		1		1
	Total	2		2	1	3
Libertad	Public Market	1		1	1	2
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	1	3	1	4
Pandan	Public Market	1		1		1
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	1	3		3
Patnongon	Public Market	1		1	1	2
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	1	3	1	4
San Jose de Buenavista (Capital)	Public Market	2	1	3		3
	Bus/Jeepney Terminal	1		1	1	2
	Parks/Playground	1		1		1
	Total	4	1	5	1	6
San Remigio	Public Market	1	1	2		2
	Bus/Jeepney Terminal					
	Parks/Playground	1		1		1
	Total	2	1	3		3
Sebaste	Public Market	1	1	2		2
	Bus/Jeepney Terminal					
	Parks/Playground	1		1	1	2
	Total	2	1	3	1	4
Sibolom	Public Market	1		1		1
	Bus/Jeepney Terminal		1	1		1
	Parks/Playground	1		1	1	2
	Total	2	1	3	1	4
Tibiao	Public Market	1		1		1
	Bus/Jeepney Terminal					
	Parks/Playground	1	1	2		2
	Total	2	1	3		3
Tobias Fernier	Public Market	1		1		1
	Bus/Jeepney Terminal		1	1		1
	Parks/Playground	1		1		1
	Total	2	1	3		3
Valdenrama	Public Market	1		1		1
	Bus/Jeepney Terminal				1	1
	Parks/Playground	1	1	2		2
	Total	2	1	3	1	4
Provincial Total	Public Market	20	5	25	4	29
	Bus/Jeepney Terminal	1	3	4	4	8
	Parks/Playground	19	10	29	4	33
	Total	40	18	58	12	70

8.4 Types of Facilities and Implementation Criteria

8.4.1 Water Supply

(1) Urban water supply

With regard to development/expansion of urban water supply by municipality, existing conditions, future requirements and planned/on-going projects were reviewed in preparation of this PW4SP. Potential water source for future development was also evaluated in Chapter 7, taking into account the possibility to utilize untapped spring sources. Location of urban area of respective municipalities/city was referred to Figure 3.4.1 in Chapter 3. Table 8.4.1 presents basic figures on existing service coverage, water sources and future requirements.

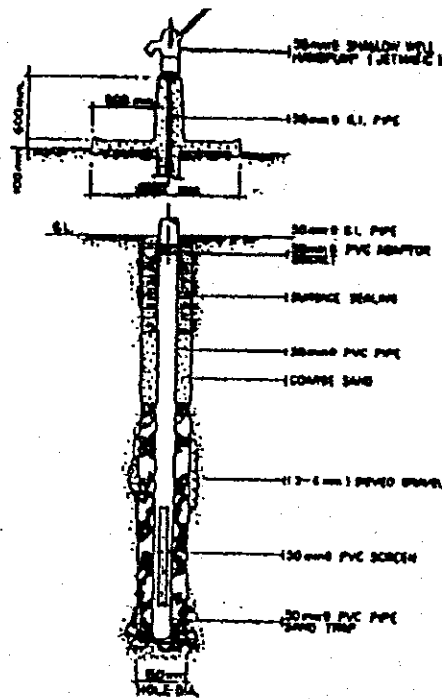
Table 8.4.1 Existing Condition and Future Requirements of Urban Water Supply by Municipality

Name of Municipality	Existing Condition (1998)						Phase I (2005)						Phase II (2010)					
	Existing Level III System and Others			L-III Water Source			Pop. Served by Level III and Others			Total Water Source Required (m3/d)			Pop. Served by Level III			Total Water Source Required (m3/d)		
	No. of Level III and Operating	Pop. Served by Level III	% Served by Level III	Pop. Served by Level III	Total Pop. Served (%)	Production (m3/d)	Urban Population (2005)	Additional Pop. Served by Level III	% Served by Level III	Additional Pop. Served by Level III	% Served by Level III	Total Pop. Served	% Served by Level III	Additional Pop. Served	% Served by Level III	Total Pop. Served	% Served by Level III	Total Water Source Required (m3/d)
Atlix	765	409	26%	1,087	1,857 64%	SP	900	99	11%	None	66%	598	66%	864	95%	963	95%	200
Barbaza	2,924 (WD)	1,087	26%	1,857	64%	SP	3,020	401	11%	None	61%	2,258	61%	2,529	95%	3,700	95%	300
Bellon	4,809	4,103	85%	4,103	85%	DW	5,712	620	11%	None	83%	4,723	83%	5,295	95%	5,915	95%	700
Buizony	7,034 (WD)	991	69%	5,857	83%	DW	8,167	887	70%	None	83%	6,744	83%	7,574	95%	8,327	95%	300
Caluya	5,540	5,107	92%	5,107	92%	SP	6,135	630	88%	None	83%	5,107	83%	6,137	95%	6,772	95%	400
Culiacan	5,444 (WD)	200	36%	1,775	42%	SP	5,798	502	45%	None	48%	2,277	48%	2,676	95%	3,030	95%	100
Huamantla	4,181 (WD)	3,009	80%	3,009	80%	DW	4,623	459	11%	None	82%	3,468	82%	3,710	95%	4,169	95%	200
Llanos	3,275	1,693	76%	1,693	76%	SP	2,954	321	11%	None	68%	2,014	68%	2,777	95%	3,098	95%	400
Libertad	3,126 (WD)	2,893	92%	2,893	92%	SP	3,472	2,883	84%	None	84%	2,883	84%	3,667	95%	4,044	95%	100
Pandora	4,739 (WD)	1,835	39%	1,718	35%	DW	5,353	581	45%	None	77%	4,134	77%	2,996	95%	5,412	95%	400
San Jose de Buenavista (Capital)	41,483 (Mun)	23,295	24%	33,255	80%	SP	46,748	5,078	32%	None	82%	38,333	82%	34,859	95%	49,897	95%	4,600
San Remigio	1,216	989	80%	989	80%	Surf	1,373	149	11%	None	83%	1,138	83%	1,233	95%	1,382	95%	200
Sebastián	10,311 (Mun)	6,031	58%	3,916	38%	DW	10,488	2,885	28%	None	85%	8,916	85%	7,702	95%	10,387	95%	1,500
Sierra	8,354 (WD)	2,450	29%	2,450	29%	SP	9,611	1,044	59%	None	84%	8,108	84%	4,506	95%	9,964	95%	600
Tehuacan	4,584 (Mun)	2,561	55%	2,561	55%	SP	4,584	1,228	27%	None	83%	3,289	83%	3,323	95%	4,551	95%	200
Tehuacan	4,407 (WD)	1,50	34%	1,50	34%	SP	4,625	3,683	80%	None	83%	3,683	80%	4,362	95%	4,619	95%	200
Valderrama	3,561	2,178	61%	2,178	61%	SP	4,124	448	11%	None	68%	2,626	68%	3,704	95%	4,152	95%	500
Provincial Total	118,491	38,754	33%	56,061	47%		132,542	11,219	49%	38%	80%	106,034	80%	87,599	95%	137,572	95%	19,100

(Note) WD: Water District, Prov: Province, Mun: Municipality, Asr: Association

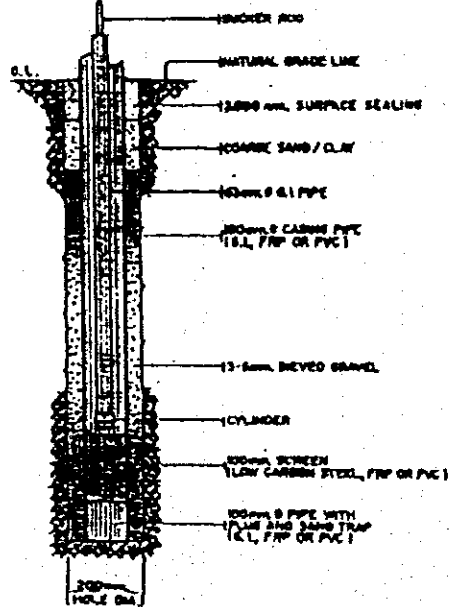
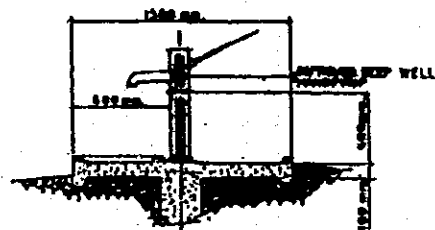
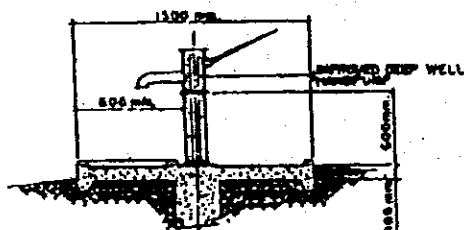
Unit consumption: 100 lpcd

Additional population served in 2010 includes the served population that will be absorbed by Level III system.

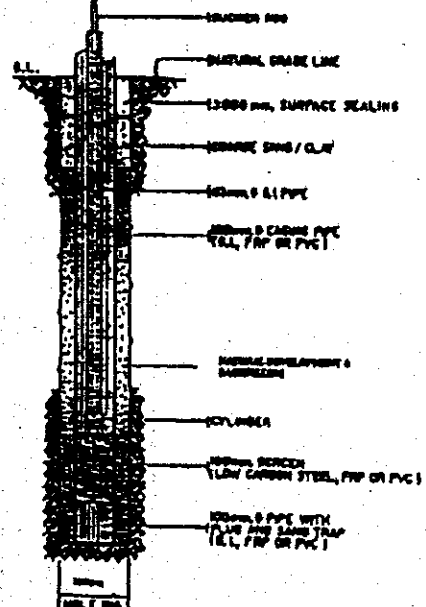


OPEN HOLE DRILLING & GRAVEL PACK METHOD

SHALLOW WELLS



OPEN HOLE DRILLING & GRAVEL PACK METHOD

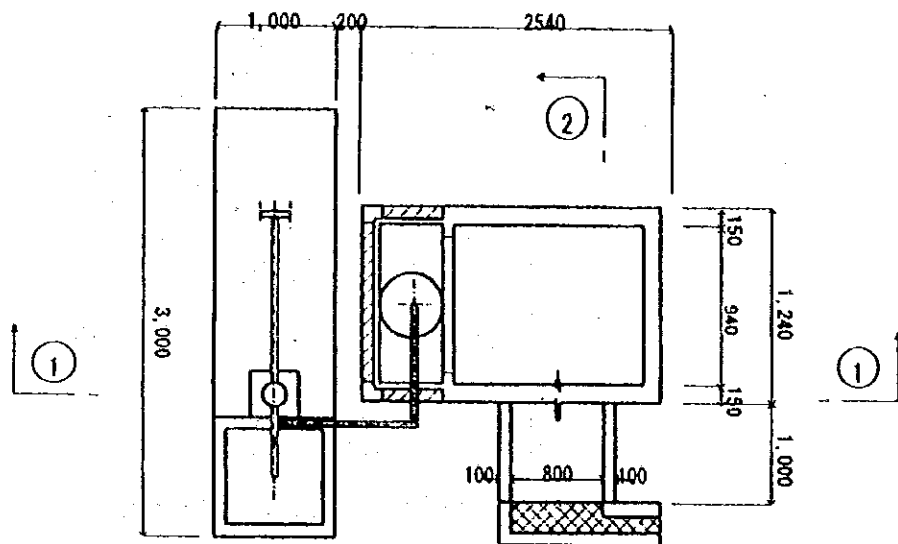


OPEN HOLE DRILLING & NATURAL GRAVEL PACK METHOD

DEEP WELLS

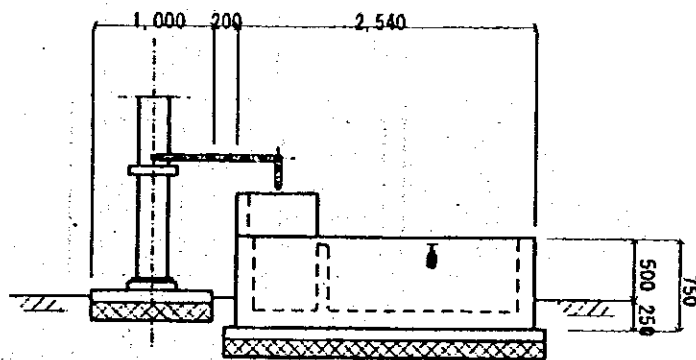
FIGURE 8.4.1

TYPICAL STRUCTURE OF LEVEL I WELL FACILITY



PLAN

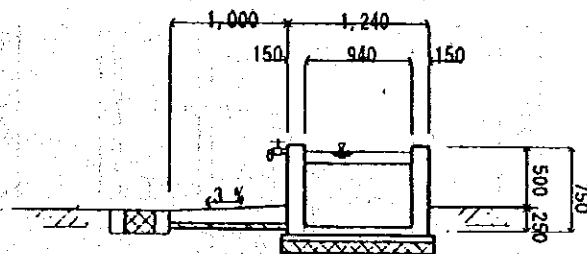
S = 1/30



Section

① — ①

S = 1/30



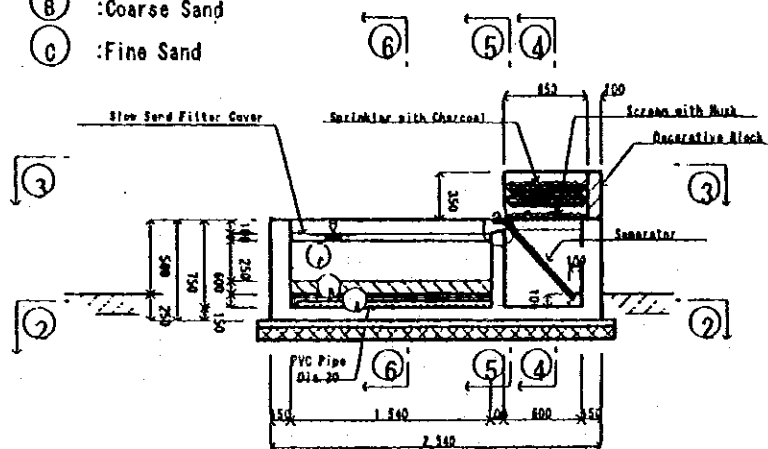
Section

② — ②

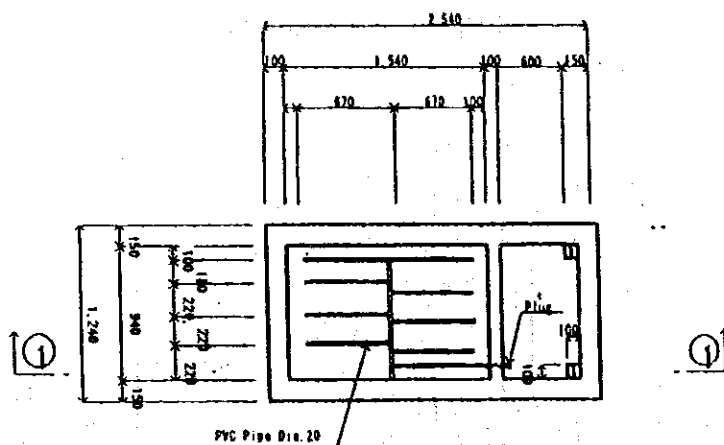
S = 1/30

Figure 8.4.2(a) Iron Removal Facility

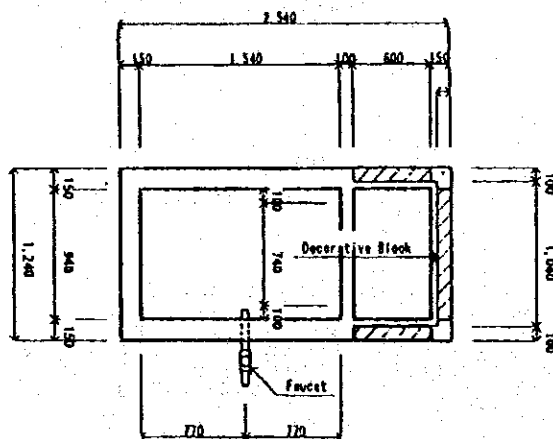
- (A) : Pebble
 (B) : Coarse Sand
 (C) : Fine Sand



Section ① - ① $S = 1/20$



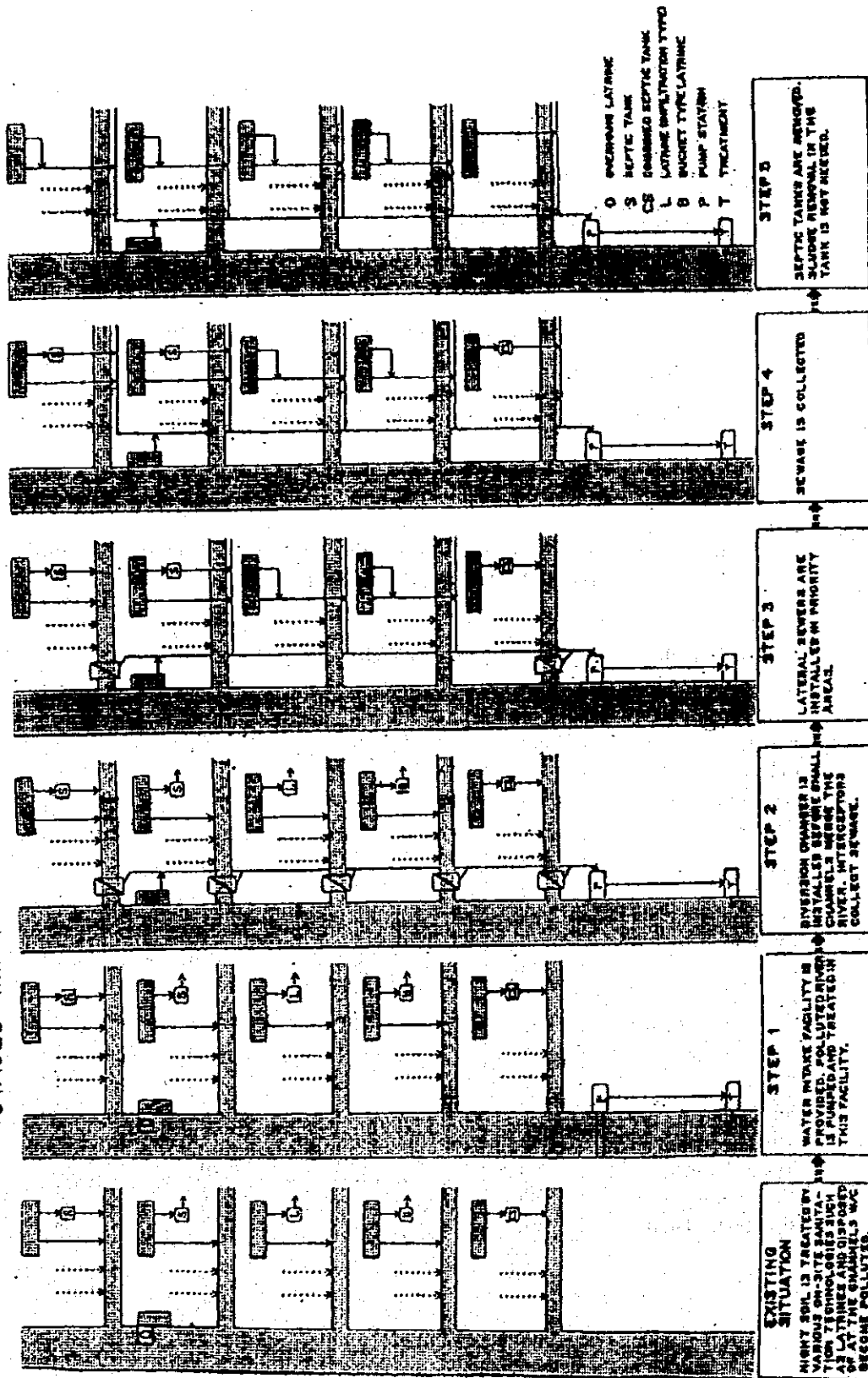
Section ② - ② $S = 1/20$



Section ③ - ③ $S = 1/20$

Figure 8.4.2(b) Iron Removal Facility

Figure 8.4.3 STAGED IMPROVEMENT IN SEWAGE COLLECTION METHOD



8.5 Service Coverage by Target Year
8.5.1 Water Supply

(1) Population to be served by Level I facilities under ADB-assisted project

With regard to development of rural water supply by municipality, the ADB-assisted Rural Water Supply and Sanitation Sector Project (RW3SP) plays a major role in medium-term plan of PW4SP. To set up the target, additional population to be served under this project shall be subject to a due consideration.

Physical targets:

Physical targets for rural water supply are construction of shallow well (195 units), deep well (113 units) and developed spring (28 units) in the whole province. A total of 336 units were allocated by the province to the recipient municipalities as shown in Table 8.5.1.

Table 8.5.1 Proposed Number of Facility to be Constructed under ADB-Assisted RW3SP (1999-2001)

Municipality	Class	Shallow Well	Deep Well	Developed Spring	Total
Anini-y	5th	5	11	2	18
Barbaza	5th	6	7	2	15
Belison	5th			1	1
Bugasong	4th	11	13	1	25
Caluya	4th	2		2	4
Culasi	4th	23	14	2	39
Hamtic	4th	2	6	1	9
Laua-an	5th	3	3	1	7
Libertad	5th	3		2	5
Pandan	5th	28	15	1	44
Patnongon	4th	34		1	35
San Jose de Buenavista	3rd	1			1
San Remigio	4th	45	8	2	55
Sebaste	5th	10	5	2	17
Sibalom	3rd		7	2	9
Tibiao	5th		6	2	8
Tobias Fornier	5th	22	16	2	40
Valderrama	5th		2	2	4
Provincial Total	3rd	195	113	28	336

Current status

Implementation of the project was originally scheduled to commence in 1997 with 5 years implementation period (1997-2001), however, the construction of the facilities has just started now due to delay of fund releasing. In addition, delivery of required materials has not completed for 1st year allocation. Thus, the above physical targets under ADB-assisted project may be major part of the requirements in medium-term plan (year 2001 - 2005).

Additional population to be served:

The additional population to be served under ADB-assisted project is assumed at 30,240 persons based on the total number of physical targets (336 units) applying served population of 90 persons per one Level I facility (serving 6 persons/III x 15 HHs/unit).

(2) Population to be served by target year

Phase I

For urban area, the additional service coverage was estimated by Level III service. For rural area, the population to be served under ADB-assisted project is the target of rural water supply. The additional service coverage by Level II system was not considered, since Level II systems with untapped springs were not included in the ADB-assisted project.

Phase II

For urban area, the population served by Level I and II facilities in base year was considered to be absorbed by Level III service aside from the additional service coverage to be estimated by the sector target. For rural area, all existing facilities in Phase I were assumed to be utilized through the future.

Table 8.5.2 Population to be Served in Phase I (Water Supply)

Name of Municipality	Area	Population Served in the Base Year				Phase I Coverage (2005)											
		Population Served in the Base Year			Total Population	Service Coverage			Additional Population to be Served								
		Level III	Level II	Level I		Total	Level III	Level II	Level I	Total	Level III	Level II	Level I	Total			
Anini-y	Urban			499	909	99		499	598	99				99			99
	Rural		950	10,830	23,023		950	12,450	13,400					1,620			1,620
	Total		950	11,329	23,932	99	950	12,949	13,998	99				1,620			1,719
Barbaza	Urban	770		1,087	3,688	1,171		1,087	2,258	401				1,350			401
	Rural	2,002		8,186	20,498	2,002		9,536	11,538					1,350			1,350
	Total	2,772		9,273	24,186	3,173		10,623	13,796	401				1,350			1,751
Belison	Urban			4,103	5,712	620		4,103	4,723	620							620
	Rural		650	4,891	8,614		650	4,981	5,631					90			90
	Total		650	8,994	14,326	620	650	9,084	10,354	620				90			710
Bugasong	Urban	4,866		991	8,167	5,753		991	6,744	887							887
	Rural	4,078	2,375	8,193	14,646	4,078	2,375	10,443	16,896					2,250			2,250
	Total	8,944	2,375	9,184	20,503	9,831	2,375	11,434	23,640	887				2,250			3,137
Caluya	Urban			5,107	6,135			5,107	5,107								
	Rural			7,861	13,700			8,221	8,221					360			360
	Total			12,968	19,835			13,328	13,328					360			360
Culasi	Urban	4,455			5,798	5,085			5,085	630							630
	Rural	2,174	1,200	13,903	17,277	2,174	1,200	17,413	20,787					3,510			3,510
	Total	6,629	1,200	13,903	33,388	7,259	1,200	17,413	25,872	630				3,510			4,140
Hamtic	Urban	1,575	200		4,623	2,077	200		2,277	502							502
	Rural	617	2,125	17,937	37,225	617	2,125	18,747	21,489					810			810
	Total	2,192	2,325	17,937	41,848	2,694	2,325	18,747	23,766	502				810			1,312
Laua-an	Urban			3,009	4,223	459		3,009	3,468	459							459
	Rural		3,775	9,038	12,813		3,775	9,668	13,443					630			630
	Total		3,775	12,047	20,577	459	3,775	12,677	16,911	459				630			1,089
Libertad	Urban			1,693	2,954	321		1,693	2,014	321							321
	Rural		1,975	6,107	17,094		1,975	6,557	8,532					450			450
	Total		1,975	7,800	20,048	321	1,975	8,250	10,546	321				450			771
Pandian	Urban	2,883			3,427	2,883			2,883								
	Rural	21,160	875		25,136	21,160	875	3,960	25,995					3,960			3,960
	Total	24,043	875		28,563	24,043	875	3,960	28,878					3,960			3,960
Pamongon	Urban	1,835		1,718	3,553	2,416		1,718	4,134	581							581
	Rural	165	4,450	12,069	16,684	165	4,450	15,219	19,834					3,150			3,150
	Total	2,000	4,450	13,787	20,237	34,888	4,450	16,937	23,968	581				3,150			3,731

Table 8.5.2 Population to be Served in Phase I (Water Supply) (Cont'd)

Name of Municipality	Area	Population Served in the Base Year				Phase I Coverage (2005)								
		Total			Total Population	Service Coverage			Additional Population to be Served					
		Level III	Level II	Level I		Level III	Level II	Level I	Total	Level III	Level II	Level I	Total	
San Jose de Buenavista (Capital)	Urban	9,960	150	23,145	33,255	46,748	15,038	150	23,145	38,333	5,078			5,078
	Rural		150	3,513	3,663	4,302		150	3,603	3,753		90	90	
	Total	9,960	300	26,658	36,918	51,050	15,038	300	26,748	42,086	5,078	90	90	5,168
San Remigio	Urban			989	989	1,373	149		989	1,138	149			149
	Rural		2,450	15,747	18,197	25,249		2,450	20,697	23,147		4,950	4,950	
	Total		2,450	16,736	19,186	26,622	149	2,450	21,686	24,285	149	4,950	4,950	5,099
Sebasto	Urban	2,885	800	5,231	8,916	10,488	2,885	800	5,231	8,916				
	Rural		75	1,472	1,547	2,290		75	3,002	3,077		1,530	1,530	
	Total	2,885	875	6,703	10,463	12,778	2,885	875	8,233	11,993		1,530	1,530	1,530
Sibalom	Urban	4,614	75	2,375	7,064	9,611	5,658	75	2,375	8,108	1,044			1,044
	Rural	486	3,000	22,852	26,338	46,915	486	3,000	23,662	27,148		810	810	
	Total	5,100	3,075	25,227	33,402	56,526	6,144	3,075	26,037	35,256	1,044	810	810	1,854
Tibiao	Urban	1,228		2,561	3,789	4,584	1,228		2,561	3,789				
	Rural	1,318	2,650	7,025	10,993	15,044	1,318	2,650	7,745	11,713		720	720	
	Total	2,546	2,650	9,586	14,782	19,628	2,546	2,650	10,306	15,502		720	720	
Tobias Fornier	Urban	3,683	150		3,833	4,625	3,683	150		3,833				
	Rural	394	3,950	9,651	13,995	23,468	394	3,950	13,251	17,595		3,600	3,600	
	Total	4,077	4,100	9,651	17,828	28,093	4,077	4,100	13,251	21,428		3,600	3,600	
Valderrama	Urban			2,178	2,178	4,124	448		2,178	2,626	448			448
	Rural			7,214	7,214	14,960			7,574	7,574		360	360	
	Total			9,392	9,392	19,084	448		9,752	10,200	448	360	360	808
Provincial Total	Urban	38,754	1,375	54,686	94,815	132,542	49,973	1,375	54,686	106,034	11,219			11,219
	Rural	32,394	30,650	166,489	229,533	380,213	32,394	30,650	196,729	259,773		30,240	30,240	
	Total	71,148	32,025	221,175	324,348	512,755	82,367	32,025	251,415	365,807	11,219	30,240	30,240	41,459

Table 8.5.3 Population to be Served in Phase II (Water Supply)

Name of Municipality	Area	Population Served in 2005				Total Population	Service Coverage				Phase II Coverage (2010)				
		Level III	Level II	Level I	Total		Level III	Level II	Level I	Total	Level III	Level II	Level I	Total	
Anini-y	Urban	99		499	598	1,014	963			963			864		864
	Rural		950	12,450	13,400	25,706		950	22,957	23,907			10,507	10,507	
	Total	99	950	12,949	13,998	26,720	963	950	22,957	24,870	864		10,507	11,371	
Barbaza	Urban	1,171		1,087	2,258	3,895	3,700			3,700	2,529		2,529		2,529
	Rural	2,002		9,536	11,538	21,693	2,002		18,172	20,174			8,636	8,636	
	Total	3,173		10,623	13,796	25,588	5,702		18,172	23,874	2,529		8,636	11,165	
Belison	Urban	620		4,103	4,723	6,226	5,915			5,915	5,295		5,295		5,295
	Rural		650	4,981	5,631	9,420		650	8,111	8,761			3,130	3,130	
	Total	620	650	9,084	10,354	15,646	5,915	650	8,111	14,676	5,295		3,130	8,425	
Bugasong	Urban	5,753		991	6,744	8,765	8,327			8,327	2,574		2,574		2,574
	Rural	4,078	2,375	10,443	16,896	26,888	4,078	2,375	18,553	25,006			8,110	8,110	
	Total	9,831	2,375	11,434	23,640	35,653	12,405	2,375	18,553	33,333	2,574		8,110	10,684	
Caluya	Urban			5,107	5,107	7,128	6,772			6,772	6,772		6,772		6,772
	Rural			8,221	8,221	15,962			14,845	14,845			6,624	6,624	
	Total			13,328	13,328	23,090	6,772		14,845	21,617	6,772		6,624	13,396	
Culasi	Urban	5,085			5,085	6,137	5,830			5,830	745		745		745
	Rural	2,174	1,200	17,413	20,787	29,263	2,174	1,200	23,841	27,215			6,428	6,428	
	Total	7,259	1,200	17,413	25,872	35,400	8,004	1,200	23,841	33,045	745		6,428	7,173	
Hamtic	Urban	2,077	200		2,277	5,003	4,753			4,753	2,676		2,676		2,676
	Rural	617	2,125	18,747	21,489	40,375	617	2,125	34,807	37,549			16,060	16,060	
	Total	2,694	2,325	18,747	23,766	45,378	5,370	2,125	34,807	42,302	2,676		16,060	18,736	
Laua-an	Urban	459		3,009	3,468	4,388	4,169			4,169	3,710		3,710		3,710
	Rural		3,775	9,668	13,443	21,427		3,775	16,152	19,927			6,484	6,484	
	Total	459	3,775	12,677	16,911	25,815	4,169	3,775	16,152	24,096	3,710		6,484	10,194	
Libertad	Urban	321		1,693	2,014	3,261	3,098			3,098	2,777		2,777		2,777
	Rural		1,975	6,557	8,532	18,909		1,975	15,610	17,585			9,053	9,053	
	Total	321	1,975	8,250	10,546	22,170	3,098	1,975	15,610	20,683	2,777		9,053	11,830	
Pandian	Urban	2,883			2,883	3,667	3,484			3,484	601		601		601
	Rural	21,160	875	3,960	25,995	26,949	21,160	875	3,960	25,995					
	Total	24,043	875	3,960	28,878	30,616	24,644	875	3,960	29,479	601				601
Pamongon	Urban	2,416		1,718	4,134	5,697	5,412			5,412	2,996		2,996		2,996
	Rural	165	4,450	15,219	19,834	31,497	165	4,450	24,677	29,292			9,458	9,458	
	Total	2,581	4,450	16,937	23,968	37,194	5,577	4,450	24,677	34,704	2,996		9,458	12,454	

8.5.2 Sanitation

Table 8.5.4 Additional Number of Households to be Served in Phase I (Household Toilets)

Name of Municipality	Area	No. of Household Served in the Based Year				Phase I Coverage (2005)									
		Flush	Pour Flush	VIP/Dry	Total	Total No. of HHs	Household Coverage				Additional No. of HHs to be Served				
							Flush	Pour Flush	VIP/Dry	Total	Flush	Pour Flush	VIP/Dry	Total	
Anini-y	Urban	10	102		112	160	22	115	7	144	12	13	7	32	
	Rural	14	2,343	225	2,582	4,156	99	2,826	608	3,533	85	483	383	951	
	Total	24	2,445	225	2,694	4,316	121	2,941	615	3,677	97	496	390	983	
	Urban	39	401	42	482	692	93	498	32	623	54	87		141	
Barbaza	Rural	65	1,811	236	2,112	3,980	169	2,706	508	3,383	104	895	272	1,271	
	Total	104	2,212	278	2,594	4,672	262	3,204	540	4,006	158	982	272	1,412	
	Urban	10	677	115	802	1,078	146	776	48	970	136	32		168	
	Rural	11	914	305	1,230	1,719	73	1,169	219	1,461	62	169		231	
Belison	Total	21	1,591	420	2,032	2,797	219	1,945	267	2,431	198	201		399	
	Urban	28	474	408	910	1,595	215	1,149	72	1,436	187	339		526	
	Rural	110	1,632	586	2,328	4,910	209	3,339	626	4,174	99	1,707	40	1,846	
	Total	138	2,106	994	3,238	6,505	424	4,488	698	5,610	286	2,046	40	2,372	
Caluya	Urban	104	618	3	725	1,158	104	834	104	1,042		216	101	317	
	Rural		1,332	23	1,355	2,580		1,754	439	2,193		422	416	838	
	Total	104	1,950	26	2,080	3,738	104	2,588	543	3,235		638	517	1,155	
	Urban		812	60	872	1,146	155	825	51	1,031	155	4		159	
Culasi	Rural	314	1,715	548	2,577	5,485	314	3,730	618	4,662		2,015	70	2,085	
	Total	314	2,527	608	3,449	6,631	469	4,555	669	5,693	155	2,019	70	2,244	
	Urban	73	586	23	682	908	123	654	40	817	50	68	17	135	
	Rural	49	3,720	688	4,457	7,145	304	4,858	911	6,073	255	1,138	223	1,616	
Hamic	Total	122	4,306	711	5,139	8,053	427	5,512	951	6,890	305	1,206	240	1,751	
	Urban	5	371		376	838	113	603	38	754	108	232	38	378	
	Rural	2	1,896	918	2,816	4,260	181	2,897	543	3,621	179	626		805	
	Total	7	2,267	918	3,192	5,098	294	3,500	581	4,375	287	858	38	1,183	
Laua-an	Urban	9	336		345	561	76	404	25	505	67	68	25	160	
	Rural	4	849	748	1,601	3,102	132	2,110	395	2,637	128	908		1,036	
	Total	13	1,185	748	1,946	3,663	208	2,514	420	3,142	195	976	25	1,196	
	Urban	112	364	32	508	705	112	508	15	635		127		127	
Libertad	Rural	256	3,206	214	3,676	5,047	256	3,432	602	4,290		226	388	614	
	Total	368	3,570	246	4,184	5,752	368	3,940	617	4,925		353	388	741	
	Urban														
	Rural														

Table 8.5.4 Additional Number of Households to be Served in Phase I (Household Toilets) (Cont'd)

Name of Municipality	Area	No. of Household Served in the Based Year				Phase I Coverage (2005)								
		Flush	Pour Flush	VIP/Dry	Total	Total No. of HHs	Household Coverage				Additional No. of HHs to be Served			
							Flush	Pour Flush	VIP/Dry	Total	Flush	Pour Flush	VIP/Dry	Total
Pamongon	Urban	25	792		817	1,060	143	811		954	118	19		137
	Rural	94	3,311	821	4,226	5,991	255	4,074	763	5,092	161	705		866
	Total	119	4,103	821	5,047	7,051	398	4,885	763	6,046	279	724		1,003
San Jose de Buenavista (Capital)	Urban	819	5,233	553	6,605	9,060	1,223	6,523	408	8,154	404	1,145		1,549
	Rural	220	418	85	723	878	220	526		746		23		23
	Total	1,039	5,651	638	7,328	9,938	1,443	7,049	408	8,900	404	1,168		1,572
San Remigio	Urban		145	20	165	285	39	206	12	257	39	53		92
	Rural	243	1,635	456	2,334	4,737	243	3,221	562	4,026		1,586	106	1,692
	Total	243	1,780	476	2,499	5,022	282	3,427	574	4,283	39	1,639	106	1,784
Sebaste	Urban	25	1,700	20	1,745	2,089	282	1,598		1,880	135			135
	Rural		194	138	332	448	19	305	57	381	19	30		49
	Total	25	1,894	158	2,077	2,537	301	1,903	57	2,261	154	30		184
Sibalom	Urban	16	1,213	168	1,397	1,817	245	1,308	82	1,635	229	9		238
	Rural	13	4,799	1,570	6,382	9,057	385	6,158	1,155	7,698	372	944		1,316
	Total	29	6,012	1,738	7,779	10,874	630	7,466	1,237	9,333	601	953		1,554
Tibiao	Urban	106	645	39	790	982	133	707	44	884	27	62	5	94
	Rural		1,958	164	2,122	3,076	131	2,092	392	2,615	131	134	228	493
	Total	106	2,603	203	2,912	4,058	264	2,799	436	3,499	158	196	233	587
Tobias Fornier	Urban	25	195	288	508	866	117	623	39	779	92	179		271
	Rural	18	1,614	2,322	3,954	4,675	199	3,179	596	3,974	20			20
	Total	43	1,809	2,610	4,462	5,541	316	3,802	635	4,753	112	179		291
Valderrama	Urban		539		539	825	111	594	38	743	111	55	38	204
	Rural		427	1,264	1,691	2,957	126	2,010	377	2,513	126	696		822
	Total		966	1,264	2,230	3,782	237	2,604	415	3,256	237	751	38	1,026
Provincial Total	Urban	1,406	15,203	1,771	18,380	25,825	3,452	18,736	1,055	23,242	1,924	2,708	231	4,863
	Rural	1,413	33,774	11,311	46,498	74,203	3,315	50,386	9,371	63,072	1,741	12,707	2,126	16,574
	Total	2,819	48,977	13,082	64,878	100,028	6,767	69,122	10,426	86,315	3,665	15,415	2,357	21,437

Table 8.5.5 Additional Number of Households to be Served in Phase II (Household Toilets)

Name of Municipality	Area	No. households Served in 2005				Phase II Coverage (2010)						
		Flush	Pour Flush	VIP/Dry	Total	Total No. of HHs	Household Coverage			Additional No. of HHs to be Served		
							Flush	Pour Flush	VIP/Dry	Total	Flush	Pour Flush
Anini-y	Urban	22	115	7	144	254	118	111	7	236	96	
	Rural	99	2,826	608	3,533	6,427	99	5,077	608	5,784		2,251
	Total	121	2,941	615	3,677	6,681	217	5,188	615	6,020	96	2,251
Barbaza	Urban	93	498	32	623	974	453	421	32	906	360	
	Rural	169	2,706	508	3,383	5,423	488	3,885	508	4,881	319	1,179
	Total	262	3,204	540	4,006	6,397	941	4,306	540	5,787	679	1,179
Belison	Urban	146	776	48	970	1,557	724	676	48	1,448	578	
	Rural	73	1,169	219	1,461	2,355	73	1,828	219	2,120		659
	Total	219	1,945	267	2,431	3,912	797	2,504	267	3,568	578	659
Bugasong	Urban	215	1,149	72	1,436	2,191	1,019	947	72	2,038	804	
	Rural	209	3,339	626	4,174	6,722	605	4,819	626	6,050	396	1,480
	Total	424	4,488	698	5,610	8,913	1,624	5,766	698	8,088	1,200	1,480
Caluya	Urban	104	834	104	1,042	1,782	829	724	104	1,657	725	
	Rural		1,754	439	2,193	3,991		3,153	439	3,592		1,399
	Total	104	2,588	543	3,235	5,773	829	3,877	543	5,249	725	1,399
Culasi	Urban	155	825	51	1,031	1,534	714	662	51	1,427	559	
	Rural	314	3,730	618	4,662	7,316	658	5,308	618	6,584	344	1,578
	Total	469	4,555	669	5,693	8,850	1,372	5,970	669	8,011	903	1,578
Hamtic	Urban	123	654	40	817	1,251	582	541	40	1,163	459	
	Rural	304	4,858	911	6,073	10,094	617	7,557	911	9,085	313	2,699
	Total	427	5,512	951	6,890	11,345	1,199	8,098	951	10,248	772	2,699
Laua-an	Urban	113	603	38	754	1,097	510	472	38	1,020	397	
	Rural	181	2,897	543	3,621	5,357	181	4,097	543	4,821		1,200
	Total	294	3,500	581	4,375	6,454	691	4,569	581	5,341	397	1,200
Libertad	Urban	76	404	25	505	815	379	354	25	758	303	
	Rural	132	2,110	395	2,637	4,727	132	3,727	395	4,254		1,617
	Total	208	2,514	420	3,142	5,542	511	4,081	420	5,012	303	1,617
Pandan	Urban	112	508	15	635	917	427	411	15	853	315	
	Rural	256	3,432	602	4,290	6,737	606	4,855	602	6,063	350	1,423
	Total	368	3,940	617	4,925	7,654	1,033	5,266	617	6,916	665	1,423

Table 8.5.5 Additional Number of Households to be Served in Phase II (Household Toilets) (Cont'd)

Name of Municipality	Area	No. households Served in 2005				Phase II Coverage (2010)									
		Flush		VIP/Dry		Total No. of HHs	Household Coverage			Additional No. of HHs to be Served			Total	VIP/Dry	Total
		Flush	Pour	Flush	VIP/Dry		Flush	Pour	VIP/Dry	Flush	Pour	VIP/Dry			
Pamungon	Urban	143	811			954	662	662		1,324	519		519		519
	Rural	255	4,074	763		5,092	165	6,159	763	7,087		2,085	2,085		2,085
	Total	398	4,885	763		6,046	827	6,821	763	8,411	519	2,085	2,604		2,604
San Jose de Buenavista (Capital)	Urban	1,223	6,523	408		8,154	6,106	5,698	408	12,212	4,883		4,883		4,883
	Rural	220	526			746	220	892		1,112	366		366		366
	Total	1,443	7,049	408		8,900	6,326	6,590	408	13,324	4,883	366	5,249		5,249
San Remigio	Urban	39	206	12		257	170	157	12	339	131		131		131
	Rural	243	3,221	562		4,026	243	5,229	562	6,034		2,008	2,008		2,008
	Total	282	3,427	574		4,283	413	5,386	574	6,373	131	2,008	2,139		2,139
Sebasté	Urban	282	1,598			1,880	1,296	1,295		2,591	1,014		1,014		1,014
	Rural	19	305	57		381	19	478	57	554	173		173		173
	Total	301	1,903	57		2,261	1,315	1,773	57	3,145	1,014	173	1,187		1,187
Sibalom	Urban	245	1,308	82		1,635	1,219	1,137	82	2,438	974		974		974
	Rural	385	6,158	1,135		7,698	486	9,903	1,155	11,544	101	3,745	3,846		3,846
	Total	630	7,466	1,237		9,333	1,705	11,040	1,237	13,982	1,075	3,745	4,820		4,820
Tibiao	Urban	133	707	44		884	557	513	44	1,114	424		424		424
	Rural	131	2,092	392		2,615	355	2,799	392	3,546	224	707	931		931
	Total	264	2,799	436		3,499	912	3,312	436	4,660	648	707	1,355		1,355
Tobias Fornier	Urban	117	623	39		779	566	526	39	1,131	449		449		449
	Rural	199	3,179	596		3,974	394	4,574	596	5,564	195	1,395	1,590		1,590
	Total	316	3,802	635		4,753	960	5,100	635	6,695	644	1,395	2,039		2,039
Valderrama	Urban	111	594	38		743	508	470	38	1,016	397		397		397
	Rural	126	2,010	377		2,513	126	3,073	377	3,576	1,063		1,063		1,063
	Total	237	2,604	415		3,256	634	3,543	415	4,592	397	1,063	1,460		1,460
Provincial Total	Urban	3,452	18,736	1,055		23,243	16,839	15,777	1,055	33,671	13,387		13,387		13,387
	Rural	3,315	50,386	9,371		63,072	5,467	77,413	9,371	92,251	2,242	27,027	29,269		29,269
	Total	6,767	69,122	10,426		86,315	22,306	93,190	10,426	125,922	15,629	27,027	42,656		42,656

Table 8.5.6 Additional Number of Public School Students to be Served in Phases I and II (School Toilets)

Name of Municipality	Std. No. of Public School Student that can be Served in the Base Year (1998)	Projected No. of Public School Student in 2005	Phase I Coverage (2005)		Projected Number of Public School Students in 2010	Phase II Coverage (2010)	
			Public School Students Coverage	Additional No. of Public School Student to be Served		Public School Students Coverage	Additional No. of Public School Students to be Served
Anini-y	3,892	4,979	5,639	1,747	6,254	5,629	
Barbaza	1,440	5,395	3,333	1,893	6,044	5,440	2,107
Belison	2,294	2,786	2,294		3,246	2,921	627
Bugasong	3,920	7,071	6,401	2,481	8,078	7,270	869
Cahuya	1,440	5,029	3,205	1,765	5,835	5,270	2,065
Culasi	3,200	7,790	5,934	2,734	8,745	7,871	1,937
Hamtic	4,800	10,705	8,557	3,757	12,252	11,027	2,470
Laua-an	2,160	5,873	4,221	2,061	6,452	5,807	1,586
Libertad	1,200	4,367	2,733	1,533	5,114	4,603	1,870
Pandan	2,720	7,156	5,231	2,511	7,670	6,903	1,672
Patongon	3,920	13,660	8,714	4,794	9,040	8,136	
San Jose de Buenavista (Capital)	6,640	8,861	9,750	3,110	10,742	9,668	
San Remigio	2,160	7,054	4,635	2,475	7,490	6,741	2,106
Sebaste	2,737	3,035	2,737		3,421	3,079	342
Sibalom	8,480	14,126	13,437	4,957	15,443	13,899	462
Tibiao	2,000	4,559	3,600	1,600	5,054	4,549	949
Tobias Fornier	5,338	5,447	5,338		6,120	5,508	170
Valderrama	560	4,464	2,127	1,567	5,035	4,532	2,405
Provincial Total	58,901	122,357	97,886	38,985	132,055	118,853	21,637

Table 8.5.7 Additional Number of Public Utilities with Sanitary Toilets in Phase I and II (Cont'd)

Name of Municipality	Type	Coverage in Base Year			Phase I Coverage			Phase II Coverage		
		No. of PU with Toilets Facilities	No. of PU with Sanitary Toilets	No. of PU with Toilets Facilities	Add'l. No. of Public Utilities with Sanitary Toilets	No. of PU with Sanitary Toilets	No. of PU with Toilets Facilities	Add'l. No. of Public Utilities with Sanitary Toilets	No. of PU with Toilets Facilities	No. of PU with Sanitary Toilets
Pandan	Public Market	2	2	2		2	2		2	2
	Bus/JEEPNEY Terminal									
	Parks/Playground			1	1	1	1		1	1
Pamungon	Total	2	2	3	1	3	3		3	3
	Public Market	2	2	2		2	2	1	3	3
	Bus/JEEPNEY Terminal									
San Jose de Buenavista (Capital)	Parks/Playground	2		1	1	1	1		1	1
	Total	2	2	3	1	3	4	1	4	4
	Public Market	4	4	5	1	5	5		5	5
San Remigio	Bus/JEEPNEY Terminal	2		2	2	2	3	1	3	3
	Parks/Playground	6	4	7	3	7	8	1	8	8
	Total	2	2	3	3	3	3		3	3
Sebasti	Public Market	2		3	3	3	3		3	3
	Bus/JEEPNEY Terminal	2								
	Parks/Playground	2	2	3	3	3	4	1	4	4
Sibolom	Total	2	2	2	1	2	2		2	2
	Public Market	2		1	1	1	1	1	1	1
	Bus/JEEPNEY Terminal	2	2	3	1	3	4	1	4	4
Tibiao	Parks/Playground	2	2	2		2	2		2	2
	Total	2	2	2	1	3	4	1	4	4
	Public Market	2	2	2		2	2		2	2
Tobias Fornier	Bus/JEEPNEY Terminal	2		1		1	1		1	1
	Parks/Playground	2		3	3	3	3		3	3
	Total	2	2	2	2	2	2	1	2	2
Valderrama	Public Market	2		1	1	1	1	1	1	1
	Bus/JEEPNEY Terminal	2	2	3	3	3	4	1	4	4
	Parks/Playground	2	2	3	1	3	4	1	4	4
Provincial Total	Total	40	28	45	17	45	49	4	49	49
	Public Market	2		5	5	5	9	4	9	9
	Bus/JEEPNEY Terminal	6	6	16	10	16	20	4	20	20
	Parks/Playground	48	34	66	32	66	78	12	78	78

8.6 Facilities, Equipment and Rehabilitation Required to Meet the Target Services
8.6.1 Water Supply

(1) Required water supply facilities

Urban water supply:

Urban water supply facilities required by target year shown in Table 8.6.1 were estimated as the required number of house connections based on the additional service coverage.

As reference, the following requirements were also estimated:

- daily average water demand at 100 lpcd consumption rate, and
- number of deep wells to meet the daily maximum water demand based on the groundwater productivity.

(daily maximum water demand = 1.3 x daily average water demand)

Information pertaining to the expansion plan of Level III systems was arranged to be indicated in Table 8.6.1 and details presented in Table 8.6.2, however, required data were not available during this PW4SP preparation.

Rural water supply:

Rural water supply facilities required by target year shown in Table 8.6.3(a) were estimated as the number of Level II systems with number of communal faucets and the number of Level I wells broken-down to deep and shallow wells. However, Level II systems shall be excluded from medium-term plan due to no Level II projects under ADB-assisted project.

(2) Required well drilling and rehabilitation equipment

The DEO-DPHW (San Jose Buenavista) has one unit of rotary type drilling rig procured in 1982, but it is not operational at present.

Taking into account the utilization of existing equipment, additional number of required equipment is estimated as described below.

Applicable type of well drilling equipment is determined considering the geological formation of the province, the easiness to technically operate. Both types of percussion and rotary are suitable for the soft and hard formations, and the percussion type can be easily operated and maintained without special training to drillers compared with the latter, it is very useful to bores in the boulders or cobbles formations. Thus, the drilling equipment of percussion type is recommendable to be selected in the PW4SP preparation.

Table 8.6.1 Urban Water Supply Facilities Required by Target Year

Name of Municipality	Reference on Expansion of Existing Level III System					Phase I (2005) Requirements				Phase II (2010) Requirements				
	Name of Operating Body	Area	Coverage in 1998		Type of Water Source	Plan for Expansion	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (m ³ /day)	Number of Spring Dev't./ Deep Well	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (m ³ /day)	Number of Spring Dev't./ Deep Well
			No. of Barangays Served	Served Population										
Anini-y	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	99	17	10	1	864	216	86	1
		Rural	N.A.	N.A.	N.A.									
		Total												
Barbaza	Barbaza WD	Urban	2	770										
		Rural	8	2,002	SP	No	401	75	40	1	2,529	632	253	1
		Total	10	2,772										
Belison	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	620	117	62	1	5,295	1,324	530	1
		Rural	N.A.	N.A.	N.A.									
		Total												
Bugasong	Bugasong WD	Urban	3	4,866										
		Rural	4	4,078	DW	No	887	173	89	1	2,574	644	257	1
		Total	7	8,944										
Caliya	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.					6,772	1,693	677	1
		Rural	N.A.	N.A.	N.A.									
		Total												
Culasi	Culasi - LGU WWS	Urban				No	630	125	63	1	745	186	75	1
		Rural	3	735										
		Total	3	735										
Culasi WD	Culasi WD	Urban	3	4,455	SP	No								
		Rural	6	1,439										
		Total	9	5,894										
Municipal Total	Municipal Total	Urban	3	4,455										
		Rural	9	2,174										
		Total	12	6,629										
Hamtic	Hamtic WD	Urban	5	1,575	DW	No	502	99	50	1	2,676	669	268	1
		Rural												
		Total	5	1,575										
Malandog LGU WWS	Malandog LGU WWS	Urban			DW	No								
		Rural	1	617										
		Total	1	617										
Municipal Total	Municipal Total	Urban	5	1,575										
		Rural	1	617										
		Total	6	2,192										
Laua-an	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	459	91	46	1	3,710	928	371	1
		Rural	N.A.	N.A.	N.A.									
		Total												
Libertad	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	321	61	32	1	2,777	694	278	1
		Rural	N.A.	N.A.	N.A.									
		Total												

Table 8.6.1 Urban Water Supply Facilities Required by Target Year

Name of Municipality	Reference on Expansion of Existing Level III System					Phase I (2005) Requirements				Phase II (2010) Requirements				
	Name of Operating Body	Area	Coverage in 1998		Type of Water Source	Plan for Expansion	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (m ³ /day)	Number of Spring Dev't/ Deep Well	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (m ³ /day)	Number of Spring Dev't/ Deep Well
			No. of Barangays Served	Served Population										
Pandan	Pandan WD	Urban	3	2,883	SP	N.A.					601	150	60	1
		Rural	14	21,160										
		Total	17	24,043										
Pamungon	Pamungon WD	Urban	1	1,835	DW	No	581	115	58	1	2,996	749	300	1
		Rural	3	165										
		Total	4	2,000										
San Jose de Buenavista (Capital)	San Jose - LGU RW	Urban	9	9,960	SP	No	5,078	984	508	1	34,859	8,715	3,486	5
		Rural												
		Total	9	9,960										
San Remigio	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	149	31	15	1	1,233	308	123	1
		Rural	N.A.	N.A.										
		Total												
Sebastie	Sebastie - LGU WWS	Urban	1	2,885	Surf	No					7,702	1,926	770	2
		Rural												
		Total	1	2,885										
Sibalom	Sibalom WD	Urban	4	4,614	DW	N.A.	1,044	197	104	1	4,306	1,077	431	1
		Rural	2	486										
		Total	6	5,100										
Tibiao	Tibiao - LGU WWS	Urban	1	1,228	SP	No					3,323	831	332	1
		Rural	2	1,318										
		Total	3	2,546										
Tobias Fornier	Tobias Fornier WD	Urban	3	3,683	SP	No					936	234	94	1
		Rural	1	394										
		Total	4	4,077										
Valderrama	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	448	90	45	1	3,704	926	370	1
		Rural	N.A.	N.A.										
		Total												
Provincial Total		Urban	35	38,754			11,219	2,175	1,122	13	87,602	21,902	8,761	23
		Rural	44	32,394										
		Total	79	71,148										

Table 8.6.2 Plan for Expansion of Existing Level III Systems

Name of Municipality	Name of Operating Body	Additional Areas Barangay to be Covered	Additional Population to be Served	Additional Water Sources	
				Type	Capacity (m ³ /day)
Barbaza	Barbaza WD				
Bugasong	Bugasong WD				
Culasi	Culasi - LGU WWS				
	Culasi WD				
	Municipal Total				
Hamtic	Hamtic WD				
	Malandog LGU WWS				
	Municipal Total				
Patnongon	Patnongon WD				
San Jose de Buenavista (Cap)	San Jose - LGU RWW				
Sebaste	Sebaste - LGU WWS				
Tibiao	Tibiao - LGU WWS				
Tobias Fornier	Tobias Fornier WD				

Table 8.6.3(a) Rural Water Supply Facilities Required by Target Year

Name of Municipality	Phase I (2005) Requirements										Phase II (2010) Requirements				
	Level II			Level I							Level I				
	Number of System	No. of Communal Faucets	Number of Deep Wells			No. of Shallow Wells	Total	Number of Deep Wells			Number of Deep Wells			No. of Shallow Wells	Total
			40 m	80 m	120 m			40 m	80 m	120 m	40 m	80 m	120 m		
Anini-y			10			9	19	88			88			88	176
Barbaza			6			11	17	44			44			100	144
Belison			1			1	1	22			22			31	53
Bugasong			6			23	29	28			28			108	136
Caluya						5	5							111	111
Culasi			10			37	47	22			22			86	108
Hamtic			9			1	10	242			242			26	268
Laua-an			2			7	9	22			22			87	109
Libertad			1			4	5	16			16			135	151
Pandan			11			42	53								
Pamongo			31			12	43	111			111			47	158
San Jose de Buenavista (Ca)			1			1	1	15			15			15	15
San Remigio			7			55	62	3			3			27	30
Sebaste			2			18	20								
Sibalom			4			6	10	138			138			205	343
Tibiao			1			9	10	5			5			45	50
Tobias Fornier			44			4	48	81			81			9	90
Valderrama			1			4	5	13			13			108	121
Provincial Total			147			247	394	850			850			1,213	2,063

Table 8.6.3(b) Rural Water Supply Facilities Required by Target Year

Name of Municipality	Phase I (2005) Requirements										Phase II (2010) Requirements						
	Percentage Allocated to Public Facility (100%)										Percentage Allocated to Public Facility (100%)						
	Percentage Allocated for Public Wells (100%) and Percentage Allocated for Public Spring Development (0%)										Percentage Allocated for Public Wells (100%) and Percentage Allocated for Public Spring Development (0%)						
	Number of Deep Wells				No. of Shallow Wells	Total	No. of Spring Dev.	Grand Total	Number of Deep Wells				No. of Shallow Wells	Total	No. of Spring Dev.	Grand Total	
	40 m	80 m	120 m	Sub-total					40 m	80 m	120 m	Sub-total					
Anini-y	11			11	5	16	2	18	88			88	88	176		176	
Barbaza	7			7	6	13	2	15	44			44	44	144		144	
Belison							1	1	22			22	22	53		53	
Bugasong	13			13	11	24	1	25	28			28	28	136		136	
Caluya					2	2	2	4						111		111	
Culasi	14			14	23	37	2	39	22			22	22	108		108	
Haminc	6			6	2	8	1	9	242			242	242	268		268	
Laua-an	3			3	3	6	1	7	22			22	22	109		109	
Libertad					3	3	2	5	16			16	16	151		151	
Pandan	15			15	28	43	1	44									
Patrongon					34	34	1	35	111			111	111	47		158	
San Jose de Buenavista (Capital)					1	1	1	1	15			15	15	15		15	
San Remigio	8			8	45	53	2	55	3			3	3	30		30	
Sebate	5			5	10	15	2	17									
Sibalom	7			7	7	7	2	9	138			138	138	205		343	
Tibiao	6			6	6	6	2	8	5			5	5	45		50	
Tobias Fornier	16			16	22	38	2	40	81			81	81	90		90	
Valderrama	2			2	2	2	2	4	13			13	13	108		121	
Provincial Total	113			113	195	308	28	336	850			850	850	1,213		2,063	

Medium size percussion drilling rig (truck-mounted type for deep well):

Average performance

- 1 well/30 days (5 m/day of drilling rate with finishing work)

Annual accomplishment

- 9 wells/year ($365 \text{ days/year} \div 30 \text{ days/well} \times 0.75$)

Required number

- 3 sets for the total 113 deep wells under ADB-assisted project

Well rehabilitation equipment:

Average performance

- 1 well/7 days (well redevelopment and finishing work)

Annual accomplishment

- 39 wells/year ($365 \text{ days/year} \div 7 \text{ days/well} \times 0.75$)

Required number

- 1 set for 10% of 113 Level I deep wells

Support vehicle:

Type - pick-up truck with winch, double cab

Required number

- 1 unit for well rehabilitation

Considering the non-operational existing rotary drilling rig, it is necessary for the province to mobilize at least three (3) units of medium size percussion rig for implementation of ADB-assisted project. In addition, three (3) units of service truck equipped with crane are required for a percussion rig for hauling drilling tools and water. However, following equipment shall be considered for medium-term development plan to the physical targets:

- 1 set of well rehabilitation equipment for 10% of deep wells (at least 1 set shall be held by the provincial government); and
- 1 unit of support vehicle for well rehabilitation.

8.6.2 Sanitation

Table 8.6.4 Urban Household Toilets Required by Target Year

Name of Municipality	Phase I (2005) Requirements						Phase II (2010) Requirements					
	Additional HHs to be Served			No. of HHs to be Served			Additional HHs to be Served			No. of HHs to be Served		
	Flush	Pour	VIP/ Dry	Total	Flush	Pour	Flush	Pour	VIP/ Dry	Total	Flush	Total
Anini-y	12	13	7	32	12	13	32	96		96	96	96
Barbaza	54	87		141	54	87	141	360		360	360	360
Belison	136	32		168	136	32	168	578		578	578	578
Bugasong	187	339		526	187	339	526	804		804	804	804
Caluya		216	101	317		216	317	725		725	725	725
Culasi	155	4		159	155	4	159	559		559	559	559
Hamtic	50	68	17	135	50	68	135	459		459	459	459
Laus-an	108	232	38	378	108	232	378	397		397	397	397
Libertad	67	68	25	160	67	68	160	303		303	303	303
Pandan		127		127		127	127	315		315	315	315
Pamongon	118	19		137	118	19	137	519		519	519	519
San Jose de Buenavista (Ca)	404	1,145		1,549	404	1,145	1,549	4,883		4,883	4,883	4,883
San Remigio	39	53		92	39	53	92	131		131	131	131
Sebastie	135			135	135		135	1,014		1,014	1,014	1,014
Sibalom	229	9		238	229	9	238	974		974	974	974
Tibiao	27	62	5	94	27	62	94	424		424	424	424
Tobias Fornier	92	179		271	92	179	271	449		449	449	449
Valderrama	111	55	38	204	111	55	204	397		397	397	397
Provincial Total	1,924	2,708	231	4,863	1,924	2,708	4,863	13,387		13,387	13,387	13,387

Table 8.6.5 Rural Household Toilets Required by Target Year

Name of Municipality	Phase I (2005) Requirements										Phase II (2010) Requirements									
	Additional HHs to be Served					No. of HHs to be Served					Additional HHs to be Served					No. of HHs to be Served				
	Pour		Flush		Total	Pour		Flush		Total	Pour		Flush		Total	Pour		Flush		Total
	VIP	Dry	VIP	Dry		VIP	Dry	VIP	Dry		VIP	Dry	VIP	Dry		VIP	Dry	VIP	Dry	
Anini-y	85	483	383	272	951	85	483	383	272	951	2251	1179	319	1179	2251	2251	1179	319	1179	2251
Barbaza	104	895	272	231	1271	104	895	272	231	1271	659	659	396	1480	1876	659	659	396	1480	1876
Belison	62	169	40	1846	838	62	169	40	1846	838	344	1578	344	1578	1922	344	1578	344	1578	1922
Bugasong	99	1707	40	416	2085	99	1707	40	416	2085	313	2699	313	2699	3012	313	2699	313	2699	3012
Caluya	422	2015	70	2085	255	422	2015	70	2085	255	1200	1200	350	1423	1773	1200	1200	350	1423	1773
Culasi	255	1138	223	1616	805	255	1138	223	1616	805	805	805	350	1423	1773	805	805	350	1423	1773
Hamtic	179	626	908	1036	161	179	626	908	1036	161	1617	1617	350	1423	1773	1617	1617	350	1423	1773
Laua-an	128	226	388	866	23	128	226	388	866	23	2085	2085	350	1423	1773	2085	2085	350	1423	1773
Libertad	161	705	23	1692	19	161	705	23	1692	19	366	366	350	1423	1773	366	366	350	1423	1773
Pandan	19	30	106	49	1586	19	30	106	49	1586	2008	2008	350	1423	1773	2008	2008	350	1423	1773
San Jose de Buenavista (Ca)	372	944	228	493	131	372	944	228	493	131	350	350	350	1423	1773	350	350	350	1423	1773
San Remigio	131	134	20	822	126	131	134	20	822	126	101	3745	101	3745	3846	101	3745	101	3745	3846
Sebasto	20	696	126	822	1741	20	696	126	822	1741	224	707	224	707	931	224	707	224	707	931
Sibalom	126	696	126	822	1741	126	696	126	822	1741	195	1395	195	1395	1590	195	1395	195	1395	1590
Tibiao	20	696	126	822	1741	20	696	126	822	1741	20	696	20	696	1063	20	696	20	696	1063
Tobias Fornier	126	696	126	822	1741	126	696	126	822	1741	2242	27027	2242	27027	29269	2242	27027	2242	27027	29269
Valderrama	1741	12707	2126	16574	1741	1741	12707	2126	16574	1741	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126
Provincial Total	1741	12707	2126	16574	1741	1741	12707	2126	16574	1741	2126	2126	2126	2126	2126	2126	2126	2126	2126	2126

Table 8.6.6 Public School Toilets Required by Target Year

Name of Municipality	Phase I (2005) Requirements			Phase II (2010) Requirements		
	Additional Public School Students to be Served	No. of Toilet Unit	No. of Toilet Facilities	Additional Public School Students to be Served	No. of Toilet Unit	No. of Toilet Facilities
Anini-y	1,747	44	9			
Barbaza	1,893	48	10	2,107	53	11
Belison				627	16	4
Bugasong	2,481	63	13	869	22	5
Caluya	1,765	45	9	2,065	52	11
Culasi	2,734	69	14	1,937	49	10
Hamtic	3,757	94	19	2,470	62	13
Laua-an	2,061	52	11	1,586	40	8
Libertad	1,533	39	8	1,870	47	10
Pandan	2,511	63	13	1,672	42	9
Patongon	4,794	120	24			
San Jose de Buenavista (Capi	3,110	78	16			
San Remigio	2,475	62	13	2,106	53	11
Sebaste				342	9	2
Sibalom	4,957	124	25	462	12	3
Tibiao	1,600	40	8	949	24	5
Tobias Fornier				170	5	1
Valderrama	1,567	40	8	2,405	61	13
Provincial Total	38,985	981	200	21,637	547	116

Table 8.6.7 Public Toilets Required by Target Year

Name of Municipality	Phase I (2005) Requirements					Phase II (2010) Requirements				
	Number of Public Toilets					Number of Public Toilets				
	Public Market	Bus/JEEPNEY Terminal	Parks/Playground	Total	Public Market	Bus/JEEPNEY Terminal	Parks/Playground	Total	Public Market	Total
Anini-y			1	1				1		1
Barbaza	3			3					1	1
Belison	2	1		3					1	1
Bugasong	1		1	2	1					1
Caluya			1	1						
Culasi			1	1				1		1
Hamtic			1	1						
Laua-an					1					1
Libertad	2		1	3	1					1
Pandan			1	1						
Pamongon			1	1	1					1
San Jose de Buenavista (Capital)	1	2		3				1		1
San Remigio	3			3						
Sebaste	3			3					1	1
Sibalom		1		1					1	1
Tibiao			1	1						
Tobias Fornier	2	1		3						
Valderrama			1	1					1	1
Provincial Total	17	5	10	32	4	4	4	12		