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 required number of house connections based on the additional service coverage.

Table 8.6.1 Urban Water Supply Facilities Required by Target Year

Municipality	Reference on Expansion of Existing Level III System										Phase II (2010) Requirements			
	Name of System (Operating Body)	Type	Coverage in 1994		Type of Water Sources[1]	Plan for Expansions[2]	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (cu. m/day)	Number of Deep Well	Additional Population to be Served	Number of House Connections	Daily Average Water Demand (cu. m/day)	Number of Deep Well
			No. of Brgy.	Served Population										
Abra de Ilog	Abra de Ilog WW	Urban	1	1,354	SP	No	0	0	0	0	816	204	82	1
		Rural	1	118										
		Total	2	1,472										
Calintaan	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	846	154	85	1	8,112	2,028	811	2
		Rural	N.A.	N.A.										
		Total	N.A.	N.A.										
Looc	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	3,502	815	350	1	2,976	744	298	1
		Rural	N.A.	N.A.										
		Total	N.A.	N.A.										
Lubang	Lubang RWSA	Urban	7	2,328	DgW	No	1,760	403	176	1	2,432	608	243	1
		Rural	1	1,695										
		Total	8	4,023										
	Tilik RWSA	Urban	1	1,403	DgW	No								
		Rural	0	0										
		Total	1	1,403										
	Municipal Total	Urban	8	3,731										
		Rural	1	1,695										
		Total	9	5,426										
Magsaysay	San Jose WD	Urban	9	1,316	DW	No	4,332	850	433	1	4,439	1,182	445	1
		Rural	1	324										
		Total	10	1,640										
Mamburao (Capital)	Mamburao RWSA	Urban	9	7,404	DW	No	1,088	222	109	1	3,562	891	356	1
		Rural	0	0										
		Total	9	7,404										
Paluan	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	1,558	325	156	1	4,509	1,150	460	1
		Rural	N.A.	N.A.										
		Total	N.A.	N.A.										
Rizal	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	3,913	375	191	1	848	212	85	1
		Rural	N.A.	N.A.										
		Total	N.A.	N.A.										
Sablayan	Sablayan WD	Urban	3	5,300	DgW	No	3,259	615	326	1	18,274	4,569	1,827	3
		Rural	1	178										
		Total	4	5,478										
San Jose	San Jose WD	Urban	13	10,509	DgW	No	6,205	1,193	621	1	26,097	6,524	2,610	4
		Rural	0	0										
		Total	13	10,509										
Sta. Cruz	Not Applicable	Urban	N.A.	N.A.	N.A.	N.A.	271	48	27	1	1,818	455	182	1
		Rural	N.A.	N.A.										
		Total	N.A.	N.A.										
Provincial Total		Urban	51	33,345			24,734	4,997	2,473	10	73,983	18,497	7,398	17
		Rural	5	4,010										
		Total	56	37,355										

Note. 1. *DW* - Deep Well, *SP* - Spring, *DgW* - dug Well and *Surf* - Surface Water.
2. Refer to supporting Table 8.6.3 for details.

As reference, 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 in Table 8.6.2, however no information was available during this PW4SP preparation.

Table 8.6.2 Plan for Expansion of Existing Level III System

Municipality	Name of Operating Body	Additional Areas Barangay to be Covered	Additional Population to be Served	Additional Water Sources	
				Type[1]	Capacity (cu. m/day)
Abra de Ilog	Abra de Ilog WW	0	0	N.A.	N.A.
Lubang	Lubang RWSA	0	0	N.A.	N.A.
	Tilik RWSA	0	0	N.A.	N.A.
	Municipal Total	0	0		N.A.
Magsaysay	San Jose WD	0	0	N.A.	N.A.
Mamburao (Capital)	Mamburao RWSA	0	0	N.A.	N.A.
Sablayan	Sablayan WD	0	0	N.A.	N.A.
San Jose	San Jose WD	0	0	N.A.	N.A.

Note: *DW* - Deep Well, *SP* - Spring, *DgW* - Dug Well, and *Surf* - Surface Water Intake.

Rural water supply:

Rural water supply facilities required by target year shown in Table 8.6.3 were estimated as number of Level II systems with number of communal faucets and number of Level I wells broken-down to deep and shallow wells. However, no untapped spring suitable for Level II system was confirmed during this PW4SP preparation.

Table 8.6.3 Rural Water Supply Facilities Required by Target Year

Municipality	Phase I (2000) Requirements								Phase II (2010) Requirements					
	Level II		Level I						Level I					
	Number of System	No. of Communal Faucets	Number of Deep Wells			Sub-total	Number of Shallow Wells	Total	Number of Deep Wells			Sub-total	Number of Shallow Wells	Total
			40 m	80 m	120 m				40 m	80 m	120 m			
Abra de Ilog	0	0	34	0	0	34	80	114	25	0	0	25	57	82
Calintaan	0	0	4	0	0	4	10	14	29	0	0	29	66	95
Looc	0	0	13	0	0	13	20	33	0	0	0	0	0	0
Lubang	0	0	108	0	0	108	27	135	93	0	0	93	23	116
Magsaysay	0	0	73	0	0	73	48	121	73	0	0	73	49	122
Mamburao (Capital)	0	0	121	0	0	121	13	134	123	0	0	123	14	137
Paluan	0	0	0	0	0	0	24	24	0	0	0	0	16	16
Rizal	0	0	0	0	0	0	0	0	187	0	0	187	0	187
Sablayan	0	0	40	0	0	40	27	67	108	0	0	108	72	180
San Jose	0	0	116	0	0	116	174	290	210	0	0	210	316	526
Sta. Cruz	0	0	53	0	0	53	22	75	89	0	0	89	38	127
Provincial Total	0	0	562	0	0	562	445	1,007	937	0	0	937	651	1,588

(2) Required well drilling and rehabilitation equipment

Presently, only each one unit of truck-mounted percussion drilling rig and portable mechanized rotary drilling rig are available at DPWH-DEO in the province. Among these equipment, rotary type rig is only capable to drill shallow wells with less than 10 m

depth owing to its penetration capacity and therefore not applicable for the planned shallow well construction..

Taking into account the maximum 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 that 50% of target area is medium to hard formation suitable to percussion type and the rest is soft to medium formation suitable to rotary type. Idling time for equipment overhauling/maintenance and rest days of workers are considered at 25% of the year.

Small size rotary drilling rig (hand-feed spindle type for shallow well):

Average performance

- 1 well/15 days (3 m/day of drilling rate with finishing work)

Annual accomplishment

- 18 wells/year (365 days/year ÷ 15 days/well x 0.75)

Required number

- 5 sets for the total 445 shallow wells

Medium size rotary drilling rig (truck-mounted top-head drive type for deep well):

Average performance

- 1 well/20 days (10 m/day of drilling rate with finishing work)

Annual accomplishment

- 13 wells/year (365 days/year ÷ 20 days/well x 0.75)

Required number

- 5 sets for 50% of the total 562 deep wells

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 days/year ÷30 days/well x 0.75)

Required number

- 7 sets for 50% of the total 562 deep wells

Well rehabilitation equipment:

Average performance

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

Annual accomplishment

- 39 wells/year (365 days/year ÷7 days/well x 0.75)

Required number

- 2 sets for 10% of 562 Level I deep wells

Support vehicle:

Type - pick-up truck with winch, double cab

Required number

- 7 units (5 units for small size rotary rig and 2 units for well rehabilitation)

Considering the utilization of existing percussion drilling rig and well rehabilitation equipment, the following equipment shall be mobilized/procured either by private sector or LGUs to accomplish the physical targets:

- 5 sets of small size rotary rig for shallow wells,
- 5 sets of medium size rotary rig for 50% of deep wells,
- 6 sets of medium size percussion rig for 50% of deep wells
- 2 set of well rehabilitation equipment for 10% of deep wells (at least 1 set shall be held by the provincial government), and
- 7 units of support vehicles for shallow well construction and well rehabilitation.

In addition to the above, service trucks equipped with crane are required for each unit of medium size rotary and percussion rigs for hauling drilling tools and water.

8.6.2 Sanitation

Table 8.6.4 Urban Household Toilets Required by Target Year

Municipality	Phase I (2000) Requirements								Phase II (2010) Requirements							
	Add'l HHs to be Served				No.of HHs Toilets				Add'l HHs to be Served				No.of HHs Toilets			
	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total
Abra de Ilog	0	45	6	51	0	45	6	51	133	70	0	203	133	70	0	203
Calintaan	154	122	21	297	154	122	21	297	978	279	0	1,257	978	279	0	1,257
Looc	229	228	16	474	229	228	16	474	590	246	0	836	590	246	0	836
Lubang	0	239	25	264	0	239	25	264	577	127	0	704	577	127	0	704
Magsaysay	237	0	26	263	237	0	26	263	910	361	0	1,271	910	361	0	1,271
Mamburao (Capital)	0	565	43	608	0	565	43	608	964	209	0	1,173	964	209	0	1,173
Paluan	230	407	0	637	230	407	0	637	548	203	0	751	548	203	0	751
Rizal	105	262	7	374	105	262	7	374	244	87	0	331	244	87	0	331
Sablayan	257	909	54	1,220	257	909	54	1,220	2,697	1,562	0	4,259	2,697	1,562	0	4,259
San Jose	656	126	119	901	656	126	119	901	3,974	1,475	0	5,449	3,974	1,475	0	5,449
Sta. Cruz	177	19	13	209	177	19	13	209	414	148	0	562	414	148	0	562
Provincial Total	2,045	2,922	330	5,297	2,045	2,922	330	5,297	12,029	4,767	0	16,796	12,029	4,767	0	16,796

Table 8.6.5 Rural Household Toilets Required by Target Year

Municipality	Phase I (2000) Requirements								Phase II (2010) Requirements							
	Add'l HHs to be Served				No.of HHs Toilets				Add'l HHs to be Served				No.of HHs Toilets			
	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total	Flush	Pour Flush	VIP Latrine	Total
Abra de Ilog	12	753	39	804	12	753	39	804	5	1,380	0	1,385	5	1,380	0	1,385
Calintaan	0	152	45	197	0	152	45	197	0	1,865	0	1,865	0	1,865	0	1,865
Looc	0	0	10	10	0	0	10	10	0	49	0	49	0	49	0	49
Lubang	32	409	51	492	32	409	51	492	219	1,849	0	2,068	219	1,849	0	2,068
Magsaysay	30	556	52	638	30	556	52	638	21	2,440	0	2,461	21	2,440	0	2,461
Mamburao (Capital)	0	462	46	508	0	462	46	508	0	2,631	0	2,631	0	2,631	0	2,631
Paluan	0	328	0	328	0	328	0	328	0	319	0	319	0	319	0	319
Rizal	0	933	81	1,014	0	933	81	1,014	0	3,727	0	3,727	0	3,727	0	3,727
Sablayan	17	1,197	125	1,339	17	1,197	125	1,339	9	3,804	0	3,813	9	3,804	0	3,813
San Jose	0	1,446	216	1,662	0	1,446	216	1,662	0	10,270	0	10,270	0	10,270	0	10,270
Sta. Cruz	196	930	0	1,126	196	930	0	1,126	83	2,361	0	2,444	83	2,361	0	2,444
Provincial Total	287	7,166	666	8,120	287	7,166	666	8,120	337	30,695	0	31,032	337	30,695	0	31,032

Table 8.6.6 Public School Toilets Required by Target Year

Municipality	Phase I (2000) Requirements			Phase II (2010) Requirements		
	Add'l Public School Students to be Served	No. of Toilet Units	No. of Toilet Facilities	Add'l Public School Students to be Served	No. of Toilet Units	No. of Toilet Facilities
Abra de Ilog	0	0	0	699	14	3
Calintaan	668	13	3	1,731	35	7
Looc	86	2	0	544	11	2
Lubang	478	10	2	1,256	25	5
Magsaysay	987	20	4	2,155	43	9
Mamburao (Capital)	1,466	29	6	2,683	54	11
Paluan	117	2	0	711	14	3
Rizal	1,411	28	6	2,142	43	9
Sablayan	1,081	22	4	2,794	56	11
San Jose	2,935	60	12	7,632	153	31
Sta. Cruz	1,006	20	4	1,690	34	7
Provincial Total	10,285	206	41	24,037	482	98

Table 8.6.7 Public Toilets Required by Target Year

Municipality	Type	Phase I (2000) Requirements Number of Public Toilets	Phase II (2010) Requirements Number of Public Toilets
Abra de Ilog	Public Market	1	0
	Bus/Jeepney Term.	1	0
	Total	2	0
Calintaan	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Looc	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Lubang	Public Market	1	0
	Bus/Jeepney Term.	0	0
	Total	1	0
Magsaysay	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Mamburao (Capital)	Public Market	1	1
	Bus/Jeepney Term.	1	0
	Total	2	1
Paluan	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Rizal	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Sablayan	Public Market	0	1
	Bus/Jeepney Term.	1	1
	Total	1	2
San Jose	Public Market	1	2
	Bus/Jeepney Term.	1	1
	Total	2	3
Sta. Cruz	Public Market	1	0
	Bus/Jeepney Term.	0	1
	Total	1	1
Provincial Total	Public Market	10	4
	Bus/Jeepney Term.	4	8
	Total	14	12

9. SECTOR MANAGEMENT PLAN

9.4 Project Management Arrangements

Table 9.4.1 Format for Level I Project Data

Form _____

PROPOSED LEVEL I PROJECT DATA

Notice : This form shall be accomplished upon instruction on PST/PWSD

LOCATION

1.1 Barangay/Sitio	1.3 Province
1.2 Municipality	1.4 Region

POP. DATA

2.1 Total Community/Barangay Population	2.3 Proposed Population to be Served
2.2 Total Number of Households	2.4 Proposed Number of Households to be Served

INFORMATION ON THE WELL SITE

3.1 Ownership : ☐ Public ☐ Private	3.3 Location:
3.2 Description :	3.4 Donor (If Private Lot):

DESCRIPTION OF EXISTING NEARBY SOURCE(S) (Use separate sheets if necessary)

4.1 Type of Point Source:

- ☐ Deep Well
- ☐ Shallow Well
- ☐ Spring
- ☐ Others (dug well pond)

4.2 Ownership :

- ☐ Public
- ☐ Private

4.3 For wells :

Casing diameter_____ in. or_____m.

Casing depth _____ ft. or_____m.

Water level Well _____ ft. or_____m.

Well capacity/yield _____ gpm. or_____lps.

4.4 For Springs : Capacity/yield _____ gpm. or_____lps.

Approx. elevation above or below

Service Area _____ ft. or _____ m

Location

- ☐ Inside of service area
- ☐ Outside of service area

Approximate distance from center of service area _____km.

Prepared by :

_____ _____

Municipal Liason Staff Date

Table 9.4.2 Format for Level II Feasibility Study

Form _____

FEASIBILITY STUDY (Level II) Notice : This form shall be accomplished upon instruction of the PST/PWSO.	Barangay	Municipality
	Province	Region

PROJECT SUMMARY

POPULATION DATA

1. Present Population	2. Design Population	3. Number of Households
		6. Number of Faucets

TECHNICAL DATA

4. Type of Source ☐ Spring ☐ Well ☐ Surface Water	5. Type of System ☐ Gravity ☐ Pumped	
	7. Pump Horsepower _____ HP	8. Pumping Time _____ Hours per Day
9. Total Average Daily Demand _____ Liters	10. Storage Tank Capacity _____ Liters	11. Pump Discharge Capacity _____ LPS

FINANCIAL DATA

12. Total System Cost P _____	13. Maximum Loan Amount P _____	14. Interest Rate _____
15. Local Equity P _____	16. Funding Cost per Household P _____	17. Repayment Period (months) _____

18. Type of Local Equity ☐ Cash ☐ Labor ☐ Materials ☐ Others, _____

19. Total Monthly Expense P _____	20. Monthly Fee Per Household P _____

ANNEXES

☐ 1 Survey Form	☐ 5 Design of Pipe Lines	☐ 9A Fittings Schedule (G.I. Pipes)	☐ 12 Financial Analysis
☐ 2 Map of the Project Area	☐ 6 Design of Reservoir and Pump	☐ 9B Fittings Schedule	☐ 13 Availability of Local Equity
☐ 3 Design Criteria and Basic Design Data	☐ 7 Detailed Design Plan	☐ 10 Bill of Materials	
☐ 4 Schematic Diagram of the System	☐ 8 Pipes Schedule	☐ 11 Cost Summary	

Prepared by :	Endorsed by :
_____ Municipal Liason Staff	_____ PST/PWSO Coordinator
_____ Date	_____ Date

Annex 1

SURVEY FORM
_____ Rural Water Supply Project

A. LOCATION

Barangay : _____ Province : _____
Municipality : _____ Region Number : _____

B. GENERAL INFORMATION

1. Population _____
2. Number of households _____
3. Distance from poblacion _____ kilometers
4. Availability of electricity Yes ☐ No ☐
5. Distance form electric line _____ kilometers
6. Power cost per kilowatt hour P _____
7. Availability of public transportation _____
8. Main livelihood of residents
   - ☐ Land transport
   - ☐ Water transport
   - ☐ Farming
   - ☐ Industry ☐ Others
   - ☐ Fishing

C. TECHNICAL INFORMATION

1. Are there reliable sources of potable water?
   ☐ Yes ☐ No

a) For Wells
   Well capacity : _____ lps
   Casing diameter : _____
   Casing depth : _____
   Water level from top of well : _____
   Location : ☐ Within service area
   ☐ Outside _____M. from service area

b) For Springs
   Average dry season flow : _____ ☐ GPM ☐ LPS
   Relative elevation of spring
   a. _____ ☐ ft. ☐ m. above service area
   b. _____ ☐ ft. ☐ m. below service area
   Location : ☐ Within service area
   ☐ Outside _____ m. from service area

2. Are there water supply system materials and equipment (pumps, pipes, fittings) which can be donated for this project from other source?

☐ Yes ☐ No

For pumps : Type : _____ Power : _____ HP

For pipes : ☐ Galvanized Iron ☐ PVC
☐ Others, specify _____

3. Is there an existing water tank that can be used? ☐ Yes ☐ No

Type : ☐ Steel ☐ Reinforced Concrete

Capacity : _____ ☐ Gallons ☐ Cubic Meters

Location: (Please indicate in the map of the project area)

Relative elevation with respect to service area ____ ☐ ft. ____ ☐ m.

4. Are there other sites where water tanks may be erected? ☐ Yes ☐ No
Location : (please indicate in the map of the project area)

Relative elevation with respect to service area ____ ☐ ft. ____ ☐ m.

5. Does the barrio have skilled personnel? ☐ Yes ☐ No

If yes, how many? Estimated Number

Plumbers : _____
Masons : _____
Carpenters : _____
Others : _____

If no, are there competent contractors near the area?
Plumbing contractor : ☐ Yes ☐ No
Tank fabricator : ☐ Yes ☐ No

Are there suppliers of materials (pumps, pipes, fittings) in the municipality?
☐ Yes ☐ No

D. FINANCIAL INFORMATION

1. What can the barangay provide as local equity?

Cash :	₱ _____		
Labor :	_____	man-days	
Materials :	Sand	: _____	cu. m.
	Gravel	: _____	cu. m.
	Cement	: _____	bags
	Others, specify :	_____	

2. Have the people been informed of the current financing policies for Level II systems, particularly the monthly fees required to repay loan & provide for O & M?

☐ Yes ☐ No

3. How much are the people willing to pay per household per month as a water fee?

Below ₱ 6.00	☐	₱ 10.00 - 15.00	☐	Others	☐
₱ 6.00 - 10.00	☐	15.00 - 20.00	☐	Specify :	_____

4. Average income per household ₱ _____ per month

E. INSTITUTIONAL INFORMATION

1. Is there an existing association who is ready, willing and able to manage the system

☐ Yes ☐ No

If yes, please specify. _____

2. Are people willing to join a water association to operate and manage a water supply system? ☐ Yes ☐ No

3. How many households are willing to be members? _____ households.

4. Name at least three (3) leaders of the community who can act as officers of the association, if required.

Name	Address
_____	_____
_____	_____
_____	_____
_____	_____

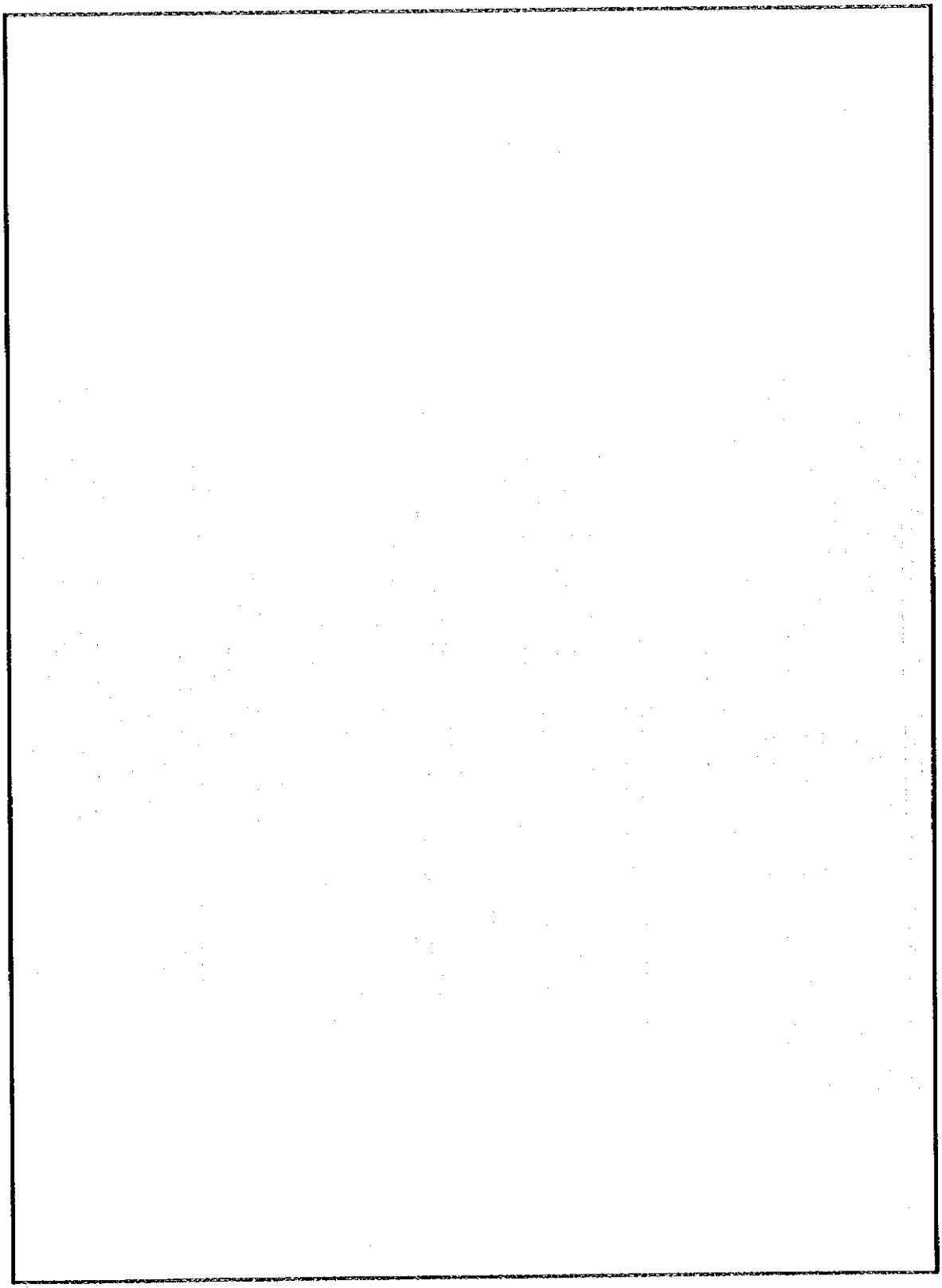
F. MAP OF THE AREA

Please attach map of the area proposed to be served. Indicate location of houses, buildings and other structures to be served including roads, the water source(s) and possible locations of storage tanks. The map should preferably be drawn to scale.

Important : If map cannot be drawn to scale, indicate distance measurements between important points along roads, or possible routes of distribution pipes with households properly indicated. For rolling terrain, indicate elevation differences between measurement points.

G. REMARKS :

Annex 2
MAP OF THE PROJECT AREA
_____ Rural Water Supply Project



Annex 3

DESIGN CRITERIA AND BASIC DESIGN DATA
_____ Rural Water Supply Project

I. Design Criteria

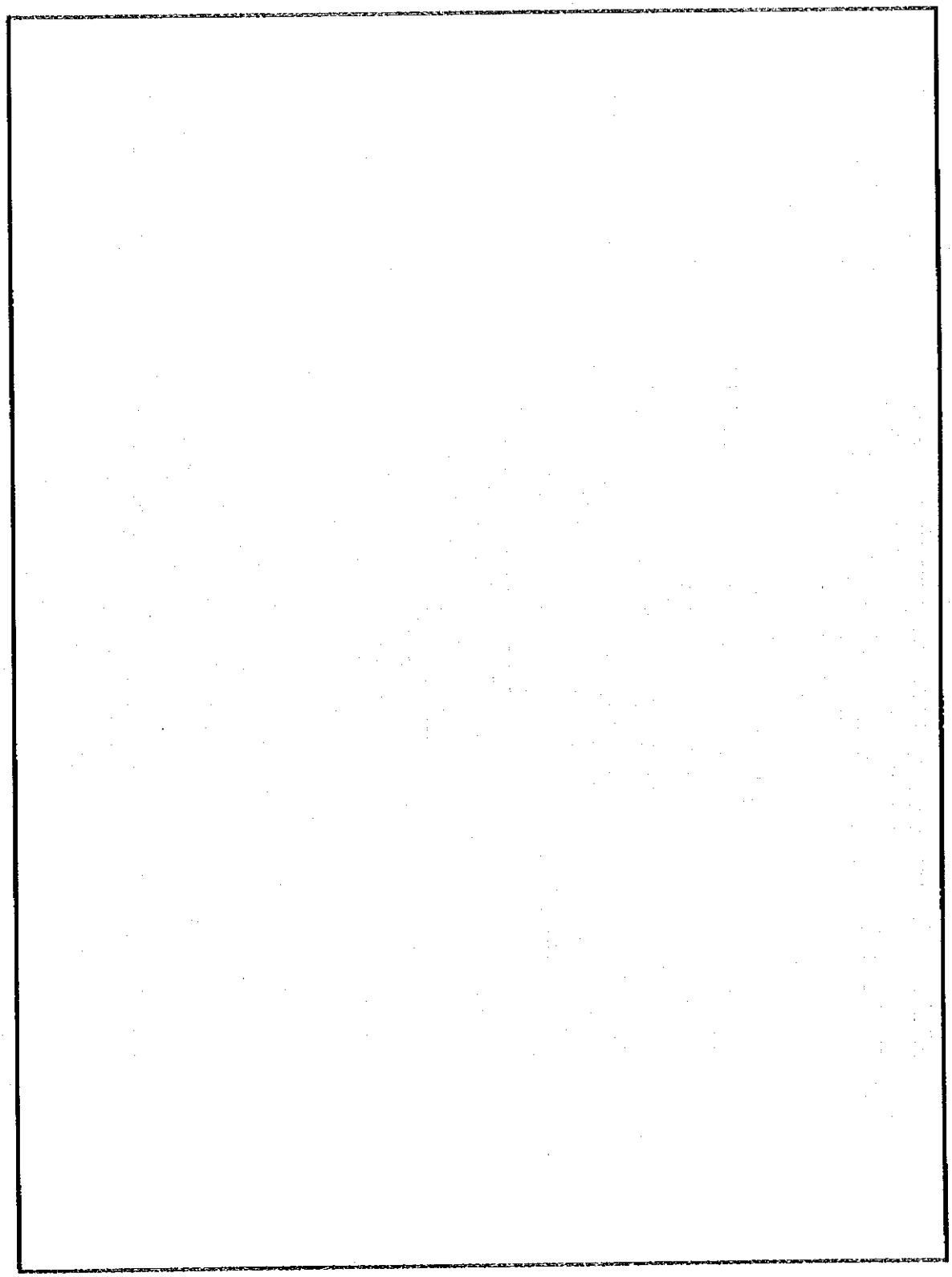
1. Design Period : 5 years
2. Population
   - Annual Growth : 3%
   - Average Household Size : 6 persons/HH
   - Design Population : Present Population x 1.16
3. Per Capita Water Consumption
   - Level II : 60 lpcd
   - Level II with garden : 75 lpcd
   - Level III : 100 lpcd
4. Water Demand
   - Average Day Demand : Design Population X Per Capita Consumption
   - Maximum Day Demand : 1.3 X Average Day Demand
   - Maximum Hour Demand : 2.5 X Average Day Demand
5. Pump Operation
   - Pumping Hours : 8 -15 hours
   - Pumping Rate : Maximum Day Demand/PumpingHrs. = _____
6. Storage Capacity : 1/4 of Average Day Demand
7. System Pressure : 5 - 10 psi at faucet
8. Households Served Per Faucet : 4 - 6 HH

II. Basic Design Data

1. Present Population : _____
2. Design Population (Present Population X 1.16) : _____
3. Average Day Demand: _____ X _____ : _____
   (Per Capita Consumption) (Design Pop.)
4. Maximum Day Demand: 1.3 X _____ : _____
   (Average Day Demand)

Annex 4

SCHEMATIC DIAGRAM OF THE SYSTEM
_____ Rural Water Supply Project



Annex 5

DESIGN OF PIPE LINES

_____ Rural Water Supply Project

SECTION (1)	NODES From (2)	NODES To (3)	SECTION LENGTH(M) (4)	HOUSEHOLD SERVED (5)	PEAKFLOW (LPS) (6)	PIPE DIA (MM) (7)	HEAD LOSS PER 100M (8)	ACTUAL HEADLOSS (9)	REMARK (10)

Annex 6

DESIGN OF RESERVOIR AND PUMP

_____ Rural Water Supply Project

A. DESIGN

1. Determine Capacity of Reservoir, (C_r)

   C_r = 1/4 x Average Day Demand

   C_r = 1/4 x D_e (LPD)

   C_r = _____ liters

2. Determine Minimum Water Elevation, (WL_m)

   WL_m = total head loss + Minimum Pressure in Main (Meters)

   For Barangay System, Min. Pressure = 5 psi (use 3M.)

   For Poblacion System, Min. Pressure = 10 psi (use 7M.)

   WL_m = _____ M.

   Note : The bottom of the storage tank should be higher than this elevation.

B. DESIGN OF PUMP

1. Determine Pump Capacity, Q_p (LPS)

   Q_p = Max. Day Demand (LPD)/ Operating Time (Sec.)

   Q_p = $78 P_d/T$ where: P_d = Design Population

   T = Operating Time in Seconds

   Q_p = _____ LPS

2. Calculate Total Dynamic Head, TDH (Meters)

   TDH = Depth of Pumping Level + by Maximum Reservoir Elevation + friction loss

   TDH = _____ m

3. Calculate Brake Horsepower Requirement :

$$\text{Brake Horsepower} = \frac{Q_p \times TDH}{75 \times \text{Efficiency}}$$

Brake Horsepower = _____ Hp

Where :

Efficiency for Centrifugal Pump, 30-60 %

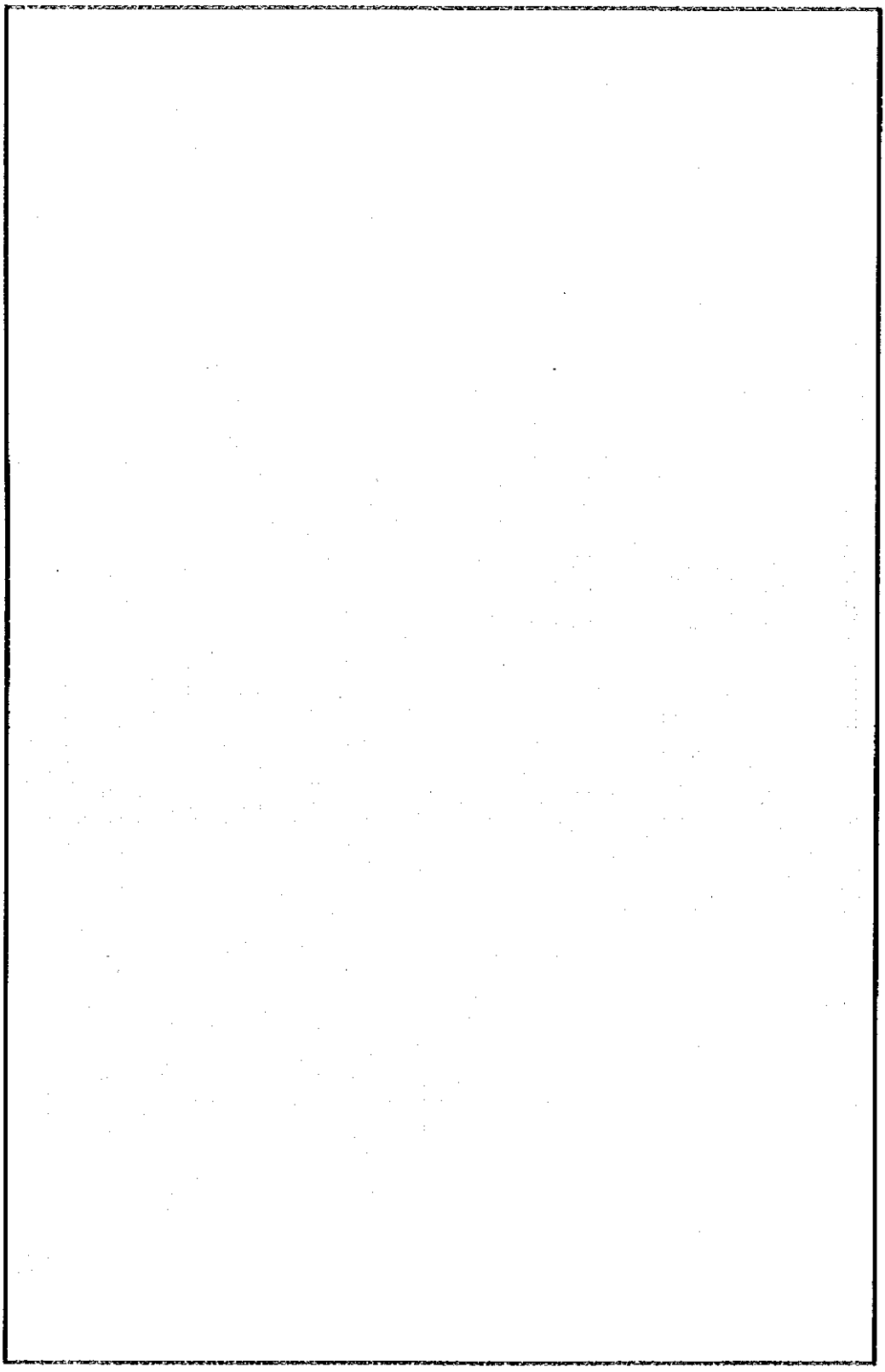
Efficiency for Submersible Pump, 50-60 %

Efficiency for Jetmatic Pump, 20-30 %

Annex 7

DETAILED DESIGN PLAN

_____ Rural Water Supply Project



Annex 8

PIPES SCHEDULE

_____ Rural Water Supply Project

PIPE DIAMETER (1) mm	SECTION LENGTH (2) m	REQUIRED PIPES (3)	ACTUAL NO. OF PIPES (4)	ADDITIONAL PIPES (5)

Annex 9A

FITTINGS SCHEDULE (G.I. PIPES)

_____ Rural Water Supply Project

NODES / SECT LENGTH	COUPLING		UNION PATENTE	TEE STD.	TEE REDUCER	BUSHING REDUCER	ELBOW STD / ELBOW REDUCER	COUPLING REDUCER	FAUCET	NIPPLE	VALVES
	Qtv.	Size	Qty.								

Annex 9B

FITTINGS SCHEDULE (PVC PIPES)

_____ Rural Water Supply Project

NODES / SECT LENGTH	SOCKET		STD. ELBOW REDUCER	STD. TEE REDUCER	SOCKET ADAPTOR	SOCKET REDUCER	G. I. FITTINGS			OTHERS
	Qty.	Size					VALVES	FAUCET	ELBOW	

Annex 10

BILL OF MATERIALS

_____ Rural Water Supply Project

QUANTITY	UNIT	DESCRIPTION	UNIT COST	TOTAL COST

Annex 11

COST SUMMARY

_____ Rural Water Supply Project

I. ESTIMATED COST OF THE SYSTEM

1. a) Cost of Pipes ₱ _____

   b) Cost of Fittings _____

   Total Cost of Pipes and Fittings ₱ _____

2. Cost of Reservoir _____
3. Cost of Pump _____
4. Labor Cost _____

   a) 10% of Pipes & Fittings (For G.I. Pipes)

   b) 25% of Pipes & Fittings (For PVC Pipes)

5. Cost of Freight and Handling _____
6. Contingencies 5% (Pipes & Fittings - Labor) _____

   Total Cost of the System ₱ _____

For gravity system, omit cost of pump.

II. FINANCIAL DATA

1. Total Cost of the System ₱ _____
2. Local Equity _____
3. Amount of Loan _____

Note:

Cost of freight and handling:

0%, - Rizal; 2.5%, - Zambales; 7% - Mindoro Fittings

Annex 12

FINANCIAL ANALYSIS

_____ Rural Water Supply Project

A. RELEVANT DATA

1. Pumping Hours : _____ hrs.
2. Pump Horsepower : _____ HP
3. Cost/KWH : P_____
4. Pump Cost : P_____
5. Amount of Loan : P_____
6. Loan Terms : _____ % (interest per annum)
   : _____ years (Repayment Period)
7. Number of Households : _____

B. COMPUTATION OF MONTHLY EXPENSES (Omit non-applicable items)

1. Operations
   a. Salaries _____ x _____ = P _____
   b. Office Supplies _____ x _____ = P _____
   c. Power _____ x _____ = P _____
   d. Chemical _____ x _____ = P _____
   e. Miscellaneous _____ x _____ = P _____

2. Asset Replacement
   a. Pump _____ / _____ = P _____
   Life (mos.)
   b. Pipelines _____ / _____ = P _____
   Life (mos.)
   c. Tank _____ / _____ = P _____
   Life (mos.)
   d. Others _____ / _____ = P _____
   Life (mos.)
3. Amortization _____ x _____ = P _____
   (CRF) (Loan Amt.)
4. Maintenance (2% of Capital Equipt.costs annually)
   .02 X _____ /12 = P _____
6. Total Monthly Expenses = P _____

C. COMPUTATION OF WATER FEE

Monthly Water Fee Per Household :

_____ / _____ = P _____
(Total Monthly Expenses) (No. of HH)

Annex 13

AVAILABILITY OF LOCAL EQUITY

Item	Amount
I. Cash	₱ _____

II. Labor

Type of Labor	No. of Workers	No. of Days	Rate Per Day	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	_____

III. Materials

Type of Materials	Quantity	Unit Cost	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	_____

TOTAL ₱ _____

I certify that the items listed above represent the local share of the project cost. _____ _____ Association President Date	Noted by : _____ _____ Municipal Sector Liason Date

9.5 Community Development Models

Community Development Model Study (Level I)
Model Site: Sitio Casoy, Barangay Balansay, Mamburao, Occidental Mindoro

1. Socio-Economic Profile of the Model Site

Sitio Casoy is situated in the northwestern part of Barangay Balansay, about 7 kilometers from the town proper of Mamburao. It has a land area of about 10 hectares lying along the national road.

The residents depend primarily on fishing and farming for their main source of livelihood. Other residents are employed either as salespersons or helpers in the poblacion. Some are drivers of public utility vehicles. Commercial activities found in the area include a small rice trading and "sari-sari" stores.

The primary school offers Grades 1 to 3 only. For their health and medical needs, the residents go to the Rural Health Unit which is visited thrice a month by a midwife and a nurse. Community-based organizations includes the Sanggunian Nayon, the Parents-Teachers Association (PTA), Sanggunian Kabataan (SK), and several farmers' cooperatives.

2. Present Water Supply/Sanitation Situation

The residents of Sitio Casoy are being served by shallow wells although not all households have their own wells. Others get water from neighbors with existing wells. There is one public shallow well located at the center of the sitio which was constructed by the DEO but is not operational. The barangay elementary school has no water system. A Level I system has been proposed to be constructed to serve both the school and its premises. But this has remained a plan..

As to the sanitation situation, only about 15% of the total population have toilet facilities. The school has a toilet but due to lack of water, cleanliness could not be maintain. Cases of water-borne diseases, however, are minimal.

3. Assessments

3.1. Water Sources

The residents of Sitio Casoy get their supply of water from shallow wells which are mostly unreliable because these are not provided with protection works to avoid contamination. The barangay elementary school does not have its own water system.

3.2. Sanitation Facilities

Only 15% of the total households have toilet facilities. Those who do not have toilets resort to the bad practice of "wrap and throw". The school has one toilet but because of lack of water supply, sanitation could not be maintained.

3.3. Health

Cases of water-related illnesses have been reported in the sitio. These could be the result from using inadequate water and from the absence of sanitary toilets.

3.4. Institutional Analysis

There are existing people's organizations operating in Sitio Casoy although not one had taken the initiative in improving the water and sanitary conditions in the area. The organizations have not yet realized their potential as catalysts to improve the water and sanitation conditions in the community.

4. Future Development Needs

4.1. Potential Source and Service Level

The construction of one deep well could alleviate the present situation in the area. A shallow well shall also be constructed inside the school premises to serve the students and the teachers. The population to be served by the proposed water system is 300 consisting of 30 households.

The construction of individual toilets will have to be promoted.

4.2. Deputizing Local Organization as BWSA

The residents should identify an organization which can take the lead role in implementing the health and sanitation program in the area. From among the existing community associations in Sitio Casoy, the Parents-Teachers Association (PTA) has expressed willingness to take the responsibility. As such, the PTA can be assume the role and functions of the Barangay Water and Sanitation Association (BWSA).

5. Capital and O&M costs

5.1. Water Source Facility and Sanitary Toilets

Capital cost required to construct one (1) deep well of 100 m depth is ₱255,000 while installation of one shallow well would cost about ₱57,000. The community, through BWSA can avail grants for this.

Capital cost of individual household toilets shall be shouldered by the homeowners. If a family could not put up the initial capital cost, the BWSA can make arrangements with lending agencies (cooperatives, banks, etc.) for the extension of loan.

5.2. Operation and Maintenance

Cost of operating and maintaining the proposed wells shall be shouldered by the users through their monthly membership dues. The Association, through its treasurer will regularly collect the monthly contribution and deposit them in the bank. All expenses for O&M will be charged from the savings.

6. Community Involvement

6.1. Pre-Construction (Project Preparation and Planning)

(1) The Barangay Council, in coordination with the Municipal Sector Liaison (MSL), could initiate meeting among the residents to discuss water and sanitation problems and needs in the area.

(2) The residents can endorse the PTA to be the core organization of BWSA to implement the water and sanitation improvement project.

(3) The association should submit a formal request to the municipal/provincial government, duly endorsed by the Barangay Council, for technical and financial assistance in undertaking Level I project in Sitio Casoy. The request is accompanied by a written set of commitments signed by the members/beneficiaries indicating willingness to participate in the project, assume the responsibility for the operation and maintenance, including the collection of fees to pay for the cost of spare parts and labor. An initial reserve fund representing the membership fees of beneficiaries will be collected and deposited in a bank.

(4) Upon approval of such request, the Association will mobilize its project team to assist project staff in undertaking the following:

a) Conduct of community study (barangay diagnostics)
b) Identification of the alternative sites available where the deep well and shallow well would be installed.
c) Negotiation for written permits granting use of land and right of way where the wells would be put up.
d) Negotiation with qualified local contractor who can undertake well drilling

(5) Monitoring Activities: During this stage, the Association will submit a progress report to the Municipal Sector Liaison (MSL) indicating the status of project planning and preparation. The report will include such information as the composition and membership of the PTA (BWSA), scope of project to be implemented, project specifications, work plan and schedule, and financial arrangement (if any),

6.2. Construction Phase (Project Implementation)

(1) During construction of facilities, the BWSA has to assign team/s which shall coordinate and monitor the implementation of the project.

(2) Beneficiaries could provide labor during well construction, pump installation and preparation of drains and soak way pits.

(3) In the construction of individual household toilets, the Association could encourage "bayanihan"" system where members provide free and voluntary assistance to other

members in undertaking activities such as excavation of pits and construction of latrine structures.

(4) The community may contribute materials which are locally available for the construction of the facilities. These may take in the form of gravel and sand, roofing sheets, timber or tools for excavation.

(5) The residents should provide information which may be necessary to expedite the construction of the facility.

(6) Monitoring Activities: The BWSA will have a meeting discussion with MSL on the status of construction project.

6.3. Post Construction (Operation and Maintenance)

(1) BWSA should monitor whether the contractors conduct proper disinfecting of the wells immediately after their completion. Also, the association shall request PHO to conduct periodic surveillance and, if necessary, disinfection of the wells.

(2) The Association shall monitor whether the facilities are properly maintained or not.

(3) Beneficiaries should be involved directly in the operation and maintenance of the facilities. They shall practice to keep the premises of the water facility clean and free from spilt water which may cause contamination of the source. Breakdown should be reported immediately to the BWSA so that repair work must be undertaken immediately.

(4) Operation and maintenance cost will be shouldered by the beneficiaries through their membership fees. The association shall collect monthly contribution and deposit them in the bank. Expenses for repairs and improvement as well as spare parts commonly used will also be purchased out of this fund.

(5) The member-beneficiaries should provide labor in the repair and rehabilitation of the facilities.

(6) The association shall adopt a disaster response program which focuses on securing facilities and in providing water supply in times of emergencies.

(7) Water quality surveillance should be a priority activity of the BWSA. Members should see to it that regular water examination is being done by the Rural Health Unit or PHO. Results will be furnished to the BWSA.

(8) Maintenance of individual household toilets should be the responsibility of the owners.

(9) Monitoring Activities: The BWSA is required to submit annual reports to MSL. The first report should be submitted immediately upon the completion of the project. It should include well log data, number of sanitary toilets constructed, overall cost (both for water system and toilets), project modification (if any), and timetable of maintenance activities. Succeeding reports will indicate breakdowns and repairs, expenses, problems encountered in operating the system and, if possible, recommendations, and other relevant data.

7. Project Elements

7.1. Health and Hygiene Education

(1) Health and hygiene education should be launched as early as the start of the project and should be sustained. In fact, it will be a good entry point in discussing existing water and sanitation issues in the community.

(2) The MSL, in cooperation with the Rural Health Unit should conduct a continuous health education campaign in the project area. Special presentations can also be done by the RHU staff during meetings of the group. Significantly, the facilities to be established would provide more opportunities to discuss hygiene practices and identify areas for improvement.

(3) This local effort can be reinforced by multi-media campaign being organized by higher institutions such as the DOH and the government's information agency.

(4) The barangay elementary school adopt DEC's Teacher-Child-Parent Approach which involves parents and other members of the family in teaching practical lessons in hygiene education.

7.2. Human Resources Development and Training

(1) BWSA members, including women, will be trained on basic hand pump operation and maintenance; simple tasks like replacing rubber washer, etc. Workshops and on-the-job training will be conducted by the municipal government.

(2) Qualified young members will be enrolled at the National Manpower and Youth Council Training Center which conducts regular training course on Plumbing. Internship of graduates can be arranged with the nearest water district or with the municipal/provincial government.

7.3. Women's Involvement

1) The female members of BWSA shall be involved from the start of the project and on major decisions like the selection of sites for the wells and the collection of fees/contributions.

2) Women should be involved in operation and maintenance of the facilities, doing simple tasks. They should therefore be included in training programs conducted for the members.

3) The women sector must take the lead in health and hygiene education activities in the community.

Community Development Model Study (Level II)

Model Site: Barangay San Luis, Mamburao, Occidental Mindoro

1. Socio-Economic Profile of the Model Site

The proposed project site comprises the five sitios of Barangay San Luis, namely: Sitio Proper, Balete, Matamayor, Subing and Taguan covering an aggregate area of 2094.40 hectares. The topography of the barangay varies from flat to rolling. It is about 5 kilometers from the town proper of Mamburao. Most of the houses are made of bamboo and nipa which are clustered from six to ten. The population of the study area is 1,300 and the number of households is 146. Average size of a household ranges from 8 to 10 persons. About 5% of the residents belong to the minorities.

Only about 5% of the residents are professionals who are mostly engaged in commerce, education and agriculture. Fifty-five (55%) percent are high school graduates. The annual average household income ranges from ₱ 8,000 to ₱ 15,000 derived mostly from agricultural production. Only 5% are engaged in non-agricultural economic activity including: fishing, retailing, poultry and hog raising. Some are gainfully employed in the city. The commercial activities found in the area are small retail stores (capitalization of ₱ 3,000.00) and a number of small rice trading.

The barangay has a primary school and a health center which is visited weekly by a nurse and a midwife. Health situation in the study area is very poor. Common causes of morbidity are diarrhea, tuberculosis, malaria and malnourishment. However, mortality rate is only 1%. The Barangay Council meets twice a month. There is also a Parents-Teachers Association (PTA) and a Farmers Cooperative. These associations are actively participated in by the residents of the barangay.

2. Present Water Supply/Sanitation Situation

The residents generally depend on shallow wells for their water supply. Those who do not have private wells get their water from neighbors. There are few public shallow wells in the area and most of the time they are not functional due to lack of maintenance.

Only about 25% have toilet facilities and there is no existing public toilet.

3. Assessments

3.1. Water Sources

The residents of the 5 sitios do not get adequate supply of water. The shallow wells, their main source, are not adequately protected against contamination. Most of the residents fetch water from distant sources, exposing the water from further contamination. This also consumes much time and energy of those hauling water especially the women and children who are doing most of the job.

3.2. Sanitation Facilities

Most of the residents do not have individual sanitary toilets. They dump their wastes to open spaces.

3.3. Health

The lack of adequate water and sanitary facilities contribute to high incidence of water-related diseases in the area. In fact, diarrhea is the leading cause of illness in the community.

3.4. Institutional Analysis

(1) The barangay residents express much concern over the deteriorating health condition in the area such that they clamor for the immediate construction of water and sanitation facilities.

(2) Two community organizations - the Farmers Cooperative and the Parents-Teachers Association - are active in Barangay San Luis but both don't deal with the water and sanitation issues in the area.

(3) Significantly, the residents are willing to organize themselves into a water association while officers of the existing local groups are ready to assume lead role in the water association

4. Future Development Needs

4.1. Potential Source and Level of Service

(1) There is a spring located in the project site, at an elevation of about 40 meter and a distance of about 1 km from the proposed service area which could be the potential source for the

project. Water quality seems to be acceptable although further investigation of the quantity is needed. Stream flow is minimal during dry season and the water is currently used for irrigation.

A detailed topographic survey of the source area extending at least 200 to 500 meters in radius is needed to provide information to protect the intake from flooding and contamination and for the design of the spring box. Technical evaluation shall also be made such as flow rate. The pipeline which will have to cross some rice fields must be deep enough to preclude being plowed up. Enlargement of the eye of the spring shall be done to increase the quantity of water yield. Construction of a spring box around the spring shall be done to protect the source from contamination.

(2) Level II water system shall be an appropriate for the study area. This will consist of a pipe distribution system from the source to the communal faucets, the number of which shall be determined by the residents.

(3) All families shall be encouraged to construct individual household toilets.

4.2. Identification of Community Organization

A Rural Water and Sanitation Association (RWSA) could be the most logical organization to implement water and sanitation project in the area. It will be formed to operate and maintain the proposed water system. The leaders of the farmers cooperative and the PTA will form the nucleus of the RWSA officers. Membership will be open to all residents (usually the family head) who would-be users of the proposed system.

5. Capital and O&M Funds

5.1. Water System

Capital cost required to construct Level II system is estimated at ₱2,472,273.00. Of this amount, cost of materials is about 70%, while labor cost accounts for 30%. The capital cost will be shouldered by the RWSA through a loan from the municipal/provincial governments or other lending institutions (LWUA, cooperatives, rural banks, etc.). To bring down the cost of the system, the community should provide free labor in the construction of the system. They can assist in excavations, pipe laying and installation of faucets. The water charges to be collected

by the association from the water consumers will cover administrative cost of RWSA, costs of system operation and maintenance and loan amortization.

5.2. Sanitary Toilets

Capital cost of individual household toilets shall be shouldered by the homeowners. If a family could not put up the initial capital cost, the RWSA can make arrangements for the extension of loan from various institutions. Policies on interest rates and repayment scheme adopted by the lending institutions shall be adopted. The Association will be the guarantor and the collector for this loan.

5.3. Operation and Maintenance

Water charges to be collected by the Association from the water consumers will cover costs of operation and maintenance. Generally, the Association should raise 1% of the total capital cost annually for the system's O&M.

6. Community Involvement

6.1. Pre-Construction (Project Preparation and Planning)

(1) The barangay residents shall initiate the holding of a meeting to discuss their water and sanitation problems and needs. The officers of the farmers cooperative and the PTA shall facilitate the discussion.

(2) The people shall organize the RWSA to manage, operate and maintain the water system. Members of the RWSA shall be the main users of the water system. The Association shall appoint committees which shall be responsible for all the undertakings of the cooperative.

(3) The members shall pay their initial membership dues .

(4) The RWSA shall request the municipal/provincial government for technical assistance in determining the scope of water and sanitation project they shall undertake.

(5) The Association shall submit a request to the municipal/provincial government or other lending institutions (such as commercial banks and cooperatives) for the necessary loan to finance the project. The request is accompanied by a commitment sheet signed by the

beneficiaries indicating their willingness to participate in the project, assume the responsibility for the maintenance, including the collection of fees to pay for the cost of operation and maintenance and for loan amortization. A reserve fund representing the initial contribution/membership fee of beneficiaries will be collected and deposited in a bank.

(6) As soon as there's fund available, the RWSA shall mobilize its own team to assist the municipal/provincial team in:

a) undertaking community study (barangay diagnostics)
b) selection of water source and location of communal faucets
c) detailed planning and as a baseline for evaluation (including technical and social aspects as well as knowledge, attitudes, practices related to water, sanitation, and hygiene).
d) negotiation for the acquisition of the right of way
e) establishing the technology, level and design of the water system.
f) short listing of local contractors for the conduct of bidding

(7) The members shall also attend all briefings and presentations related to the project.

(8) Monitoring: During this stage, the RWSA shall submit a progress report to the Municipal Sector Liaison (MSL) indicating the status of project planning and preparation. The report will include, among others, the scope of project to be implemented, project specifications, work plan and schedule, delineation of responsibilities, and financial arrangements.

6.2. Construction Phase (Project Implementation)

(1) The beneficiaries shall provide self-help labor in the following activities:

a) clearing of the spring premises
b) construction of intake box and drainage around the spring
c) digging and pipe laying
d) installation of public faucets and meter
e) preparation of drains and soak way pits
f) excavation of pits and construction of latrine structures

(2) Granting of right of way for pipe laying, construction of pump stations and for installation of other necessary facilities

(3) Dissemination of information on the on-going construction

(4) Provision of access to contractors

(5) The association shall meet with the beneficiaries to set water fees to generate fund that will be used for the system's loan repayment and for operation and maintenance.

(6) Monitoring Activities: The association will submit progress reports to MSL indicating the status of the project. It contains information such as modifications, project team composition, people's contributions (cash, materials and labor), etc.

6.3. Post Construction (Facility Operations)

(1) The RWSA should monitor the practices of the users to ensure proper handling of the water and sanitation facilities as well as prudent use of water. Every member-consumer should also cooperate with RWSA in the protection of communal faucets/meters from loss or damage. Any member who would cause the loss or damage of facilities shall shoulder all expenses to be incurred in replacing and/or repairing of said facilities.

(2) The Association should assign person/s to regularly monitor the performance of the water source and public faucets. Water samples should be collected and tested in cooperation with the PHO staff.

(3) The members should pay their membership dues/water consumption charges regularly in order for the association maintain good service of the water system.

(4) Maintenance of individual household toilets shall be the responsibility of the owners.

(5) Monitoring Activities: The association should submit quarterly reports to MSL. The first post-construction report should be submitted immediately upon the completion of the project. It should indicate scope of work (water system) such as: spring development undertaken, number of communal faucets installed, length and diameter of pipes laid, sanitary toilets constructed, modifications (if any), overall cost (both for water system and toilets), and timetable of maintenance activities. Succeeding reports will indicate

breakdowns and repairs, expenses, problems encountered in operating the system and, if possible, recommendations, and other relevant data.

7. Project Elements

7.1. Training and Hygiene Education

(1) To create awareness among the residents on the value of safe water and sanitary toilet facilities, the RWSA, assisted by MSL, shall conduct hygiene education in the project area. The campaign should be launched as early as the commencement of the project and should be sustained.

(2) The hygiene education conducted by RWSA could, in fact, be the entry point for the improvement of water and sanitation systems in the project area. Moreover, the new facilities shall provide more opportunities to discuss hygiene practices and identify areas for improvement.

(3) The barangay elementary school adopt DEC's Teacher-Child-Parent Approach which involves parents and other members of the family in teaching practical lessons in hygiene education.

(4) The efforts of the MSL and the school shall be reinforced by multi-media campaign being implemented by other government institutions such as the DOH and the Philippine Information Agency.

7.2. Human Resources Development and Training

(1) Members of the Association, including women shall be trained on:

a) basic utility operation and maintenance
b) simple tasks like replacing rubber washer
c) leak detection and repair
d) meter reading,

(2) Workshops and on-the-job training will be conducted by the municipal/provincial government.

(3) Qualified young members will be enrolled at the National Manpower and Youth Council Training Center which conducts regular training course on water system operation. Internship of graduates can be arranged with the nearest water district or the municipal waterworks system.

7.3. Women's Involvement

1) The RWSA should campaign for female members and give them equal opportunity in the Board and in the management of the Association. They (the women) must be involved from the start of the project and on major decisions like the selection of sites for the wells and faucets and in the collection of fees/contributions.

2) Women should be involved in operation and maintenance of the facilities, doing simple tasks. They should therefore be included in training programs conducted for the members.

3) The women sector must spearhead in health and hygiene education campaign in the community.

Community Development Model Study (Level III)

Model Site: Sta. Cruz, Occidental Mindoro

1. Socio-Economic Profile of the Model Site

The study area covers three barangays in Sta. Cruz, namely: Mulawin, Poblacion I and Poblacion II. Sta. Cruz is a fifth class and the second largest municipality of the province covering an area of 68,140 hectares or 11.6% of the total land area of Occidental Mindoro. The terrain is generally flat. It is 27 kms. southeast of Mamburao. Total population in the study area is 4,540 comprising 906 households. A large majority of the prominent residents come from the old families of Lubang Island and the town of Paluan. Average household size ranges from five to six persons.

Agriculture is the major economic activity in the area. Only 6% of the residents are engaged in fishing. Other minor sources of income include gathering of forest products (like nito, rattan, buri and bamboo). Commercial establishments, including variety stores, agricultural suppliers and rice mills, are found in the area. Poultry, livestock and some fish ponds also thrive in the area. Bamboo and rattan industry can also be found.

There is a primary and secondary school in the study area. A 10-bed capacity community hospital serves the municipality. There is also one Rural Health Unit, a Botika sa Barangay and a health center in every barangay. Two doctors are assigned in the hospital.

The Sanggunian Bayan meets weekly. Various sub-committees have been formed to attend to the different priority services. There are some NGOs in the area, including the PTA, the Youth Club and the South Luzon Jurisdictional Conference (SLJC).

2. Present Water Supply/Sanitation Situation

The municipality of Sta. Cruz does not have a waterworks system. The residents depend on shallow wells or springs as their sources of potable water. Some of these sources, especially the shallow wells, provide unreliable water quality. However, the MPDC reports minimal cases of health problems encountered. Diarrhea and other water-borne related diseases break out only during rainy season.

About one-third of the total population have toilet facilities. Some 300 sanitary latrines will be installed from the FW4SP project.

3. Assessment

3.1. Water Sources

The present sources do not provide adequate water supply to the residents in the study area. The main sources are shallow wells and spring but these are no provision for protection works to avoid contamination.

3.2. Sanitation Facilities

Majority of the households have no sanitary toilets although the government is presently implementing a project aimed at constructing additional 300 household toilets in the area.

3.3. Health

The health situation in the study area is comparatively better than the rest of barangays in the municipality although some cases of water-related diseases have been recorded especially during rainy season. This can be attributed to contamination of water sources, improper handling and storage of water and lack of sanitation facilities.

3.4. Institutional Analysis

There is no existing waterworks system nor community-based organizations that implement water and sanitation programs. There are few non-government organizations (NGOs) but water and sanitation is not included in their priority programs. The residents, as well as the barangay councils involved, are not yet inclined in mobilizing the people for this purpose.

4. Future Development Needs

4.1. Potential Source and Service Level

Recommended source of water for the proposed water system is deep well. At present, there are no deep wells existing in the area, but good aquifer may be expected with the alluvium deposits. Deep wells should be constructed 1 km or more away from the seashore to avoid salt water intrusion and should be located upstream. Depth of the well should be more than 20 meters. A

complete topographic and/or hydrographic survey is needed around the location of the proposed well to indicate location of existing wells and/or boreholes including surfaces or subsurface geologic features.

Another potential source of water for the proposed water system is a spring located 7 kms. from the poblacion with an elevation difference of 30 to 40 meters. The estimated flow of the spring is about 6 liters per second. A topographic map extending at least 200 meters in radius from the spring site will be needed to provide information on the protection of the intake box from flooding and contamination and on the design of water collection works.

Level III (individual house connections) can be a viable water system in the study area because of the density of the houses.

4.2. Identification of Community Organization

As a pre-requisite to the development of the water and sanitation facilities in the area, a community organization should be appointed by the residents. In Bgys. Mulawin, Poblacion I and Poblacion II, there is no existing organization which can assume the responsibility of implementing Level III project. As such, there is a need for the residents of the three barangays to get together and form an organization. Based on preliminary interviews with the people, the formation of a Rural Waterworks and Sanitation Association (RWSA) is a better alternative organization in the area.

5. Capital and O&M Funds

5.1. Water System

Capital cost required to construct the Level III system for the study area shall be determined after the conduct of feasibility study and detailed design. The capital cost will be shouldered by the Rural Waterworks and Sanitation Association through a loan from the municipal/provincial government or other sources such as LWUA and commercial banks. Water charges will be collected from the consumers to cover the cost of operation and maintenance, and for loan amortization.

5.2. Individual Sanitary Toilets

Capital cost of household toilets shall be shouldered by the homeowners. If a member could not put up the initial capital cost, the Association can extend loan to the member, terms of payment of which shall be decided by the cooperative.

6. Community Involvement

6.1. Pre-Construction (Project Planning and Preparation)

(1) The residents of the three barangays shall initiate the move for the holding of a general assembly-meeting. The Barangay Councils of concerned areas, in coordination with the municipal/provincial government, can facilitate the meeting. The people shall discuss the water and sanitation problems and needs in the community and decide among themselves the action that will be taken to solve the present problems and answer their needs as far as water and sanitation are concerned.

(2) The people shall organize the RWSA to assume the management, operation and maintenance of the water supply system. Members of the RWSA shall be the main users of the water supply system. The Association shall elect its officers and a manager who will supervise the operation of the system. It shall also appoint committees which shall be responsible for all the undertakings of the Association.

(3) The members shall pay their initial membership dues .

(4) The Association shall request the municipal/provincial government or other sector agencies to provide assistance in determining the scope of water and sanitation project they shall undertake.

(5) The Association submits a formal request to the municipal and/or provincial government for the necessary financial loan in undertaking the project. The request is accompanied by a commitment sheet signed by the beneficiaries indicating their willingness to participate in the project, assume the responsibility for the maintenance, including the collection of fees to pay for the cost of operation and maintenance and for loan amortization. A reserve fund representing the initial contribution/membership fee of beneficiaries will be collected and deposited in a bank.

(6) Upon approval the loan, the Association will mobilize teams to assist the municipal/ provincial or other supporting staff in:

a) conducting feasibility studies

b) negotiation for the acquisition of the right of way

c) design of the system

d) project bidding

e) project mobilization

(7) The members shall also attend all briefings and presentations related to the project

(8) Monitoring: During this stage, the Association shall submit a progress report to the Municipal Sector Liaison (MSL) indicating the status of project planning and preparation. The report will include, among others, the scope of project to be implemented, project specifications, work plan and schedule, delineation of responsibilities, and financial arrangements.

6.2. Construction (Project Implementation)

(1) Since the construction of the water system will be undertaken by a qualified contractor, the direct involvement of the residents shall be limited to the following:

(a) Granting of right of way for pipe laying, construction of pump stations and installation of other necessary facilities

(b) Dissemination of information on the construction activities

(c) Compliance with new road traffic routes

(d) Provision of access to contractors

(e) Monitoring of inconveniences caused by the construction

(f) Early application for water connection

(2) Monitoring: The contractor, through the authority (MSL and/or others) will submit to the Association progress reports on the status of the construction project. The report shall include any modification, problems being encountered, and possible solutions.

6.3. Post Construction (Operation and Maintenance)

(1) The facilities shall be operated and maintained by highly-trained personnel and technicians to be assigned by the RWSA. However, the users should participate in the operation and maintenance of the systems through the following:

(a) Paying of water bills on time

(b) Reporting of water leaks at the main pipeline, illegal connections and tampering of water meters

(c) Giving access to meter readers

(d) Conservation of water

(e) Campaign for more service connections

(f) Monitoring of water quality

(g) Attending at association meetings and other activities

(h) Safe disposal of waste water

(i) Dissemination of health and hygiene information

(2) Individual household toilets shall be the responsibility of the owners.

(3) Monitoring Activities: The Association shall submit quarterly reports to the MSL. The first post-construction report should be submitted immediately upon the completion of the project. It should indicate scope of work, sanitary toilets constructed, modifications (if any), overall cost (both for water system and toilets), and timetable of maintenance activities. Succeeding reports will indicate number of connections, breakdowns and repairs, expenses, problems encountered in operating the system and, if possible, recommendations, and other relevant data.

7. Project Elements

7.1. Training and Hygiene Education

(1) Health and hygiene education should be launched as early as the initial planning of the project and should be sustained. In fact, it would be a good entry point in discussing existing water and sanitation issues in the community prior to the formation of the association.

(2) The Municipal Sector Liaison, together with the Rural Health staff should conduct a continuous health education campaign in the barangay. Special presentations can also be

done by the Rural Health Unit (RHU) staff during meetings of the group. Significantly, the facilities to be established would provide more opportunities to discuss hygiene practices and identify areas for improvement.

(3) This local effort can be reinforced by multi-media campaign being organized by higher government institutions such as the DOH and the Philippine Information Agency to be coordinated by the municipal/provincial staff.

(4) The primary schools in the three barangays shall adopt DEC's Teacher-Child-Parent Approach which involves parents and other members of the family in teaching practical lessons in hygiene education.

7.2. Human Resources Development and Training

(1) Training and human resource development programs shall be directed to those who would manage , operate and maintained the water systems. The Board of Directors, Management and staff of the RWSA shall be sent to the provincial government/other relevant central government agencies to attend basic and advance training programs such as policy making, financial management, systems design, construction supervision, among others.

(2) Qualified young members and residents of the barangays will also be enrolled at the National Manpower and Youth Council Training Center which conducts water system-related courses. Internship of graduates can be arranged with the municipal/provincial government.

7.3. Women's Involvement

(1) The Association should campaign for female members and give them equal opportunity in the Board and in the management of the system. They (the women) must be involved from the start of the project and their recommendations must be considered.

(2) Women should be involved in operation and maintenance of the facilities and allowed to simple repair jobs. They should therefore be included in training programs conducted for the members.

(3) The women sector must spearhead in health and hygiene education campaign in the community.

10. COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT

10.2 Assumptions for Cost Estimates

(1) Unit Construction Cost

Table 10.2.1 Unit Cost of Level I (Deep Well - 40m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,300
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	11	pcs.	2,625	28,875
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,719	2,719
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,313	8,626
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 200mm borehole	40	m	1,100	44,000
3. Freight Cost (7% of Materials)		L.S.		2,815
Sub-Total of B				**87,035**
C. Well Development		L.S.		**5,000**
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,000	9,000
(2) 63mm x 6m GI Pipe with coupling	6	pcs.	1,706	10,236
(3) #10 Sieved Gravel	0.7	cu.m	870	609
(4) Coarse Sand	1	cu.m	304	304
(5) Cement for Sanitary Seal	4	bags	117	468
(6) Pump Base and Platform				
1) Cement	4	bags	117	468
2) Gravel	2	cu.m	385	770
3) Sand	1	cu.m	304	304
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	250	250
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	45	270
6) Nail	1	kg.	32	32
Sub-Total of D-1				22,711
2. Labor (40% of D-1.)		L.S.		9,084
3. Freight Cost (7% of Materials)		L.S.		1,590
Sub-Total of D				**33,385**
E. Indirect Cost				
Profit (10% of A, B, C & D)		L.S.		12,872
VAT (14% of Profit & Labor)		L.S.		9,234
Sub-Total of E				**22,106**
Total of Construction Cost (A+B+C+D+E)				**150,826**
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,000
2. Construction Supervision		L.S.		2,000
3. Water Quality Analysis		L.S.		1,088
Sub-Total of F				**6,088**
GRAND TOTAL				**156,914**
SAY				**156,900**

Note: L.S. - Lump Sum
Source: DPWH standard price in 1994
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.2 Unit Cost of Level I (Deep Well - 80m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,300
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	24	pcs.	2,625	63,000
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,719	2,719
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,313	8,626
2. Labor, Fuel, Lubricant and others				
Well Drilling for 80 m depth at 200mm borehole	80	m	1,100	88,000
3. Freight Cost (7% of Materials)		L.S.		5,204
Sub-Total of B				**167,549**
C. Well Development		L.S.		5,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,000	9,000
(2) 63mm x 6m GI Pipe with coupling	8	pcs.	1,706	13,648
(3) #10 Sieved Gravel	1.6	cu.m	870	1,392
(4) Coarse Sand	1	cu.m	304	304
(5) Cement for Sanitary Seal	4	bags	117	468
(6) Pump Base and Platform				
1) Cement	4	bags	117	468
2) Gravel	2	cu.m	385	770
3) Sand	1	cu.m	304	304
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	250	250
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	45	270
6) Nail	1	kg.	32	32
Sub-Total of D-1				26,908
2. Labor (40% of D-1.)		L.S.		10,762
3. Freight Cost (7% of Materials)		L.S.		1,883
Sub-Total of D				**39,551**
E. Indirect Cost				
Profit (10% of A, B, C and D)		L.S.		21,540
VAT (14% of Profit & Labor)		L.S.		16,842
Sub-Total of E				**38,382**
Total of Construction Cost (A+B+C+D+E)				**253,782**
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,000
2. Construction Supervision		L.S.		2,000
3. Water Quality Analysis		L.S.		1,088
Sub-Total of F				**6,088**
GRAND TOTAL				**259,870**
SAY				**259,900**

Note: L.S. - Lump Sum
Source: DPWH standard price in 1994
Unit Cost: Adjusted to 1995 Price level.

Table 10.2.3 Unit Cost of Level I (Deep Well - 120m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		**L.S.**		**3,300**
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	37	pcs.	2,625	97,125
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,719	2,719
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,313	8,626
2. Labor, Fuel, Lubricant and others				
Well Drilling for 120 m depth at 200mm borehole	120	m	1,100	132,000
3. Freight Cost (7% of Materials)		L.S.		7,593
Sub-Total of B				**248,063**
C. Well Development		**L.S.**		**5,000**
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,000	9,000
(2) 63mm x 6m GI Pipe with coupling	15	pcs.	1,706	25,590
(3) #10 Sieved Gravel	2.5	cu.m	870	2,175
(4) Coarse Sand	1	cu.m	385	385
(5) Cement for Sanitary Seal	4	bags	117	468
(6) Pump Base and Platform				
1) Cement	4	bags	117	468
2) Gravel	2	cu.m	385	770
3) Sand	1	cu.m	304	304
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	250	250
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	45	270
6) Nail	1	kg.	32	32
Sub-Total of D-1				39,712
2. Labor (40% of D-1.)		L.S.		15,885
3. Freight Cost (7% of Materials)		L.S.		2,780
Sub-Total of D				**58,377**
E. Indirect Cost				
Profit (10% of A, B, C and D)		L.S.		31,474
VAT (14% of Profit & Labor)		L.S.		25,110
Sub-Total of E				**56,584**
Total of Construction Cost (A+B+C+D+E)		**L.S.**		**371,324**
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,000
2. Construction Supervision		L.S.		2,000
3. Water Quality Analysis		L.S.		1,088
Sub-Total of F				**6,088**
GRAND TOTAL				**377,412**
SAY				**377,400**

Note: L.S. - Lump Sum
Source: DPWH standard price in 1994
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.4 Unit Cost of Level I (Deep Well Rehabilitation)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		**L.S.**		**3,300**
B. Well Rehabilitation				
1. Materials				
(1) Cylinder Pump Set	1	set	9,000	9,000
(2) Cement for Surface Sealing	4	bags	117	468
(3) Pump Base and Platform				
1) Cement	4	bags	117	468
2) Gravel	2	cu.m	385	770
3) Sand	1	cu.m	304	304
4) Plywood (4' x 8' x 1/4")	1	pc.	250	250
5) Form Lumber (2" x 3" x 6")	6	pcs.	45	270
6) Nail	1	kg.	32	32
Sub-Total of B-1				11,562
2. Labor (40% of B-1)		L.S.		4,625
3. Freight Cost (7% of Materials)		L.S.		809
Sub-Total of B				**16,996**
C. Well Development		**L.S.**		**6,500**
D. Indirect Cost				
Profit (10% of A, B & C)		L.S.		2,680
VAT (14% of Profit & Labor)		L.S.		1,933
Sub-Total of D				**4,613**
Total of Construction Cost (A+B+C+D)				**31,409**
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		1,100
2. Supervision		L.S.		650
3. Water Quality Analysis		L.S.		1,088
Sub-Total of E				**2,838**
GRAND TOTAL				**34,247**
SAY				**34,200**

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.5 Unit Cost of Level I (Shallow Well - 18m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		1,100
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 50mm x 6m PVC Pipe with socket	2	pcs.	813	1,620
(2) 50mm x 3m PVC Pipe with plug	1	pc.	410	410
(3) 50mm PVC Socket	1	pc.	90	90
(4) 50mm x 3m PVC Screen	1	pc.	1,300	1,300
2. Labor, Fuel, Lubricant and others				
Well Drilling for 18 m depth at 150mm borehole	18	m	520	9,360
3. Freight Cost (7% of Materials)		L.S.		240
Sub-Total of B				**13,026**
C. Well Development		L.S.		500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1	set	2,380	2,380
(2) 50mm x 1m GI Pipe (Sch. 40)	1	pc.	75	75
(3) #10 Sieved Gravel	0.1	cu.m	870	87
(4) Coarse Sand	0.07	cu.m	304	21
(5) Cement for Sanitary Seal	1	bag	117	117
(6) Pump Base and Platform				
1) Cement	4	bags	117	468
2) Gravel	1	cu.m	385	385
3) Sand	1	cu.m	304	304
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	250	250
5) Form Lumber (50mm x 75mm x 1,800 mm)	1	pc.	45	45
6) Nail	1	kg.	32	32
Sub-Total of D-1				4,164
2. Labor (40% of D-1.)		L.S.		1,666
3. Freight Cost (7% of Materials)		L.S.		291
Sub-Total of D				**6,121**
E. Indirect Cost				
Profit (10% of A, B, C & D)		L.S.		2,075
VAT (14% of Profit & Labor)		L.S.		1,834
Sub-Total of E				**3,909**
Total of Construction Cost (A+B+C+D+E)				**24,656**
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,000
2. Construction Supervision		L.S.		1,500
3. Water Quality Analysis		L.S.		1,088
Sub-Total of F				**4,588**
GRAND TOTAL				**29,244**
SAY				**29,200**

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.6 Unit Cost of Level II (600 Service Population)

Sheet-1 (Cost: Peso)

Description	Quantity	Unit	Unit	Cost
A. Mobilization/Demobilization		L.S.		3,000
B. Construction of Spring Box				
1. Materials		L.S.		36,300
2. Labor (30% of 1.)		L.S.		10,890
3. Freight Cost (7% of Materials)		L.S.		2,541
Sub-Total of B				**49,731**
C. Installation of Pipelines & Fittings				
1. Transmission Main				
(1) Materials				
1) 63mm dia. PVC Pipe (Class 12.5 with pusher type socket)	330	pcs.	813	268,290
2) 63mm dia. Tee	1	no.	88	88
3) Solvent Cement	26	cans	46	1,196
4) 63mm dia. x 150mm Nipple	3	nos.	136	408
5) 63mm dia. Union Patente	1	pc.	173	173
6) 63mm dia. x 50mm dia. Reducing Socket	2	pcs.	105	210
7) 63mm dia. Elbow (90 deg.)	1	pc.	76	76
8) 63mm dia. Elbow (45 deg.)	1	pc.	75	75
9) 63mm dia. Gate Valve	3	pcs.	763	2,289
Sub-Total of Materials				272,805
(2) Labor (30% of Material Cost)		L.S.		81,842
(3) Freight Cost (7% of Materials)		L.S.		19,096
Sub-Total of Transmission Main				373,743
2. Distribution Pipeline				
(1) Materials				
1) 50mm dia. PVC Pipe (Class 12.5 with pusher type socket)	20	pcs.	450	9,000
2) 38mm dia. PVC Pipe (Class 12.5 with pusher type socket)	30	pcs.	300	9,000
3) 20mm dia. PVC Pipe (Class 40 with pusher type socket)	10	pcs.	100	1,000
4) 13mm dia. x 1 m Stand Pipe	10	pcs.	94	940
5) Solvent Cement	4	cans	46	184
6) Fittings				
a. 50mm dia. x 150mm PVC Nipple	3	pcs.	125	375
b. 32mm dia. x 150mm PVC Nipple	3	pcs.	76	228
c. 13mm dia. x 150mm GI Nipple	40	pcs.	25	1,000
d. 50mm dia. Union Patente	1	pcs.	163	163
e. 32mm dia. Union Patente	2	pcs.	71	142
f. 13mm dia. Union Patente	10	pcs.	25	250
g. 50mm dia. x 32mm dia. Reducing Socket	6	pcs.	90	540
h. 32mm dia. x 20mm dia. Reducing Socket	10	pcs.	70	700
i. 20mm dia. x 13mm dia. Reducing Socket	10	pcs.	55	550
j. 50mm dia. PVC Elbow (90 deg.)	2	pcs.	68	136
k. 13mm dia. GI Elbow (90 deg.)	20	pcs.	13	260
l. 20mm dia. x 13mm dia. Socket Adaptor	10	pcs.	41	410
m. 50mm dia. GI Gate Valve	2	pcs.	671	1,342
n. 32mm dia. GI Gate Valve	2	pcs.	380	760
o. 13mm dia. GI Gate Valve	24	pcs.	230	5,520
p. 13mm dia. Brass Faucet	24	pcs.	41	984
q. 50mm dia. Tee	4	pcs.	130	520
r. 32mm dia. Tee	6	pcs.	110	660
s. Water Meter	24	pcs.	750	18,000
t. Water Meter Box	24	pcs.	1,100	26,400
Sub-Total of Materials				79,064
(2) Labor (30% of Material Cost)		L.S.		23,719
(3) Freight Cost (7% of Materials)		L.S.		5,534
Sub-Total of Distribution Pipeline				108,317
Sub-Total of C				**482,060**

Table 10.2.6 Unit Cost of Level II (600 Service Population)

Sheet-2 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
D. Indirect Cost				
1. Transmission Main				
(1) Profit (10% of C-1)		L.S.		37,374
(2) VAT (10% of Profit and Labor)		L.S.		11,922
2. Source Facilities and Distribution Pipeline				
(1) Profit (10% of A, B, C-2)		L.S.		16,105
(2) VAT (14% of Profit and Labor)		L.S.		7,100
Sub-Total of D				**72,501**
Total Construction Cost (A+B+C+D)				**607,292**
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering and RWSA Formation		L.S.		2,000
2. Supervision		L.S.		12,000
3. Water Quality Analysis		L.S.		1,088
Sub-Total of E				**15,088**
Total Estimated Cost				**622,380**
Unit Cost per Person Served				**1,037**
			Say	1,000

Note: L.S. - Lump Sum
Source: DPWH standard price in 1994
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.7 Unit Cost of Level III (5,000 Service Population)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		**L.S.**		**300,000**
B. Source Development and Storage				
1. Deep Well	1	No.	1,540,000	1,540,000
2. Deep Well Pump	1	No.	550,000	550,000
3. Chlorinator House & Equipment	1	L.S.		440,000
4. Storage Tank (250 cu.m)	1	No.	1,100,000	1,100,000
Sub-Total of B				**3,630,000**
C. Transmission Main				
1. 160mm dia.	500	L.M.	1,120	560,000
Sub-Total of C				**560,000**
D. Distribution Main				
1. 160mm dia.	1,000	L.M.	1,120	1,120,000
2. 110mm dia.	3,000	L.M.	925	2,775,000
3. 90mm dia.	3,000	L.M.	580	1,740,000
4. 75mm dia.	5,000	L.M.	540	2,700,000
Sub-Total of D				**8,335,000**
E. Service Connections	**1,000**	**Nos.**	**1,940**	**1,940,000**
F. Miscellaneous				
1. Vehicle	1	No.	550,000	550,000
2. Office & Workshop Bldg.	1	No.	550,000	550,000
3. Office Equipment		L.S.		100,000
4. Tools and Spare Parts		L.S.		100,000
Sub-Total of F				**1,300,000**
Total Direct Cost (A+B+C+D+E+F)				**16,065,000**
G. Indirect Cost (25% of Direct Cost)		**L.S.**		**4,016,250**
Total Estimated Cost				**20,081,250**
Unit Cost per Person Served				
For New Construction				4,016
			Say	**4,000**
For Expansion of Existing System (Exclude F.)				3,691
			Say	**3,700**

Note: L.S. - Lump Sum
Source: LWUA standard price in 1994
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.8 Unit Cost of Level III (10,000 Service Population)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		300,000
B. Source Development and Storage				
1. Deep Well	1	No.	1,540,000	1,540,000
2. Deep Well Pump	1	No.	550,000	550,000
3. Chlorinator House & Equipment	1	L.S.		440,000
4. Storage Tank (250 cu.m)	1	No.	1,100,000	1,100,000
Sub-Total of B				**3,630,000**
C. Transmission Main				
1. 160mm dia.	500	L.M.	1,120	560,000
Sub-Total of C				**560,000**
D. Distribution Main				
1. 160mm dia.	2,000	L.M.	1,120	2,240,000
2. 110mm dia.	5,000	L.M.	925	4,625,000
3. 90mm dia.	6,000	L.M.	580	3,480,000
4. 75mm dia.	8,000	L.M.	540	4,320,000
Sub-Total of D				**14,665,000**
E. Service Connections	2,000	Nos.	1,940	3,880,000
F. Miscellaneous				
1. Vehicle	1	No.	550,000	550,000
2. Office & Workshop Bldg.	1	No.	550,000	550,000
3. Office Equipment		L.S.		100,000
4. Tools and Spare Parts		L.S.		100,000
Sub-Total of F				**1,300,000**
Total Direct Cost (A+B+C+D+E+F)				**24,335,000**
G. Indirect Cost (25% of Direct Cost)		L.S.		**6,083,750**
Total Estimated Cost				**30,418,750**
Unit Cost per Person Served				
For New Construction				3,042
			Say	3,000
For Expansion of Existing System (Exclude F.)				2,879
			Say	2,900

Note: L.S. - Lump Sum
Source: LWUA standard price in 1994
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.9 Unit Cost of Level III (15,000 Service Population)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		**L.S.**		**300,000**
B. Source Development and Storage				
1. Deep Well	2	No.	1,540,000	3,080,000
2. Deep Well Pump	2	No.	550,000	1,100,000
3. Chlorinator House & Equipment	2	L.S.		440,000
4. Storage Tank (250 cu.m)	2	No.	1,100,000	2,200,000
Sub-Total of B				**6,820,000**
C. Transmission Main				
1. 160mm dia.	1,000	L.M.	1,120	1,120,000
Sub-Total of C				**1,120,000**
D. Distribution Main				
1. 160mm dia.	3,000	L.M.	1,120	3,360,000
2. 110mm dia.	7,000	L.M.	925	6,475,000
3. 90mm dia.	9,000	L.M.	580	5,220,000
4. 75mm dia.	11,000	L.M.	540	5,940,000
Sub-Total of D				**20,995,000**
E. Service Connections	**3,000**	**Nos.**	**1,940**	**5,820,000**
F. Miscellaneous				
1. Vehicle	1	No.	550,000	550,000
2. Office & Workshop Bldg.	1	No.	550,000	550,000
3. Office Equipment		L.S.		100,000
4. Tools and Spare Parts		L.S.		100,000
Sub-Total of F				**1,300,000**
Total Direct Cost (A+B+C+D+E+F)				**36,355,000**
G. Indirect Cost (25% of Direct Cost)		**L.S.**		**9,088,750**
Total Estimated Cost				**45,443,750**
Unit Cost per Person Served				
For New Construction				3,030
			Say	**3,000**
For Expansion of Existing System (Exclude F.)				2,921
			Say	**2,900**

Note: L.S. - Lump Sum

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.10 Unit Cost of Flush Water Sealed with Septic Tank Toilet

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Demolition		L.S.		1,000
B. Earthwork				
1. Materials				
(1) Gravel Fill	1	cu.m.	385	385
Sub-Total of B-1				385
2. Labor				
(1) Excavation	6	cu.m.	119	714
(2) Backfill	2	cu.m.	108	216
(3) Gravel Fill	1	cu.m	141	141
Sub-Total of B-2				1,071
Sub-Total of B				**1,456**
C. Walls & Posts				
1. Materials				
(1) 0.15 x 0.20 x 0.40 Ord. CHB	180	pcs.	6	1,080
(2) Cement	17	bags	117	1,989
(3) Sand	2	cu.m	304	608
(4) Rebars: 12 mm dia. x 6.0 m	5	pcs.	68	340
10 mm dia. x 6.0 m	2	pcs.	49	98
(5) #16 Tie Wire	1	kg.	49	49
(6) Scaffolding:				
10-2" x 4" x 8" (Ord. Lumber)	53	bf.	32	1,696
Sub-Total of C-1				5,860
2. Labor (30% of C-1)		L.S.		1,758
Sub-Total of C				**7,618**
D. Roofing Work				
1. Materials				
(1) GA #26 Corr. GI (L=3.0 m)	3	bd.ft.	274	822
(2) GA #26 Plain GI Flushing	1	pc.	264	264
(3) GA # 24 Plain GI Gutter	1	pc.	264	264
(4) Roof Nails	2	kgs.	44	88
(5) Rafter - 2" x 5 x 10', 4 pcs.	33.33	bd.ft	32	1,067
(6) Purlins - 2" x 2" x 12', 3 pcs.	12	bd.ft	32	384
(7) Wood Cleats - 2" x 2" x 12', 1 pc.	3.33	bd.ft	32	107
(8) Nailers - 2" x 2" x 12', 5 pcs.	20	bd.ft	32	640
2" x 2" x 10', 5 pcs.	20	bd.ft	32	640
(9) Fascia Board - 1" x 12" x 18', 2 pcs.	36	bd.ft	32	1,152
(10) Common Wire Nails (Assorted)	3	kgs.	29	87
(11) Downspout (PVC)				
75 mm dia. x 3.0 m	2	pcs.	81	162
(12) Elbow (PVC) - 75 mm dia.	2	pcs.	15	30
(13) Coupling (PVC) - 75 mm dia.	1	pc.	14	14
Sub-Total of D-1				5,721
2. Labor (30% of D-1)		L.S.		1,716
Sub-Total of D				**7,437**

Table 10.2.10 Unit Cost of Flush Water Sealed with Septic Tank Toilet

Sheet 2 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
E. Plumbing				
1. Materials				
(1) Water Closet	1	set	2,000	2,000
(2) Water line and sanitary fixtures with septic tank		L.S.		6,192
Sub-Total of E-1				8,192
2. Labor (30% of E-1)		L.S.		2,458
Sub-Total of E				**10,650**
F. Carpentry Work				
1. Materials				
(1) Flush Type Door w/Lower Jambs	1	pc.	1,428	1,428
(2) Windows (wooden jalousy) w/Jambs	2	sets	298	596
Sub-Total of F-1				2,024
2. Labor (30% of E-1)		L.S.		607
Sub-Total of F				**2,631**
G. Freight Cost (7% of Materials for B-F excluding indigenous materials)		L.S.		1,225
H. Indirect Cost				
Profit (10% of A - G)		L.S.		3,202
VAT (14% of Profit & Labor)		L.S.		1,514
Sub-Total of H				**4,716**
Total of Construction Cost (A+B+C+D+E+F+G+H)			Say	36,733 36,700

Source: DOH standard price in1993.

Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.11 Unit Cost of Pour Flush with Double Pit Latrine

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Earthwork				
1. Materials				
(1) Gravel Fill	1	cu.m.	385	385
Sub-Total of A-1				385
2. Labor				
(1) Excavation	6	cu.m.	119	714
(2) Backfill	2	cu.m.	108	216
(3) Gravel Fill	1	cu.m.	141	141
Sub-Total of A-2				1,071
Sub-Total of A				**1,456**
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 16 - 2" x 8" x 6' Coco Lumber	128	bd.ft.	8	1,024
(2) 10mm dia x 6.0m Rebar	3	pcs.	49	147
(3) #16 Tie Wire	0.5	kg.	49	25
(4) Cement	10	bags	117	1,170
(5) Sand	1.5	cu.m.	304	456
(6) Gravel	2	cu.m.	385	770
(7) Stone Lining with Mortar		L.S.	1,014	1,014
Sub-Total of B-1				4,606
2. Labor (25% of B-1)		L.S.		1,152
Sub-Total of B				**5,758**
C. Walls & Posts				
1. Materials				
(1) 4 - 4" x 4" x 10' Coco Lumber	53.33	bd.ft.	8	427
(2) 6 - 2" x 3" x 10' Coco Lumber	30	bd.ft.	8	240
(3) 8 - 2" x 3" x 8' Coco Lumber	32	bd.ft.	8	256
(4) 2.0 m x 5.0 m Sawali	2	rolls	357	714
(5) Assorted Nails	6	kgs.	29	174
(6) Bamboo Clips		L.S.	119	119
Sub-Total of C-1				1,930
2. Labor (25% of C-1)		L.S.		483
Sub-Total of C				**2,413**
D. Roofing Work				
1. Materials				
Rafters				
(1) 4 - 2" x 4" x 6' Coco Lumber	16	bd.ft.	8	128
(2) Bamboo Purlins		L.S.	119	119
(3) Nipa Roofing	2	100 pcs./bandle	238	476
Sub-Total of D-1				723
2. Labor (25% of D-1)		L.S.		181
Sub-Total of D				**904**
E. Plumbing				
1. Material				
(1) Toilet Bowl-Squat Type	1	pc.	547	547
(1) 75mm dia x 6.0m PVC Pipe	1	pc.	129	129
Sub-Total of E-1				676
2. Labor (25% of E-1)		L.S.		169
Sub-Total of E				**845**
F. Freight Cost (7% of Materials for B - E excluding Indigenous materials)		**L.S.**		**153**
G. Indirect Cost				
Profit (10% of A - F)		L.S.		1,153
VAT (14% of Profit & Labor)		L.S.		589
Sub-Total of G				**1,742**
Total Construction Cost (A+B+C+D+E+F+G)			**Say**	**13,271** **13,300**

Note: L.S. - Lump Sum

Source: DOH standard price in 1993.

Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.12 Unit Cost of Ventilated Improved Pit Latrine (VIP)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Earthwork				
1. Materials				
(1) Gravel Fill	0.5	cu.m	385	193
Sub-Total of A-1				193
2. Labor				
(1) Excavation	3	cu.m	119	357
(2) Backfill	1	cu.m	108	108
(3) Gravel Fill	0.5	cu.m	141	71
Sub-Total of A-2				536
Sub-Total of A				729
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 8 - 2" x 8" x 6' Coco Lumber	64	bd.ft.	8	512
(2) 10mm dia x 6.0m Rebar	2	pcs.	49	98
(3) #16 Tie Wire	0.5	kg.	49	25
(4) Cement	4	bags	117	468
(5) Sand	0.5	cu.m	304	152
(6) Gravel	0.5	cu.m	385	193
(7) Stone Lining with Mortar		L.S.	1,014	1,014
Sub-total of B-1				2,462
2. Labor (25% of B-1)		L.S.		616
Sub-Total of B				3,078
C. Walls & Posts				
1. Materials				
(1) 4 - 4" x 4" x 10' Coco Lumber	53.33	bd.ft.	8	427
(2) 6 - 2" x 3" x 10' Coco Lumber	30	bd.ft.	8	240
(3) 8 - 2" x 3" x 8' Coco Lumber	32	bd.ft.	8	256
(4) 2.0 m x 5.0 m Sawali	2	rolls	357	714
(5) Assorted Nails	6	kgs.	29	174
(6) Bamboo Clips		L.S.	119	119
Sub-Total of C-1				1,930
2. Labor (25% of C-1)		L.S.		483
Sub-Total of C				2,413
D. Roofing Work				
1. Materials				
Rafters				
(1) 4 - 2" x 4" x 6' Coco Lumber	16	bd.ft.	8	128
(2) Bamboo Purlins		L.S.	119	119
(3) Nipa Roofing	2	100	238	476
Sub-Total of D-1		pcs./bundle		723
2. Labor (25% of D-1)		L.S.		181
Sub-Total of D				904
E. Plumbing				
1. Materials				
(1) 50mm dia PVC Pipe	1	pc.	65	65
(2) Fly Screen		L.S.	50	50
Sub-Total of E-1				115
2. Labor (25% of E-1)		L.S.		29
Sub-Total of E				144
F. Freight Cost (7% of Materials for B-E excluding sand and gravel)		**L.S.**		62
G. Indirect Cost				
Profit (10% of A - F)		L.S.		733
VAT (14% of Profit & Labor)		L.S.		286
Sub-Total of G				1,019
Total of Construction Cost (A+B+C+D+E+F+G)			Say	8,349 8,300

Note: L.S. - Lump Sum
Source: DOH standard price in 1993.
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.13 Unit Cost of School Toilet

Sheet-1 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization and Demobilization		L.S.		5,300
B. Earthwork				
1. Materials				
(1) Gravel Fill	3.00	cu.m	385	1,155
Sub-Total of B-1				1,155
2. Labor				
(1) Excavation	15.88	cu.m	119	1,890
(2) Backfill	4.97	cu.m	108	537
(3) Gravel Fill	3.00	cu.m	141	423
Sub-Total of B-2				2,850
Sub-Total of B				**4,005**
C. Concrete Work				
1. Materials				
(1) Cement	61.00	bags	117	7,137
(2) Sand	4.00	cu.m	304	1,216
(3) Gravel	8.00	cu.m	385	3,080
(4) Rebars: 12mm dia x 6m	38.00	pcs.	68	2,584
10mm dia x 6m	57.00	pcs.	49	2,793
(5) #16 Tie Wire	8.00	kgs.	49	392
(6) Formworks:				
1/4" Plywood	6.00	pcs.	405	2,430
2"x2"x10" (Coco Lumber)	200.00	bd.ft.	8	1,600
Sub-Total of C-1				21,232
2. Labor (30% of C-1)		L.S.		6,370
Sub-Total of C				**27,602**
D. Masonry Work				
1. Materials				
(1) 6" CHB	800.00	pcs.	6	4,800
(2) 4" CHB	260.00	pcs.	5	1,300
(3) Cement	97.00	bags	117	11,349
(5) Sand	10.00	cu.m	304	3,040
(6) Rebars: 12mm dia x 6m	30.00	pcs.	68	2,040
10mm dia x 6m	11.00	pcs.	49	539
(7) #16 Tie Wire	4.00	kgs.	49	196
(8) Scaffolding:				
2"x4"x8" = 10 pcs. (Coco Lumber)	53.33	bf.	8	427
Sub-Total of D-1				23,691
2. Labor (30% of D-1)		L.S.		7,107
Sub-Total of D				**30,798**
E. Roofing Work				
1. Materials				
(1) GA #26 Corr. GI (l = 10')	20.00	pcs.	274	5,480
(2) GA #24 Pln. GI Flashing	3.00	pcs.	264	792
(3) GA #24 Pln. GI Gutter (Pre-Fab)	9.00	pcs.	264	2,376
(4) Umbrella Nails 2 - 1/2"	12.00	kgs.	44	528
(5) Rafter - 2"x5"x18' = 5 pcs.	75.00	bf.	32	2,400
(6) Purlins - 2"x2"x12' = 18 pcs.	72.00	bf.	32	2,304
(7) WD Cleats - 2"x2"x10" = 6 pcs.	20.00	bf.	32	640

Table 10.2.13 Unit Cost of School Toilet

Sheet-2 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(8) Nailers - 2"x2"x1012' = 30 pcs.	120.00	bf.	32	3,840
- 2"x2"x10' = 36 pcs.	120.00	bf.	32	3,840
(9) Fascia Board				
1"x12"x12' = 4 pcs.	48.00	bf.	32	1,536
1"x12"x18' = 2 pcs.	36.00	bf.	32	1,152
(10) Wood Plate				
2"x4"x20' = 2 pcs.	26.66	bf.	32	853
(11) 1/4" Thk. Mar. Plywood 4'x8'	14.00	pcs.	29	406
(12) C.W.N. Assorted	15.00	kgs.	29	435
(13) 3" dia x 3m Downspout (PVC)	3.00	pcs.	81	242
(14) 3" dia Elbow (PVC)	2.00	pcs.	15	30
(15) 3"dia Coupling (PVC)	1.00	pcs.	14	14
(16) Ceiling Vent				
1"x1"x8' = 4 pcs.	2.67	bf.	26	69
(17) Screen (1/8"x1/8")	1.00	yd.	81	81
Sub-Total of E-1				27,018
2. Labor (30% of E-1)		L.S.		8,105
Sub-Total of E				**35,123**
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile				
Flush Type Door w/ Louver (.80x2.20)	2.00	sets	1,428	2,856
(2) D - 2 Hollow Core Tanguile				
Flush Type Door (.60x2.10)	1.00	sets	1,071	1,071
(3) D - 3 Louver Door (.60x1.40)	5.00	sets	893	4,465
(4) Door Jambs (Apitong)				
2"x6"x14" = 1 pc.	14.00	bf.	32	448
2"x6"x10" = 2 pcs.	20.00	bf.	32	640
2"x6"x10" = 1 pc.	18.00	bf.	32	576
2"x4"x12" = 5 pcs.	40.00	bf.	32	1,280
(7) Wooden Jalousie Window				
With 5 Blades (.40x.50)	14.00	set	298	4,172
(8) Window Jambs (Apitong)				
2"x6"x16" = 5 pcs.	80.00	bf.	32	2,560
2"x6"x14" = 1 pc.	14.00	bf.	32	448
2"x6"x10" = 1 pc.	10.00	bf.	32	320
(9) Cabinet				
3/4"x4'x8' = 1 pc. (plyboard)	1.00	pc.	774	774
Sub-Total of F-1				19,610
2. Labor (30% of F-1)		L.S.		5,883
Sub-Total of F				**25,493**
G. Tile Work				
1. Materials				
(1) 4 - 1/4"x4 - 1/4" Glazed Tiles	1,950.00	pcs.	4	7,800
(2) 0.10x0.20m Floor Tiles	900.00	pcs.	7	6,300
(3) Cement	4.00	bags	117	468
(4) White Cement	1.00	bag	629	629
Sub-Total of G-1				15,197

Table 10.2.13 Unit Cost of School Toilet

Sheet-3 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
2. Labor (30% of G-1)		L.S.		4,559
Sub-Total of G				**19,756**
II. Plumbing Work				
1. Materials				
(1) Toilet Bowl - Squat Type	3.00	sets	596	1,788
(2) Toilet Bowl-Sit Type	2.00	sets	596	1,192
(3) Lavatory	2.00	sets	845	1,690
(4) 4" dia x 3m PVC San. Pipe	4.00	pcs.	149	596
(5) 3" dia x 3m PVC San. Pipe	7.00	pcs.	84	588
(6) 1 1/ 2" dia x 3m PVC San. Pipe	4.00	pcs.	53	212
(7) 2" dia. x 3m PVC San. Pipe	2.00	pcs.	50	100
(8) 6" x 4" Floor Drain	5.00	pcs.	84	420
(9) 2" dia. Elbow PVC	4.00	pcs.	7	28
(10) 4" dia WYB PVC	2.00	pcs.	25	50
(11) 4" dia. x 3" dia. WYB PVC	12.00	pcs.	30	360
(12) 4" dia. x 2" dia. TEE PVC	2.00	pcs.	31	62
(13) 4" dia. TEE PVC	3.00	pcs.	31	93
(14) 1 1/2" dia. WYB PVC	1.00	pcs.	12	12
(15) 4" dia. Clean Out PVC	3.00	pcs.	35	105
(16) 3" dia. Clean Out PVC	1.00	pcs.	28	28
(17) Faucet	3.00	pcs.	50	150
(18) 3" dia. x 2" dia. WYB PVC	2.00	pcs.	25	50
(19) 1 1/2" dia. Elbow PVC	6.00	pcs.	13	78
(20) PVC Cement	1.00	can	121	121
(21) 2" dia. PVC San. Pipe x 3m	2.00	pcs.	79	158
(22) 4" dia. x 2" dia. TEE	2.00	pcs.	21	42
(23) Check Valve 1 1/2"	1.00	pcs.	182	182
(24) 4" P-Trap	5.00	pcs.	66	330
Sub-Total of H-1				8,435
2. Labor (30% of H-1)		L.S.		2,531
Sub-Total of H				**10,966**
I. Painting				
1. Materials				
(1) Acrylic, Semi Gloss	8.00	gals.	261	2,088
(2) Concrete Sealer	4.00	gals.	206	824
(3) Acri Color: Wood	4.00	gals.	80	320
(4) Enamel, QDE	6.00	gals.	266	1,596
(5) Wood Putty	1.00	gals.	302	302
(6) Paint Thinner	1.00	gals.	60	60
(7) Tinting Color	4.00	pint	40	160
(8) Sand Paper (Assorted)	15.00	pcs.	7	105
(9) Misecellaneous		L.S.	1,000	0
(10) Roof Paint (green, ready-mix)	2.00	gals.	281	562
Sub-Total of I-1				6,017
2. Labor (30% of I-1)		L.S.		1,805
Sub-Total of I				**7,822**

Table 10.2.13 Unit Cost of School Toilet

Sheet-4 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
J. Electrical Work				
1. Materials				
(1) 40 Watts Flourescent Lamp	2.00	sets	255	510
(2) Elect. Wire TW #12	24.00	M	7	168
(3) Elect. Conduit - 1/2" dia x 10'	4.00	pcs.	78	312
(4) Entrance Cap. 1/2" dia	1.00	pc.	29	29
(5) Switch Outlet, Flush Type	2.00	pcs.	39	78
(6) Utility Box 2"x3"	2.00	pcs.	7	14
(7) Porcelain Receptacle 2" dia	2.00	pcs.	7	14
(8) Safety Switch 60A, 250V	1.00	set	490	490
(9) Electrical Tape	1.00	roll	22	22
Sub-Total of J-1				1,637
2. Labor (30% of J-1)		L.S.		491
Sub-Total of J				**2,128**
K. Hardware				
1. Materials				
(1) 3"x3" Butt Hinges (Loose Pin)	10.00	pcs.	15	150
(2) 4"x4" Butt Hinges (Loose Pin)	12.00	pcs.	18	216
(3) Door Lockset (Schlage US)	3.00	pcs.	454	1,362
(4) Barrel Bolt (4")	5.00	pcs.	40	200
(5) Cabinet Pull (4")	5.00	pcs.	7	35
(6) Water Storage Cover				
Checkered Plate 1/4" thick				
1.44x0.645 w/ L bar & flat bar	1.00	set	984	984
0.645x0.633 w/ L bar & flat bar	2.00	set	555	1,110
(7) Padlock	1.00	pcs.	378	378
Sub-Total of K-1				4,435
2. Labor (30% of K-1)		L.S.		1,331
Sub-Total of K				**5,766**
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180.00	pcs.	5	900
(2) Cement	18.00	bags	117	2,106
(3) Sand	1.50	cu.m	304	456
(4) Gravel	1.00	cu.m	385	385
(5) Rebars: 10mm dia x 6m	29.00	pcs.	68	1,972
(6) #16 Tire Wire	2.00	kgs.	49	98
(7) Formworks: Coco Lumber				
2"x3"x10' = 12 pcs.	60.00	bf.	8	480
1/4" plywood ord. 4'x8'	2.00	pcs.	405	810
C.W.N. (Assorted)	2.00	kgs.	29	58
Sub-Total of L-1				7,265
2. Labor (30% of L-1)		L.S.		2,180
Sub-Total of L				**9,445**

Table 10.2.13 Unit Cost of School Toilet

Sheet-5 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
M. Shallow Well (18 depth)				
a. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 63mm x 6m PVC Pipe with socket	2.00	pcs.	813	1,626
(2) 63mm x 3m PVC Pipe with plug	1.00	pc.	410	410
(3) 63mm PVC Socket	1.00	pc.	90	90
(4) 63mm x 3m PVC Screen	1.00	pc.	1,300	1,300
Sub-Total of M-a-1				3,426
2. Labor, Fuel, Lubricant and others				
Well Drilling for 18m depth at 150mm borehole	18.00	m	520	9,360
Sub-Total of M-a				12,786
b. Well Development		L.S.		500
c. Gravel Packing, Installation of Hand-Pump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1.00	set	2,380	2,380
(2) 50mm x 1m GI Pipe (Sch. 40)	1.00	pc.	75	75
(3) #10 Sieved Gravel	0.10	cu.m	870	87
(4) Coarse Sand	0.07	cu.m	430	30
(5) Cement for Sanitary Seal	1.00	bag	117	117
(6) Pump Base and Platform				
1) Cement	4.00	bags	117	468
2) Gravel	1.00	cu.m	385	385
3) Sand	1.00	cu.m	304	304
4) Plywood (1,200mm x 2,400mm x 6mm)	1.00	pc.	405	405
5) Form Lumber (50mmx75mmx1,800mm)	1.00	pc.	45	45
6) Nail	1.00	kg.	29	29
Sub-Total of M-c-1				33,823
2. Labor (40% of M-c-1)		L.S.		13,529
Sub-Total of M-c				47,352
Sub-Total of M				60,638
N. Freight Cost (7% of Materials for A - M excluding sand and gravel)		L.S.		11,396
O. Indirect Cost				
Profit (10% of A - N)		L.S.		25,624
VAT (14% of Profit & Labor)		L.S.		11,531
Sub-Total of O				37,155
Total of Construction Cost (A to O)				293,393
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,000
2. Construction Supervision		L.S.		1,500
Sub-Total of P				3,500
GRAND TOTAL				296,893
			Say	296,900

Source: DOH standard price in 1993.
Unit Cost: Adjusted to 1995 Price Level.

Table 10.2.14 Unit Cost of Public Toilet

Sheet-1 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization and Demobilization (2.4% of B - M)		**L.S.**		**6,400**
B. Earthwork				
1. Materials				
(1) Gravel Fill	3.00	cu.m	385	1,155
Sub-Total of B-1				1,155
2. Labor				
(1) Excavation	15.88	cu.m	119	1,890
(2) Backfill	4.97	cu.m	108	537
(3) Gravel Fill	3.00	cu.m	141	423
Sub-Total of B-2				2,850
Sub-Total of B				**4,005**
C. Concrete Work				
1. Materials				
(1) Cement	61.00	bags	117	7,137
(2) Sand	4.00	cu.m	304	1,216
(3) Gravel	8.00	cu.m	385	3,080
(4) Rebars: 12mm dia x 6m	38.00	pcs.	68	2,584
10mm dia x 6m	57.00	pcs.	48	2,736
(5) #16 Tie Wire	8.00	kgs.	48	384
(6) Formworks:				
1/4" Plywood	6.00	pcs.	405	2,430
2"x2"x10" (Coco Lumber)	200.00	bd.ft.	8	1,600
Sub-Total of C-1				21,167
2. Labor (30% of C-1)		L.S.		6,350
Sub-Total of C				**27,517**
D. Masonry Work				
1. Materials				
(1) 6" CHB	800.00	pcs.	6	4,800
(2) 4" CHB	260.00	pcs.	5	1,300
(3) Cement	97.00	bags	117	11,349
(5) Sand	10.00	cu.m	304	3,040
(6) Rebars: 12mm dia x 6m	30.00	pcs.	68	2,040
10mm dia x 6m	11.00	pcs.	49	539
(7) #16 Tie Wire	4.00	kgs.	49	196
(8) Scaffolding:				
2"x4"x8" = 10 pcs. (Coco Lumber)	53.33	bf.	8	427
Sub-Total of D-1				23,691
2. Labor (30% of D-1)		L.S.		7,107
Sub-Total of D				**30,798**
E. Roofing Work				
1. Materials				
(1) GA #26 Corr. GI (1 = 10')	20.00	pcs.	274	5,480
(2) GA #24 Pln. GI Flashing	3.00	pcs.	264	792
(3) GA #24 Pln. GI Gutter (Pre-Fab)	9.00	pcs.	264	2,376
(4) Umbrella Nails 2 - 1/2"	12.00	kgs.	44	528
(5) Rafter - 2"x5"x18' = 5 pcs.	75.00	bf.	32	2,400

Table 10.2.14 Unit Cost of Public Toilet

Sheet-2 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(6) Purlins - 2"x2"x12' = 18 pcs.	72.00	bf.	32	2,304
(7) WD Cleats - 2"x2"x10" = 6 pcs.	20.00	bf.	32	640
(8) Nailers - 2"x2"x1012' = 30 pcs.	120.00	bf.	32	3,840
- 2"x2"x10' = 36 pcs.	120.00	bf.	32	3,840
(9) Fascia Board				
1"x12"x12' = 4 pcs.	48.00	bf.	32	1,536
1"x12"x18' = 2 pcs.	36.00	bf.	32	1,152
(10) Wood Plate				
2"x4"x20' = 2 pcs.	26.66	bf.	32	853
(11) 1/4" Thk. Mar. Plywood 4'x8'	14.00	pcs.	452	6,328
(12) C.W.N. Assorted	15.00	kgs.	29	435
(13) 3" dia x 3m Downspout (PVC)	3.00	pcs.	81	243
(14) 3" dia Elbow (PVC)	2.00	pcs.	15	30
(15) 3"dia Coupling (PVC)	1.00	pcs.	14	14
(16) Ceiling Vent, 1"x1"x8', 4 pcs.	2.67	bf.	26	69
(17) Screen (1/8"x1/8")	1.00	yd.	81	81
Sub-Total of E-1				32,941
2. Labor (30% of E-1)		L.S.		9,882
Sub-Total of E				**42,823**
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile				
Flush Type Door w/ Louver (.80x2.20)	2.00	sets	1,428	2,856
(2) D - 2 Hollow Core Tanguile				
Flush Type Door (.60x2.10)	1.00	sets	1,071	1,071
(3) D - 3 Louver Door (.60x1.40)	5.00	sets	893	4,465
(4) Door Jambs (Apitong)				
2"x6"x14" = 1 pc.	14.00	bf.	32	448
2"x6"x10" = 2 pcs.	20.00	bf.	32	640
2"x6"x10" = 1 pc.	18.00	bf.	32	576
2"x4"x12" = 5 pcs.	40.00	bf.	32	1,280
(7) Wooden Jalousie Window				
With 5 Blades (.40x.50)	14.00	set	298	4,172
(8) Window Jambs (Apitong)				
2"x6"x16" = 5 pcs.	80.00	bf.	32	2,560
2"x6"x14" = 1 pc.	14.00	bf.	32	448
2"x6"x10" = 1 pc.	10.00	bf.	32	320
(9) Cabinet				
3/4"x4'x8' = 1 pc. (plyboard)	1.00	pc.	774	774
Sub-Total of F-1				19,610
2. Labor (30% of F-1)		L.S.		5,883
Sub-Total of F				**25,493**
G. Tile Work				
1. Materials				
(1) 4 - 1/4"x4 - 1/4" Glazed Tiles	1,950.00	pcs.	4	7,800
(2) 0.10x0.20m Floor Tiles	900.00	pcs.	7	6,300
(3) Cement	4.00	bags	117	468

Table 10.2.14 Unit Cost of Public Toilet

Sheet-3 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(4) White Cement	1.00	bag	629	629
(5) Tiles Fittings		L.S.	4,790	4,790
Sub-Total of G-1				19,987
2. Labor (30% of G-1)		L.S.		5,996
Sub-Total of G				**25,983**
H. Plumbing Work				
1. Materials				
(1) Urinal	3.00	sets	1,063	3,189
(2) Toilet Bowl - Squat Type	6.00	sets	596	3,576
(3) 4" dia x 3m PVC San. Pipe	6.00	pcs.	149	894
(4) 3" dia x 3m PVC San. Pipe	4.00	pcs.	84	336
(5) 2" dia x 3m PVC San. Pipe	3.00	pcs.	50	150
(6) 3/4" dia x 6m G.I. Pipe Sch. 40	5.00	pcs.	244	1,220
(7) 1/2" dia x 6m G.I. Pipe Sch. 40	1.00	pcs.	179	179
(8) 4"x4" WYE PVC	1.00	pcs.	25	25
(9) 3" dia Elbow PVC	10.00	pcs.	30	300
(10) 3" dia 45 degrees Bend PVC	2.00	pcs.	25	50
(11) 2" dia Elbow PVC	6.00	pcs.	7	42
(12) 2" dia 45 degrees Bend PVC	2.00	pcs.	20	40
(13) 1/2" dia Elbow G.I.	5.00	pcs.	10	50
(14) 4" dia 3" dia WYE PVC	8.00	pcs.	40	320
(15) 3/4" dia TEE G.I.	7.00	pcs.	40	280
(16) 1/2" dia TEE G.I.	5.00	pcs.	20	100
(17) 4" dia x 2" dia TEE PVC	6.00	pcs.	40	240
(18) 4" dia Clean Out PVC	3.00	pcs.	35	105
(19) 2" dia Clean Out PVC	1.00	pcs.	25	25
(20) Faucet	10.00	pcs.	50	500
(21) 3" dia x 2" dia Elbow Reducer PVC	1.00	pcs.	28	28
(22) 3" dia x 2" dia WYE PVC	3.00	pcs.	25	75
(23) 2" dia x 2" dia WYE PVC	3.00	pcs.	15	45
(24) PVC Cement	1.00	can	121	121
(25) 4" dia x 2" dia WYE PVC	2.00	pcs.	40	80
(26) Gate Valve 3/4" dia	1.00	pcs.	121	121
(27) Gate Valve 1/2" dia	1.00	pcs.	96	96
(28) Water Meter 3/4" dia	1.00	pcs.	1,261	1,261
(29) 3/4"dia x1/2"dia Elbow Reducer G.I.	1.00	pcs.	14	14
Sub-Total of H-1				13,462
2. Labor (30% of H-1)		L.S.		4,039
Sub-Total of H				**17,501**
I. Painting				
1. Materials				
(1) Acrylic, Semi Gloss	8.00	gals.	261	2,088
(2) Concrete Sealer	4.00	gals.	206	824
(3) Acri Color: Wood	4.00	gals.	80	320
(4) Enamel, QDE	6.00	gals.	266	1,596
(5) Wood Putty	1.00	gals.	302	302
(6) Paint Thinner	1.00	gals.	60	60

Table 10.2.14 Unit Cost of Public Toilet

Sheet-4 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(7) Tinting Color	4.00	pint	40	160
(8) Sand Paper (Assorted)	15.00	pcs.	7	105
(9) Misecellaneous		L.S.	1,005	0
(10) Roof Paint (green, ready-mix)	2.00	gals.	281	562
Sub-Total of I-1				6,017
2. Labor (30% of I-1)		L.S.		1,805
Sub-Total of I				**7,822**
J. Electrical Work				
1. Materials				
(1) 40 Watts Flourescent Lamp	2.00	sets	255	510
(2) Elect. Wire TW #12	24.00	M	7	168
(3) Elect. Conduit - 1/2" dia x 10"	4.00	pcs.	78	312
(4) Entrance Cap. 1/2" dia	1.00	pc.	29	29
(5) Switch Outlet, Flush Type	2.00	pcs.	39	78
(6) Utility Box 2"x3"	2.00	pcs.	7	14
(7) Porcelain Receptacle 2" dia	2.00	pcs.	7	14
(8) Safety Switch 60A, 250V	1.00	set	490	490
(9) Electrical Tape	1.00	roll	22	22
Sub-Total of J-1				1,637
2. Labor (30% of J-1)		L.S.		491
Sub-Total of J				**2,128**
K. Hardware				
1. Materials				
(1) 3"x3" Butt Hinges (Loose Pin)	10.00	pcs.	15	150
(2) 4"x4" Butt Hinges (Loose Pin)	12.00	pcs.	18	216
(3) Door Lockset (Schlage US)	3.00	pcs.	454	1,362
(4) Barrel Bolt (4")	5.00	pcs.	40	200
(5) Cabinet Poll (4")	5.00	pcs.	7	35
(6) Water Storage Cover				
Checkered Plate 1/4" thick				
1.44x0.633 w/ L bar & flat bar	1.00	set	984	984
(7) 0.645x0.633 w/ L bar & flat bar	2.00	set	555	1,110
(8) Padlock	1.00	pcs.	378	378
Sub-Total of K-1				4,435
2. Labor (30% of K-1)		L.S.		1,331
Sub-Total of K				**5,766**
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180.00	pcs.	5	900
(2) Cement	18.00	bags	117	2,106
(3) Sand	1.50	cu.m	304	456
(4) Gravel	1.00	cu.m	385	385
(5) Rebars: 10mm dia x 6m	29.00	pcs.	68	1,972
(6) #16 Tire Wire	2.00	kgs.	49	98

Table 10.2.14 Unit Cost of Public Toilet

Sheet-5 (Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(7) Formworks: Coco Lumber				
2"x3"x10' = 12 pcs.	60.00	bf.	8	480
1/4" plywood ord. 4'x8'	2.00	pcs.	405	810
C.W.N. (Assorted)	2.00	kgs.	29	58
Sub-Total of L-1				7,265
2. Labor (30% of L-1)		L.S.		2,180
Sub-Total of L				**9,445**
M. Concrete Water Tank (Elevated)				
1. Earth Work				
(1) Materials				
1) Gravel Fill	1.00	cu.m	385	385
Sub-Total of M-1 (1)				385
(2) Labor				
1) Excavation	14.70	cu.m	119	1,749
2) Backfill	13.08	cu.m	108	1,413
3) Gravel Fill	1.00	cu.m	141	141
Sub-Total of M-1 (2)				3,303
Sub-Total of M-1				3,688
2. Materials				
(1) Cement	62.00	bags	117	7,254
(2) Sand	4.50	cu.m	304	1,368
(3) Gravel	8.00	cu.m	385	3,080
(4) Rebars: 12mm dia x 6m	160.00	pcs.	49	7,840
(5) #16 Tie Wire	4.00	kgs.	49	196
(6) Formworks:				
1/4" plywood	12.00	pcs.	405	4,860
2"x3"x16' = 60 pcs.	480.00	bf.	8	3,840
(7) C.W.N. (Assorted)	5.00	kgs.	29	145
Sub-Total of M-2				39,647
3. Labor (30% of M-2)		L.S.		11,894
Sub-Total of M				**55,229**
N. Freight Cost (7% of Materials for A - M excluding sand and gravel)		**L.S.**		**12,406**
O. Indirect Cost				
Profit (10% of A - M)		L.S.		27,332
VAT (14% of Profit & Labor)		L.S.		12,662
Sub-Total of O				**39,994**
Total of Construction Cost (A to O)				**313,310**
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,000
2. Construction Supervision		L.S.		1,500
Sub-Total of P				**3,500**
GRAND TOTAL				**316,810**
			Say	316,800

Source: DOH standard price in 1993.
Unit Cost: Adjusted to 1995 Price Level.

10.2.2 Unit Cost of Equipment

Unit cost (CIF Manila) of equipment was referred to the standard cost estimates of DPWH as follows.

(1) Medium size rotary drilling rig

Type:

Truck-mounted top head drive mud circulation type

Rated drilling capacity:

150 m depth for ϕ250 mm bore hole

Equipment composition:

One unit of truck-mounted drilling rig

Each one set of operating accessories, drilling tools, casing tools and fishing tools

One set of spare parts (equivalent to 10% of above equipment/tool cost)

Unit cost:

Peso 17,370,000 per set

(2) Medium size percussion drilling equipment

Type:

Truck-mounted cable percussion type

Rated drilling capacity:

150 m depth for ϕ250 mm bore hole

Equipment composition:

One unit of truck-mounted drilling rig

Each one set of operating accessories, drilling tools, pipe handling tools and fishing tools

One set of spare parts (equivalent to 10% of above equipment/tool cost)

Unit cost:

Peso 10,280,000 per set

(3) Well rehabilitation equipment

Equipment composition:

One unit of diesel engine driven air compressor (7.5 kg/sq.cm, 500 liter/min.)

One set of air hose and hose fittings

Unit cost:

Peso 138,000 per set

(4) Service truck

Type:

Diesel engine driven 4 tons truck equipped with crane

Unit cost:

Peso 1,175,000 per unit

(5) Support vehicle

Type:

Diesel engine driven pick-up truck with electric winch

Unit cost:

Peso 500,000 per unit

(6) Refuse collection truck

Type:

Closed type compactor truck with 5 cu.m of payload capacity

Unit cost:

Peso 1,380,000 per unit including spare parts

10.3 Cost of Required Facilities and Equipment

10.3.1 Cost of Required Facilities

Table 10.3.1 Construction Cost of Water Supply Facilities Required for Phase I (2000)

Unit: 1,000 Pesos

Municipalities	Urban Water Supply Level III	Rural Water Supply								
		New System						Level I Rehabilitation	Total	Grand Total
		Level II	Level I							
			Deep Well			Shallow Wells	Sub-Total			
			40 m	80 m	120 m					
Abra de Ilog	0	0	5,335	0	0	2,336	7,671	116	7,787	7,787
Calintaan	3,384	0	628	0	0	292	920	14	934	4,318
Looc	14,008	0	2,040	0	0	584	2,624	44	2,668	16,676
Lubang	6,512	0	16,945	0	0	788	17,733	369	18,102	24,614
Magsaysay	16,028	0	11,454	0	0	1,402	12,856	250	13,106	29,134
Mamburao (Capital)	4,026	0	18,985	0	0	380	19,365	414	19,779	23,805
Paluan	6,232	0	0	0	0	701	701	0	701	6,933
Rizal	7,652	0	0	0	0	0	0	0	0	7,652
Sablayan	12,058	0	6,276	0	0	788	7,064	137	7,201	19,259
San Jose	17,995	0	18,200	0	0	5,081	23,281	397	23,678	41,673
Sta. Cruz	1,084	0	8,316	0	0	642	8,958	181	9,139	10,223
Provincial Total	88,979	0	88,179	0	0	12,994	101,173	1,922	103,095	192,074

Table 10.3.2 Construction Cost of Water Supply Facilities Required for Phase II (2010)

Unit: 1,000 pesos

Municipality	Urban Water Supply Level III	Rural Water Supply (Level I)							
		New System						Total	Grand Total
		Deep Well			Shallow Wells	Sub-Total	Level I Rehabilitation		
		40 m	80 m	120 m					
Abra de Ilog	3,019	3,923	0	0	1,664	5,587	86	5,673	8,692
Calintaan	23,525	4,550	0	0	1,927	6,477	99	6,576	30,101
Looc	11,011	0	0	0	0	0	0	0	11,011
Lubang	8,998	14,592	0	0	672	15,264	318	15,582	24,580
Magsaysay	16,461	11,454	0	0	1,431	12,885	250	13,135	29,596
Mamburao (Capital)	13,179	19,299	0	0	409	19,708	421	20,129	33,308
Paluan	17,016	0	0	0	467	467	0	467	17,483
Rizal	3,138	29,340	0	0	0	29,340	640	29,980	33,118
Sablayan	52,995	16,945	0	0	2,102	19,047	369	19,416	72,411
San Jose	75,681	32,949	0	0	9,227	42,176	718	42,894	118,575
Sta. Cruz	6,727	13,964	0	0	1,110	15,074	304	15,378	22,105
Provincial Total	231,750	147,016	0	0	19,009	166,025	3,205	169,230	400,980

Table 10.3.3 Costs of Sanitation Facilities Required for Phase I (2000)

Unit: 1,000 Pesos

Municipality	Urban Sanitation								Rural Sanitation							
	Household Toilets								Household Toilets							
	Flush	Pour Flush	VIP Latrine	Sub-total of Construction Cost	Sub-total of Public Investment Cost	Public School Toilets	Public Toilets	Total Construction Cost	Total Public Investment Cost	Flush	Pour Flush	VIP Latrine	Sub-total of Construction Cost	Sub-total of Public Investment Cost	Public School Toilets	Total Construction Cost	Total Public Investment Cost
Abra de Ilog	0	599	48	647	25	0	634	1,281	659	410	10,015	322	10,777	412	0	10,777	412
Calintaan	5,652	1,623	171	7,446	67	0	317	7,763	384	0	2,022	375	2,397	83	793	3,190	876
Looc	8,411	3,032	136	11,579	125	0	317	11,896	442	0	0	87	87	0	0	87	0
Lubang	0	3,179	207	3,386	131	0	317	3,703	448	3,179	5,440	426	7,035	224	395	7,430	619
Magsaysay	8,701	0	213	8,914	0	376	317	9,611	693	1,801	7,395	433	8,929	304	796	9,725	1,100
Mamburao (Capital)	0	7,515	358	7,873	309	823	634	9,330	1,766	0	6,145	383	6,528	253	918	7,446	1,171
Paluan	8,435	5,413	0	13,848	223	0	317	14,165	540	0	4,362	0	4,362	179	0	4,362	179
Rizal	3,853	3,485	62	7,400	143	0	317	7,717	460	0	12,409	675	13,084	510	1,537	14,621	2,047
Sablayan	9,423	12,090	439	21,952	497	398	317	22,627	1,212	624	15,920	1,038	17,582	655	886	18,468	1,541
San Jose	24,073	1,676	988	26,737	69	1,245	634	28,616	1,948	0	19,232	1,790	21,022	791	2,300	23,322	3,091
Sta. Cruz	6,496	253	105	6,854	10	0	317	7,171	327	7,206	12,369	0	19,569	508	939	20,508	1,448
Provincial Total	75,044	38,865	2,741	116,650	1,599	2,842	4,438	123,930	8,879	10,511	95,309	5,529	111,382	3,920	8,563	119,945	12,483

Table 10.3.4 Costs of Sanitation Facilities Required for Phase II (2010)

Unit: 1,000 Pesos

Municipality	Urban Sanitation									Rural Sanitation							
	Household Toilets									Household Toilets							
	Flush	Pour Flush	VIP Latrine	Sub-total of Construction Cost	Sub-total of Public Investment Cost	Public School Toilets	Public Toilets	Total Construction Cost	Total Public Investment Cost	Urban Sewerage	Flush	Pour Flush	VIP Latrine	Sub-total of Construction Cost	Sub-total of Public Investment Cost	Public School Toilets	Total Construction Cost	Total Public Investment Cost
Abra de Ilog	4,881	931	0	5,812	38	0	0	5,812	38	0	184	18,354	0	18,538	755	830	19,368	1,585
Calintaan	35,893	3,711	0	39,604	153	731	317	40,655	1,201	0	0	24,805	0	24,805	1,020	1,322	26,127	2,342
Looc	23,646	3,272	0	24,918	135	481	317	25,716	933	0	0	652	0	652	27	646	1,298	673
Luhang	23,176	1,689	0	22,865	69	454	0	23,319	523	0	8,033	24,592	0	32,625	1,011	1,492	34,117	2,503
Magsaysay	33,394	4,801	0	38,195	197	862	317	39,374	1,376	39,632	771	32,452	0	33,223	1,335	1,697	34,920	3,032
Mamburao (Capital)	35,379	2,780	0	38,159	114	1,345	317	39,821	1,776	53,385	0	34,992	0	34,992	1,439	1,842	36,834	3,281
Paluan	20,118	2,700	0	22,818	111	551	317	23,686	979	0	0	4,243	0	4,243	175	0	4,243	175
Rizal	8,955	1,157	0	10,112	48	0	317	10,429	365	0	0	49,569	0	49,569	2,039	2,333	51,902	4,372
Sablayan	98,989	20,775	0	119,764	854	1,360	634	121,758	2,848	107,295	330	50,593	0	50,923	2,081	1,958	52,881	4,039
San Jose	145,848	19,618	0	165,466	809	3,183	950	169,599	4,940	175,185	0	136,591	0	136,591	5,618	5,881	142,472	11,499
Sta Cruz	15,194	1,968	0	17,162	81	393	317	17,872	791	0	3,039	31,401	0	34,440	1,291	1,614	36,054	2,905
Provincial Total	441,473	63,402	0	504,875	2,607	9,363	3,803	518,041	15,773	375,497	12,357	408,244	0	420,601	16,791	19,633	440,214	36,401

10.4 Costs of Sector Management

10.4.1 Breakdown of Community Development and Training Cost

Cost of community development and training was estimated at 12% of the total construction cost of Level I & II water supply facilities and public toilets and at 3% of the total construction cost of Level III water supply systems. This was formulated based on the following:

(1) The 12% was derived on the basis of DILG's past experience in BWSA formation; and

(2) The 3% was derived on the basis of LWUA's past experience in the institutional strengthening needs of W.Ds.

These ratios adopted for estimating community development and training cost will allow the province to meet with its needs for community development in the sector management. The following breakdown provides a view of the components under this category.

Table 10.4.1 Breakdown of Community Development and Training Cost

Component	% Share of Cost
1. Preparation for Training Activities	10
1.1 Transportation	1
1.2 Technical Assistance	1
1.3 Food	1
1.4 Supplies and Materials including Production of Training Kits	6
1.5 Generation of Training Aids	1
	53
2. Conduct of Training Activities	5
2.1 Transporation	12
2.2 Food	33
2.3 Accommodation	1
2.4 Training Room Rental	2
2.5 Miscellaneous	
	37
3. Field Visits to Support BWSA Formation	5
3.1 Transporation	15
3.2 Food	12
3.3 Accommodation	
3.4 Field	4
Total	100

C. SECTOR IMPLEMENTATION ARRANGEMENTS

11. FINANCIAL ARRANGEMENTS

11.3 Additional Funding Requirements

Percentages for Annual Investment

Percentages of annual investment for different fields of implementation activities are assumed for each sub-sector as general indication and summarized in Table 11.3.1. Assumptions on investment timing shall be subject to change, especially for individual projects depending on fund availability and relevant conditions such as land acquisition and institutional set-up.

Table 11.3.1 Percentages for Annual Investment

Sub-Sector	Component	1996	1997	1998	1999	2000	Total
Urban Water Supply	Level III System						
	Feasibility Study and Detail Design	50	50	0	0	0	100
	Construction & Supervision	0	20	30	30	20	100
	Community Development & Training	30	20	20	20	10	100
Rural Water Supply	Level I Facility						
	Detail Design	50	50	0	0	0	100
	Construction & Supervision	12	22	22	22	22	100
	Community Development & Training	22	22	22	22	12	100
	Level II System						
	Detail Design	100	0	0	0	0	100
	Construction & Supervision	50	50	0	0	0	100
	Community Development & Training	50	50	0	0	0	100
Sanitation	Urban Household Toilet	12	22	22	22	22	100
	Rural Household Toilet	12	22	22	22	22	100
	Public School Toilet	12	22	22	22	22	100
	Public Toilet	12	22	22	22	22	100
	Disinfection of Level I Wells	12	22	22	22	22	100
	Detail Design	100	0	0	0	0	100
	Construction & Supervision	12	22	22	22	22	100
	Community Development & Training	22	22	22	22	12	100

Urban water supply:

- Engineering services for feasibility study and detailed design will be undertaken in the first two years.
- Construction work accompanied by supervisory services will be commenced partially in 2nd year and in full operation from 3rd year to 4th year.
- Community development will take place from the first year.

Rural water supply (Level I):

- Engineering services for detailed design will be undertaken during the first two years for Level I and completed within the first year for Level II.

- Construction work accompanied by supervisory services will be partially commenced from the first year and in full operation from 2nd year for Level I, while Level II will be completed within first two years.
- Community development and training will take place from the first year for Level I, while Level II will be completed within the first two years.

Sanitation:

- Engineering services for detailed design will be completed within the first year.
- Construction work accompanied by supervisory services will be partially commenced in the first year and in full operation from 2nd year.
- Community development and training will be in full operation from the first year.

11.4 Medium-Term Implementation Arrangements

11.4.2 Alternative Countermeasures

Comprehensive Investment Need Ranking for the Municipalities

Table 11.4.1 Comprehensive Investment Need Ranking of the Municipalities

Municipality	Evaluation Factor (% of Underserved and Unserved Population or Households)				Score by Sub-Sector				Weighted Score by Sub-Sector					Synthetic Investment Need Ranking
	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Total Weighted Score	
Abra de Ilog	N.A.	97	17	55	0.40	1.00	0.40	0.80	0.10	0.25	0.10	0.20	0.65	5
Calintaan	N.A.	29	33	22	0.49	0.40	0.80	0.40	0.12	0.10	0.20	0.10	0.52	9
Looc	N.A.	100	41	13	1.00	1.00	1.00	0.20	0.25	0.25	0.25	0.05	0.80	3
Lubang	N.A.	88	25	29	0.57	1.00	0.60	0.40	0.14	0.25	0.15	0.10	0.64	6
Magsaysay	N.A.	80	10	34	0.93	0.80	1.00	0.60	0.23	0.20	0.25	0.15	0.83	2
Mamburao (Capital)	N.A.	94	32	32	0.40	1.00	0.80	0.60	0.10	0.25	0.20	0.15	0.70	4
Paluan	N.A.	82	44	63	0.66	1.00	1.00	1.00	0.17	0.25	0.25	0.25	0.92	1
Rizal	N.A.	23	100	38	0.35	0.40	1.00	0.60	N.A.	0.10	0.25	0.15	0.50	11
Sablayan	N.A.	37	38	36	0.40	0.40	0.80	0.60	0.10	0.10	0.20	0.15	0.55	7
San Jose	N.A.	53	23	24	0.46	0.60	0.60	0.40	0.12	0.15	0.15	0.10	0.52	9
Sta. Cruz	N.A.	60	27	33	0.30	0.60	0.60	0.60	0.08	0.15	0.15	0.15	0.53	8
Provincial Total	N.A.	56	28	32										

Note: (1) Scoring to Underserved and Unserved Percentage (2) Assumed Weight by Sub-Sector for Synthetic Evaluation by Municipality

Score	Range of Underserved and Unserved Percentage			0.25	0.25	0.25	0.25	Allocated Weight
1.0	81 < %	41 < %	61 < %					
0.8	61 < % < 80	31 < % < 40	46 < % < 60					
0.6	41 < % < 60	21 < % < 30	31 < % < 45					
0.4	21 < % < 40	11 < % < 20	16 < % < 30					
0.2	% < 20	% < 10	% < 15					

Table 12.4.1 Draft Formats for Annual Sector Performance Summary Report (Provincial and Municipal Levels)

Form P- 1

Province of _____

Provincial Water & Sanitation Monitoring System

Annual Sector Performance Summary Report

Period Covered : _____ to _____

I. Service Coverage

Municipality (1)	LAST YEAR				THIS YEAR			
	Population (2)	Persons with Safe Water & Sanitary Toilets (3)	Persons with Safe Water Only (4)	Persons with Sanitary Toilets Only (5)	Population (6)	Persons with Safe Water & Sanitary Toilets (7)	Persons with Safe Water Only (8)	Persons with Sanitary Toilets Only (9)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
Total								
% Served								
Targets								

II. Sources & Uses of Capital Development Funds

Source of Fund (1)	Budget for Water Supply & Sanitation (2)	Actual Disbursement (3)	Uses of Funds						
			Water Source Development (4)	Water Supply Transmission (5)	Water Storage/ Treatment & Distribution (6)	Household Toilets (7)	School Toilets (8)	Public Toilets (9)	Others (10)
A. Local Funds.									
Provincial Funds									
Municipal Funds									
A.									
B.									
C.									
D.									
E.									
F.									
G.									
H.									
I.									
J.									
SUB-TOTAL									
B. National Funds									
DPWH									
DOH									
LWUA									
SUB-TOTAL									
C. External Funds									
NGO									
NGO									
NGO									
SUB-TOTAL									
TOTAL									

III. School Sanitation (Source, DECS)

School (Location) (1)	No. of Students Enrolled (2)	Water Supply Adequate ? (Y/N) (3)	No. of Functioning Toilet Units (4)	Facility: Student Ratio (5)

IV. Incidence of Diarrhea (Source IPHO)

Month (1)	Last Year (2)	This Year (3)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

V. Water Resources: Report any major changes in the availability and quality of water in the province. Attach map.

VI. Unit Cost Summary : Based on projects actually implemented and paid for during the reporting period, indicate the following average unit costs

1. Shallow Well (w/o hand pump) = _____ / Meter Depth
2. Deep Well (w/o pump) = _____ / Meter Depth
3. Pipeline = _____ / meter
4. Storage Tanks =
5. Others,

Municipality of _____

Form M - 1

Provincial Water & Sanitation Monitoring System

Annual Sector Performance Summary Report

Period Covered : _____ to _____

I. Service Coverage

Name of Barangay (1)	LAST YEAR				THIS YEAR			
	Population (2)	Persons with Safe Water & Sanitary Toilets (3)	Persons with Safe Water Only (4)	Persons with Sanitary Toilets Only (5)	Population (6)	Persons with Safe Water & Sanitary Toilets (7)	Persons with Safe Water Only (8)	Persons with Sanitary Toilets Only (9)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
Total								
% Served								

II. Sources & Uses of Capital Development Funds.

Source of Funds (1)	Budget (2)	Actual Disbursement (3)	Uses of Funds						
			Water Source Development (4)	Water Supply Transmission (5)	Water Storage/ Treatment & Distribution (6)	Household Toilets (7)	School Toilets (8)	Public Toilets (9)	Others (10)
Municipal Funds									
Barangay Funds									
A.									
B.									
C.									
D.									
E.									
F.									
G.									
H.									
I.									
J.									
K.									
L.									
M.									
N.									
O.									
P.									
Q.									
R.									
S.									
T.									
U.									
W.									
SUB-TOTAL									
NGO									
NGO									
NGO									
SUB-TOTAL									
TOTAL									

DATA REPORT

1. INTRODUCTION

1.3 The Provincial Plan for the Province of Occidental Mindoro

1.3.2 Outline of the Report

Table 1.3.1 List of Report/Data/Information/Materials collected (1/2)

No.	Title	Year	Prepared by	Related Subjects						Remarks
				WS	HD	SE	CD	SE	O	
	LAWS AND REGULATIONS									
1	The Local Government Code of 1991.	1991	Congress of the Phil.				x			
2	The Code of Sanitation of the Philippines Presidential Decree No. 856	1976	DOH			x				
3	National Handbook on Land and Other Water Resources.	Jul-91	NLUC,NEDA					x		
	STATISTICS - National Level									
1	1991 Family Income and Expenditures Survey of Households Bulletin Series 72.	1991	NSO					x		
2	1992 Philippine Statistical Yearbook.	Oct-92	NSCB			x		x		
3	1992 Philippine Yearbook.	Dec-92	NSO					x		
4	National Health Survey.	1992	DOH			x				
	STATISTICS - Provincial Level									
1	1990 Census of Population and Housing Report No. 3-64 D; Socio-Economic and Demographic	1990	NSO	x		x		x		
	Characteristics Occidental Mindoro.									
2	Socio-Economic Profile Occidental Mindoro.	1993	PPDO					x		
	NATIONAL DEVELOPMENT PLAN/ SECTOR PLAN									
1	Water Supply, Sewerage and Sanitation Master Plan of the Philippines 1988-2000.	1988	NEDA	x	x	x				
2	National Physical Framework Plan 1993-2022.	Oct-92	Nat'l. Land Use Com.					x		
3	Philippines : Water Supply Sector Reform Study.	Aug-93	WORLD BANK	x	x	x				Working Papers
4	Philippine Development Report 1987-1992	1993	NEDA					x		
5	Project Benefit Monitoring and Evaluation (PBME).	Oct-93	NJS/Basic Team				x			Final Report
6	Study for the Groundwater Development in Manila Volume 2.	Jun-92	JICA							Main Report
7	First Water Supply, Sewerage and Sanitation Sector Project BWSA Package Phase I & II.	Mar-93	DILG-PMO				x			Training Manual 2nd Edition
8	The Special Assistance for Project Sustainability Program for Rural Water Supply Project.	Mar-92	OECF	x						Final Report (Main Report)
9	BWSA Primer English Version.	Sep-92	DILG,DPWH,DOH				x			Second Edition
10	Database Application for Provincial Water Supply, Sewerage & Sanitation Sector Plan.	Apr-93	WORLD BANK						x	Mission Report
11	Master Plan for the Areas of Central Luzon Affected by the Eruption of Mt. Pinatubo.	Oct-93	USAID	x	x	x	x	x		Preliminary Report
12	Skills Training for Sanitary Engineers	Sep-92				x				Training Manual 1st Edition
13	National Strategy and Action Plan Philippine National Urban Sewerage and Sanitation Strategy and	May-93	World Bank Proj.			x				
	Feasibility Studies Project.		Loan 3242-DH							
14	PAG-ASA Climatological Data				x					
15	Sanitation and Water Supply : Practical Lessons from the Decade.	1992	Sandy Cairncross			x	x			Discussion Paper Series
16	Community Water Supply and Sanitation	1989	WHO			x	x			
17	Institutional Development in Community Water Supply and Sanitation Themes and Questions.	1986	WHO,Geneva				x			
18	Guidelines for Planning Community Participation in Water Supply & Sanitation Projects.		Anne Whyle				x			
19	Participatory Evaluation : Tools for Managing Change in Water and Sanitation.	Feb-93	Deepa Narayan				x			
20	Community Participation and Hygiene Education on Water Supply and Sanitation (CPHE).	Oct-89	Technical Coop.				x			

Related Subject : WS Water Supply, HD Hydrogeology, SE Sanitation and Environment, CD Community Development, SE Socio-Economy, O Others

List of Report/Data/Information/Materials collected (2/2)

No.	Title	Year	Prepared by	Related Subjects						Remarks
				WS	HD	SE	CD	SE	O	
21	Geological Maps of the Phils.		BMGS		x					
22	Water Resource Investigation	1986	NWRC		x					
23	Philippine Atmospheric, Geo-Physical and Astronomical Services Admin. Data.		PAG-ASA		x					
24	Philippine Water Resources Summary Data, Vol-I Stream Flow and Lake or River Stage.		Bureau of Research		x					
25	Hydrogeology of Central Luzon	Aug-70	B.M.Sandoval & Mamaril		x					
	PROVINCIAL SECTOR PLAN/DEVELOPMENT PROGRAM									
1	Major Development Programs and Projects 1986-1992 Occidental Mindoro.									
2	Annual Investment Program Occidental Mindoro.	1993	PPDO					x		
3	Rapid Assessment of Water Supply Source, Province of Occidental Mindoro Report No. 36, Vol. 26.				x					
4	5-Year Water Resources Development Plan Province of Occidental Mindoro.	1992	PPDO		x					
5	Topographical Maps of Occidental Mindoro PCGS 2514 and 2518.		NAMRIA							
6	Administrative map of Occidental Mindoro	1991	NAMRIA		x					
	OTHER REFERENCES									
1	Microsoft Windows Version 3.1	1992	Microsoft Corporation						x	User's Manual
2	Microsoft Excel Version 5.0	1994	Microsoft Corporation						x	User's Manual
3	Microsoft Word Version 6.0	1994	Microsoft Corporation						x	User's Manual

Related Subject : WS Water Supply, HD Hydrogeology, SE Sanitation and Environment, CD Community Development, SE Socio-Economy, O Others

Table 1.4.1 List of Persons and Institutions Who Participated in the Preparation of PW4SP

Name	Position	Office
Provincial Sector Planning Team:		
1. Ms. Gladys Barile	Provincial Planning & Dev't. Coordinator	Provincial Planning & Dev't. Office
2. Ms. Lorna Española	Project Evaluation Officer	- do -
3. Mr. Jerry Lopez	Sanitary Engineer	Provincial Health Office
4. Mr. Ruben Guinto	Engineer I	Governor's Office
5. Mr. Jonathan Trajeco	Engineer I	Provincial Engineer's Office
6. Ms. Malou Edquilane	Computer Operator	Provincial Planning & Dev't. Office
Water Supply and Sanitation - Project Management Office:		
1. Mr. Orville M. Roque	Program Manager	WSS-PMO, DILG
2. Ms. Ellen I. Pascua	Asst. Program Manager	- do -
3. Mr. Rogelio B. Ocampo	Chief, Planning Division	- do -
4. Mr. Mario V. De Dios	Development Management Officer V	- do -
5. Ms. Fe Crisilla M. Banluta	PW4SP Project Officer	- do -
6. Ms. Lina L. Griego	Coordinator	- do -

Table 2.6.1 Updated Guideline for Preparation of PW4SP

COMPOSITION OF FIGURES AND TABLES BY CHAPTER/SECTION

Table of Contents	Contents	Tables & Figures		
		Main Report	Supporting Report	Data Report
1. INTRODUCTION				
1.1 Sector Development in the Philippines	Nationwide sector development			
1.2 Provincial Sector Planning	Outline of provincial sector planning			
1.2.1 Objectives of Sector Planning				
1.2.2 Scope of Sector Planning				
1.2.3 Financing of Sector Plan				
1.3 The Provincial Plan for the Province		F1.3.1 Flow Diagram of Sector Planning	F1.3.1 Organization Chart for Implementation of PW4SP	
1.3.1 Preparation of the Plan				*1.3.1 List of Report/Data/ Information/Materials Collected
1.3.2 Outline of the Report				
1.4 Acknowledgments				
2. PLANNING APPROACH FOR FUTURE SECTOR DEVELOPMENT				
2.1 General				
2.2 Planning Framework	- Sector Arrangements with Reference to National Master Plan and Medium-Term Development Plan	T2.2.1 National Sector Coverage Targets		

* Questionnaire form

Table - T, Figure - F

COMPOSITION OF FIGURES AND TABLES BY CHAPTER/SECTION

Table of Contents	Contents	Tables & Figures				
		Main Report		Supporting Report		Data Report
2.3 Sector Objectives	- Water Supply Coverage - Sanitation and Sewerage Coverage					
2.4 Current Sector Policies and Strategies	- Self-Reliance - Integrated Approach - Cost Recovery - Sustainability - Private Sector Participation - Water Resources Management					
2.5 Major Legislation and Regulations Affecting the Sector	- Local Government Code - Water Code of the Philippines - Philippine Environmental Code - National Drinking Water Standards - Plumbing Code of the Philippines - Code on Sanitation - National Building Code					
2.6 Planning Principles and Data Management	- Constraints and required arrangements to undertake planning work - Data storage processing and retrieval	F2.6.1	Institutional Hierarchical System of the Philippines	T2.6.1	Data File Linkages	
2.6.1 Planning Principles		F2.6.2	Structure of Questionnaire	T2.6.2	Key Parameter	
2.6.2 Data Management				T2.6.3	Composition of Well Sources and Specific Capacity	
				T2.6.4	Annual Distribution of Investment Cost Required by Sub-sector for Medium-term Development Plan	
				T2.6.5	Level I Safe & Unsafe Percentage	
				T2.6.7	Scoring Factor for Municipal Investment Ranking for Urban Water Supply	
				T2.6.8	Scoring Factor for Municipal Comprehensive Investment Ranking	

* Questionnaire form Table - T, Figure - F

COMPOSITION OF FIGURES AND TABLES BY CHAPTER/SECTION

Table of Contents		Contents	Tables & Figures: Main Report		Tables & Figures: Supporting Report		Tables & Figures: Data Report	
3.	PROVINCIAL PROFILE							
3.1	General	- Location of Province - Administrative composition	F3.1.1 T3.1.1	Location Map Outline of City/ Municipalities				
3.2	Natural Conditions and Geographical Features						T3.2.1	Flow Data of Major Rivers
3.2.1	Meteorology	- Classification of climate by type and its characteristics - Average rainfall, temperature and wind direction						
3.2.2	Land Use	- Current land use	T3.2.1	Current Land Use				
3.2.3	Topography and Drainage	- Topographical characteristics of the province: mountains, major rivers and its flow rates, and water quality of typical rivers	F3.2.1 T3.2.2	Major River Networks Drainage Areas and Flow Rates of Major Rivers				
3.3	Socio-economic Conditions							
3.3.1	Economic Activities and Household Income	(1) Brief description on major economic activities (2) Discussion on (a) household income level and (b) occupation	F3.3.1 F3.3.2	Distribution of Households by Income Class Population Distribution by Occupation	T3.3.1 T3.3.2	Distribution of Households by Income Class Gainful Workers by Occupation Group and Major Industry Group	T3.3.1	Number of Elementary School, High School and Other Served Facilities
3.2.3	Basic Infrastructure	(1) Description on current basic infrastructure in the province (roads, electricity, telecom, postal services, transportation, banking facilities, tourism facilities, schools, etc.)	T3.3.1 T3.3.2	Provincial Outline on Public Services Public Facilities and Services by Municipality				

* Questionnaire form Table - T, Figure - F

COMPOSITION OF FIGURES AND TABLES BY CHAPTER/SECTION

Table of Contents		Contents	Tables & Figures: Main Report		Tables & Figures: Supporting Report		Tables & Figures: Data Report	
		(2) Discussion on public facilities and services (schools, public markets, banks and hospitals) by municipality						
3.3.3	Education	Description on (a) education levels and (b) literacy level	F3.3.3	Population Distribution by Highest Attainment of Education	T3.3.3	Household Population by Highest Educational Attainment		
3.4	Population							
3.4.1	Previous Population Development	(1) Population data of NSO for the census periods from 1960 to 1990 together with projected (1995) population	T3.4.1	Previous Population Development by Municipality				
		(2) Special issues, if any, which affected the present population of the province, i.e., special development and those of Mt. Pinatubo eruption in 1991	F3.4.1	Previous Population Development of the Province				
3.4.2	Classification of Urban and Rural Areas	(1) Urban and rural areas classified at barangay level based on the definition of NSO	F3.4.2	Present Population Distribution	F3.4.1	Distribution of Urban and Rural Areas		
		(2) Re-classification of urban and rural areas based on actual condition by PSPT	T3.4.2	Outline of Urban and Rural Areas in the Province				
3.4.3	Present Population Distribution	(1) No. of barangays, households & population, household size by urban and rural area	T3.4.3	Household Numbers and Household Sizes				
3.5	Health Status							
3.5.1	Morbidity, Mortality and Infant Mortality	- Ten leading causes of morbidity, mortality and infant mortality and comparison with national level - Identification and rank of diseases related to water among the 10 leading causes	T3.5.1	Number and Rates of Ten Leading Causes of Morbidity, Mortality and Infant Mortality			T3.5.1	Morbidity, Mortality and Infant Mortality by Municipality (Annual Incidence per 100,000 Persons)

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			Main Report		Supporting Report		Data Report	
3.5.2	Water Related Diseases	- Classification of water-borne, based, washed, vector related diseases - Enumeration of water related diseases and their incidence - Discussion on the health implications of sanitation	T3.5.2	Reported Cases and Deaths of Notifiable Water Related Diseases, (Year)				
3.5.3	Health Facilities and Practitioners	- No. of medical facilities and practitioners, its ratio to population and comparison with national level			T3.5.1	Number and Ratio to Population of Health Facilities and Medical Practitioners	T3.5.2	Number of Health Facilities and Practitioners by Municipality
3.6	Environmental Conditions							
3.6.1	General	- Scope of the subject limited to the sector						
3.6.2	Water Pollution	- Evaluation of existing drainage system, its function as a disposal point of domestic wastewater - Evaluation of industrial wastewater discharge - Existing classification of rivers in terms of water quality and extent of water pollution of water bodies			T3.6.1	DENR Water Quality Criteria/Water Usage and Classification for Fresh Water	T3.6.1	Municipal Solid Waste Collection and Disposal by Municipality
3.6.3	Solid Waste Disposal	- Evaluation of solid waste collection and disposal	T3.6.1	Municipal Solid Waste Collection and Disposal, and Service Coverage				
4.	EXISTING FACILITIES AND SERVICE COVERAGE							
4.1	Water Supply				T4.1.1	Details on Existing Level III Systems		
4.1.1	General	(1) Types and composition of existing water supply facilities by service level						

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		Main Report		Supporting Report		Data Report	
	(2) Survey results complied from questionnaire by service level shall be arranged to urban and rural areas at municipal level			T4.1.2	Existing Level II Systems		
	(3) Service coverage shall be counted as percentage of population served by the existing facilities. Further classification by safe and unsafe sources together with adequacy of service are incorporated in the service coverage						
4.1.2 Types of Facilities and Definition of Service Level Standard	(1) Adequacy of service defined by DOH	T4.1.1	Composition of Water System/Facility by Service Level				
4.1.3 Level III Systems	(1) Description of existing Level III system: - No. of WD & Level III (being operated by LGUs) - Type of major water sources - Range of water consumption	T4.1.2	Information on Existing Level III Systems			T4.1.3	List of Subdivisions by Municipality
		T4.1.3	Information on Water Districts				
	(2) Operating conditions of WDs: - Range of service (No. of connection) - Range of charge collection efficiency						
4.1.4 Level II Systems	(1) Description of existing Level II system - No. of operating Level II systems - Type of major water source - Range of household coverage	T4.1.4	Information on Existing Level II Systems				
	(2) Operating conditions: - Water supply interruption - Water quality - Collection efficiency						

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		Main Report		Supporting Report		Data Report
4.1.5 Level I Facilities	(1) Description of existing Level I facilities: - No. of operational and non-operational facilities - Safe and unsafe sources - Ownership by public and private (2) Problem areas: - Needs for rehabilitation and replacement of existing facilities	T4.1.5	Information on Existing Level I Facilities	T4.1.3	Percentage of Unsafe Water Sources by IPHO	
		T4.1.6	Operating Status of Existing Wells in the Province	T4.1.4	No. of Level I Facilities by Safe and Unsafe Classification	
				T4.1.5	Estimation of Unserved Population by Municipality	
4.1.6 Water Supply Service Coverage	(1) Criteria of adequate service based on the national standard	T4.1.7	Water Supply Service Coverage by Municipality	T4.1.6	Estimation of Population Covered by Safe and Unsafe Source by Municipality	
	(2) Service coverage (percent of population served by safe sources) in urban and rural areas by municipality	F4.1.1	Water Supply Coverage of the Province			
	(3) On-going projects by municipality	F4.1.2	Existing Water Supply Service Covrage Map			
4.2 Sanitation and Sewerage						
4.2.1 General	- Brief discussion of government policies/ guidelines on sanitation and sewerage as spelled out in the Code of Sanitation and NUSSMP - Coverage of the PW4SP (HH, school toilets and public toilets)					
4.2.2 Types of Facilities and Definition of Service Level Standard	- DOH/DECS classification by service level - Types of toilet facilities considered as sanitary and unsanitary in this sector plan - Definition of served and underserved/ unserved			F4.2.1	Standard Structure of Private Toilet Facility	
				F4.2.2	Standard Structure of School Toilet Facility	

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		Main Report		Supporting Report		Data Report	
4.2.3 Sanitation Facilities and Service Coverage							
(1) Household Toilets	- No. of Households with sanitary toilet facilities and underserved, by municipality - Service coverage (percent of household with sanitary toilet facilities and under-served/unserved in urban and rural area, by municipality	T4.2.1	Sanitation Facilities and Service Coverage of Household Toilets, Urban and Rural, 1994	T4.2.1	Sanitation Facilities and Service Coverage of House-hold Toilets, by Type, by Municipality, Urban and Rural, 1994		
		F4.2.1	Provincial Service Coverage of Household Toilet Facilities, 1994				
		F4.2.2	Existing Household Toilets Service Coverage Map				
(2) School and Public Toilets	- No. of School and public toilets by municipality	T4.2.2	School Toilet Facilities and Service Coverage in 1994				
	- Service coverage (percent of students adequately served by sanitary facilities and percent of public utilities with sanitary facilities)	T4.2.3	Public Toilet Facilities and Service Coverage in 1994				
(3) On-going Projects	- On-going projects by municipality (service coverage)						
(4) Problem Areas	- Common problems encountered with regards to physical and social standpoints						
4.2.4 Sewerage Facilities	- Presence/absence of sewerage facilities. If none, description of existing condition on sewage disposal - If present, description of sewerage system						

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5. EXISTING SECTOR ARRANGEMENTS AND INSTITUTIONAL CAPACITY				
5.1 General				
5.2 Sector Reforms	- NEDA Board Resolution No. 4 - NEDA Board Resolution No. 5			
5.3 Sector Institutions	- Existing Institutional Arrangements - Sector Financing	F5.3.1 Functional Relationships		
5.4 Sector Agencies at the National Level	(To be discussed for each of the major agencies).			
(1) DILG	- Existing mechanisms and processes to deliver or support services to provinces, municipalities and barangays (financial, technical and institutional) - Mechanisms for coordination and collaboration with LGUs - Existing capacity of national agency to implement sector projects (technical, financial, institutional) - Actual programs being implemented by national sector agencies focusing on transfer of appropriate technologies and approaches - Actual experiences and practices of national agency in project implementation - Problem areas			
(2) LWUA				
(3) DPWH				
(4) DOH				
(5) Other Agencies (NEDA, DOF, NWRB, DBM, DENR, DECS, MWSS)				

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5.5 Sector Agencies at the Local Level	(To be discussed for each of the agencies)			
(1) Provincial Level - PPDO - PEO - PHO	- General description of mandate and responsibility - Present capacity of local agency to undertake: the LGU level within the sector * Project identification and priority-setting * Establishment of community-based organization * Project preparation and planning * Project implementation * Operation and maintenance * Monitoring and evaluation - Financial resources (Refer to Chap 6) - Actual experiences and practices of local agencies on project implementation - Mechanism for coordination and collaboration level among local offices to implement, coordinate and monitoring of program activities - Extent of private sector participation - Linkage with national government agencies		FS.5.1 Organization Chart of the PPDO FS.5.2 Organization Chart of PEO FS.5.3 Organization Chart of PHO	
(2) Municipal and Barangay Levels - MDO - MEO - Barangay Councils - RHU/BHS				
(3) Field Offices of Central Sector Agencies - DPWH DEO - DILG P/MLGOO - NEDA RO and RDC				
(4) Water Districts (5) RWSAs (6) BWSAs (7) Others (including CBOs)				
5.6 External Support Agencies Active in the Sector				
(1) Multilateral Agencies	- The World Bank (IBRD) - The Asian Development Bank (ADB) - The United Nations Development Program and the United Nations Children's Fund (UNICEF)			

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		Main Report	Supporting Report	Data Report
(2) Bilateral Agencies	- The Japan International Cooperation Agency (JICA) - The Overseas Economic Cooperation Fund (OECF) - The Australian International Development Assistance Bureau (AIDAB) - The Danish International Agency (DANIDA) - KfW - The Royal Government of the Netherlands			
(3) NGOs and Private Sector				
5.7 Current Community Development and Training Approaches				
5.7.1 Community Development	- Existing CD approaches to promote participation of local beneficiaries - Experiences/practices on participation of project beneficiaries - Financial contributions from beneficiaries - Strategies for targeting involvement of women - Organization and training of beneficiaries			
5.7.2 Human Resources Development & Training	- Staffing situation (quality and quantity) - Existing training programs of sector agencies and mechanisms for implementation (technical and management training) - Access to technical information - Available training and information materials * Types and contents * Mode of dissemination			

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		- Actual experiences and practices of sector agencies			
5.7.3	Sanitation/Hygiene Education	- Existing health/hygiene education programs of sector agencies and mechanisms for implementation * DOH (Implementing program on Public Toilets) * DECS (Implementing program on School Toilets) - Mechanisms and resources for mass dissemination of information and other social marketing programs - Hygiene educational materials available * Types and content * Mode of dissemination - Actual experiences and practices of sector agencies (national-and local-level)			
5.8	Existing Sector Monitoring				
	(1) National Level (2) Local Level				
6.	PAST FINANCIAL PERFORMANCE IN WATER SUPPLY AND SANITATION				
6.1	General	- Basic idea and brief contents of this chapter			
6.2	Past Public Investment				

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		Main Report	Supporting Report	Data Report
6.2.1 Past Public Investment by the Central Government Agencies and LGUs	(1) Study on the previous public investment to the province by concerned agencies	T6.2.1 Previous Sector Investment to the Province by Concerned Agency	T6.2.1 Past Internal Revenue Allotment to Municipalities from Central Government	
6.2.2 Sources of Local Fund	(2) Role of past IRA in the provincial finance (profile of sector investment to allotted IRA in the province)	T6.2.2 Past Internal Revenue Allotment to the Province from Central Government		
6.3 Cost Recovery	- Study on cost recovery in water supply by service level and sanitation (WD, RWSA and BWSA)			
6.4 Affordability	- Affordability of water rates by service level and sanitation costs by users in comparison with income level	T6.4.1 Affordability in Water and Sanitation Services		
6.5 Past Financial Performance of WDs and RWSAs/BWSAs	- Study on past financial performance of WDs RWSAs/BWSAs	T6.5.1 Financial Indicators of Water Districts		
		T6.5.2 Loan Status of Water Districts		
7. WATER SOURCE DEVELOPMENT				
7.1 General				
(1) Approach and Outputs	- Available water sources and their application to suit the locality - Study approach with justification focusing on groundwater - Water Availability Map & standard well specification			

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		Main Report		Supporting Report		Data Report	
(2) Basic Data/Report with Conditions	- Major reports and hydrogeological maps used as basis of the study (with conditions and limitations) - Effective data to supplement the base materials						
(3) Utilization and Up-dating	- Manner of out-put in PW4SP - Updating methods clarifying what factors can be modified and updated						
(4) Existing Water Sources in the Province	- Description of existing water sources in the province	T7.1.1	Existing Groundwater Sources in the Province			T7.1.1	Water Source Information
7.2 Geology	- Classification of geologic rock units (3 types: Recent, Pliocene to Pleistocene, Pleistocene and Old rock units) - Distribution of each rock units and their proportion by municipality - Hydrogeolocial characteristics of each units	F7.2.1	Geological Map				
7.3 Groundwater Sources						T7.3.1	Well Inventory by Municipality
7.3.1 Classification of Ground-water Sources	- Definition and classification of groundwater sources - shallow well area (with high yield area) - deep well area (with high yield area) - difficult area	F7.3.1	Groundwater Availability Map				
7.3.2 Groundwater Availability in the Province				F7.3.1	Work Flow of Groundwater Availability Map		
(1) Shallow Well Area	- Shallow well distribution						

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	- Technical information of shallow well (Depth, SWL, SPC-CP)		F7.3.2 Groundwater Potential Area in the Province	
(2) Deep Well Area	- Deep well distribution - Technical information of deep well (Depth, SWL, SPC-CP)		F7.3.3 Potential Areas of High Yielding and With Salt Intrusion Problem	
(3) Difficult Area	- Distribution and proportion of difficult areas - Geological & Topographical characteristics of the area		F7.3.4 Area Category in Ground-water Utilization	
(4) Water Quality of Groundwater	- Possible area of salt water intrusion - Iron & Manganese problem area			
7.4 Spring Sources	- Distribution of spring sources - Technical information		T7.4.1 Existing Spring Sources by Municipality	
7.5 Surface Water Sources	- Major rivers in the province - Typical feature of the river both in quality and flow		F7.5.1 Study River Basin and Water Sampling Points	
			T7.5.1 River Information and Related Data	T7.5.1 Water Quality Examination Results
			T7.5.2 Water Quality Analysis Results	
7.6 Future Development Potential of Water Sources	- Potential water sources in each municipality (especially for rural area) with standard specifications by well type (shallow well, deep well, and spring)		T7.6.1 Existing Well Sources	F7.6.1 Individual Well Location and Specifications Map
			T7.6.2 Standard Specifications of Wells by Municipality	

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8. FUTURE REQUIREMENTS IN WATER SUPPLY AND SANITATION IMPROVEMENT				
8.1 General	(1) Physical targets - Provincial sector targets in context of the National Sector Master Plan and the National Medium-Term Development Plan - Population to be served by target year based on the NSO population projection and broken down to urban and rural areas at municipal level by sub-sector - Public school students to be served by target year based on projected school enrollment at municipal level - Projected number of public utilities by target year at municipal level (2) Physical requirements - Required facilities classified by urban and rural areas by sub-sector with implementation criteria - Equipment for construction, rehabilitation and O&M be identified (3) Identification of priority projects - Criteria for identifying priority projects - Priority projects by sub-sector			

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		Main Report		Supporting Report		Data Report	
8.2 Targets of Provincial Sector Plan	(1) Percentages of beneficiaries or utilities to be served as target indicator	T8.2.1	Provincial Sector Targets	T8.2.1	Estimation of Base Year Service Coverage of Water Supply		
	(2) Setting up of provincial sector targets by sub-sector - Water supply - Sanitation - Sewerage - Solid waste	T8.2.2	Base Year Service Coverage of Water Supply	T8.2.2	Population Coverage in Phase I Provided by Served Population in the Base Year (Water Supply)		
		T8.2.3	Base Year Service Coverage of Household Toilets	T8.2.3	Number of Households Served by Sanitary Toilets in the Base Year (1995)		
		T8.2.4	Base Year Service Coverage of Public School Toilets and Public Toilets	T8.2.4	Number of Public School Students Served by School Toilets in the Base Year (1995)		
		T8.2.5	Base Year Service Coverage of Municipal Solid Waste System in 1995	T8.2.5	Number of Public Utilities with Sanitary Toilets in the Base Year (1995)		
				T8.2.6	Household Coverage in Phase I Provided by Existing Facilities in the Base Year (Household Toilets)		
				T8.2.7	Public School Students and Public Utilities Coverage in Phase I Provided by Existing Facilities in the Base Year		

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8.3	Projection of Frame Values						
8.3.1	Population Projection	(1) Methodology for population projection by urban and rural areas by municipality - Base figures and conditions: 1990 population census and future population by urban and rural areas by municipality by target year as projected by NSO - Review/verify past population development characteristics by urban and rural areas at regional and provincial level - Review/compare past population in urban and rural areas at provincial level - Identify areas/municipalities where adjustment of projected population is necessary - Identify areas/municipalities to be excluded from PW4SP - Establish future population of urban and rural areas by municipality by target year for	T8.3.1	Future Population by Urban and Rural Area by Municipality	T8.3.1 T8.3.2 T8.3.3 T8.3.4 T8.3.5	Population Distribution in Urban and Rural Areas Past Population Development Population Projection for Target Years: Region and Province Provincial Population for Target Years Projected Number of Households by Urban and Rural Area by Municipality by Target Year	
8.3.2	School Enrollment Projection	(1) Methodology for school enrollment projection by municipality - Determine school age population - Determine participation rate of total school enrollment and participation rate of public school enrollment - Establish future participation rate of total school enrollment and participation rate of public school enrollment	T8.3.2	Projected Public School Enrollment and Number of Public Utilities by Municipality	T8.3.6	Projected School Enrollment by Municipality by Target Year	
8.3.3	Projection of the Number of Public Utilities	- Conditions used for projection of the number of public utilities toilets			T8.3.7	Projected Number of Public Utilities by Municipality by Target Year	

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8.3.4 Planning Area and Population to be Served by the Sewerage System	- Conditions used to define planning area and population to be served						
8.3.5 Number of Households to be Served by Municipal Solid Waste Collection System	- Condition used to determine population to be served						
8.4 Types of Facilities and Implementation Criteria							
8.4.1 Water Supply	- Classification of service level by urban and rural area - Optimum number of persons to be served by type andn level of service - Limited utilization/application of Levels I & II systems - Rehabilitation/replacement of Level I facilities	T8.4.1 T8.4.2	Groundwater Productivity Standard Specifications of Level I Wells	F8.4.1	Standard Structure of Wells (Open-hole Drilling and Gravel Pack Method)		
8.4.2 Sanitation	(1) HH toilets: One sanitary toilet per household is considered. Type of facility is dependent on the existing or planned water supply level of community (2) School and public utilities toilets - Future assumption on the number of public schools/utilities toilets - Standard DECS coverage based on a 1:50 facility-student ratio will be followed and the standard designs of RESP will be adopted. - Standard FWSP designs (with modification) for public toilets will be adopted						

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8.4.3	Urban Sewerage	- Staged implementation of the sewerage program for limited urban area.			F8.4.2	Staged Improvement in Sewage Collection Method	
8.4.4	Solid Waste	- Requirement of garbage collection trucks is considered.					
8.5	Service Coverage by Target Year						
8.5.1	Water Supply	(1) Assumptions/conditions adopted - Criteria on number of persons served by type and level of service through the future - Limited utilization/application of Levels I & II systems	T8.5.1	Population to be served by Target Year (Water Supply)	T8.5.1	Population to be Served by Level II System in Phase I	
			F8.5.1	Map Showing Future Water Supply Service Coverage by 2000	T8.5.2	Population to be Served in Phase I (Water Supply)	
		(2) Additional population to be served by target year - Present population served in urban and rural areas at each municipality (1994)	F8.5.2	Map Showing Future Water Supply Service Coverage by 2010	T8.5.3	Population to be Served in Phase II (Water Supply)	
8.5.2	Sanitation	(1) Household toilets - Present household served by type of toilet facility in urban and rural areas at municipal level (1994) - Households to be served by type of toilet facility in urban and rural areas at municipal level by target year - Additional households to be served by type of toilet facility in urban and rural areas at municipal level by target year	T8.5.2	Additional number of Households to be Served by Target Year (Household Toilets)	T8.5.4	Additional Number of Households to be Served in Phase I (Household Toilets)	
			F8.5.3	Map Showing Household Toilets Service Coverage by 2000	T8.5.5	Additional Number of Households to be Served in Phase II (Household Toilets)	
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	(2) School toilets - Present number of public school students adequately served at municipal level (1994) - Number of public school students to be served at municipal level by target year - Additional public school students to be served at municipal level by target year	T8.5.3 Additional Number of Public School Students to be Served by Target Year (School Toilets)	T8.5.6 Additional Number of Public School Students to be Served in Phases I and II (School Toilets)	
	(3) Public utilities toilets - Present number of sanitary public toilets at municipal level (1994) - Projected number of sanitary public utilities toilets at municipal level by target year (new construction) - Additional public utilities toilets at municipal level by target year	T8.5.4 Additional Number of Public Utilities with Sanitary Toilets by Target Year	T8.5.7 Number of Public Utilities with Sanitary Toilets in Phases I and II	
8.5.3 Urban Sewerage	- Assumptions adopted to define service coverage - Population to be served by target year (2010)	T8.5.5 Population to be Served by Urban Sewerage in Phase II		
8.5.4 Solid Waste	- Assumptions adopted to define service coverage - Additional number of households to be served by the municipal system by target year (2000)	T8.5.6 Additional No. of Urban Households to be Served by Municipal Solid Waste System in Phase I		
8.6 Facilities, Equipment and Rehabilitation to Meet the Target Services				
8.6.1 Water Supply	(1) Water supply facilities by service level by target year	T8.6.1 Water Supply Facilities Required by Target Year	T8.6.1 Urban Water Supply Facilities Required by Target Year	

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		(2) Equipment: - Well drilling equipment for water source development - Workshop bldg., and its equipment/tools - Major transportation equipment for construction and O&M			T8.6.2	Plan for Expansion of Existing Level III System	
					T8.6.3	Rural Water Supply Facilities Required by Target Year	
		(3) Rehabilitation - Wells and handpumps					
8.6.2	Sanitation	- Urban household toilets required by target year - Rural household toilets required at municipal level by target year - Public school toilets required at municipal level by target year - Public utilities toilets required at municipal level by target year	T8.6.2	Sanitation Facilities Required by Target Year	T8.6.4	Urban Household Toilets Required by Target Year	
					T8.6.5	Rural Household Toilets Required by Target Year	
					T8.6.6	Public School Toilets Required by Target Year	
					T8.6.7	Public Toilets Required by Target Year	
8.6.3	Urban Sewerage and Solid Waste	- Additional units of truck required to meet service coverage	T8.6.3	Number of Garbage Collection Trucks Required in Phase I			
8.7	Identification of Priority Projects for Medium-Term Development	(1) Criteria for identifying priority projects					
		(2) Description of identified projects by mode of service in each sub-sector					

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9.1	General				
9.2	Sector Management	- Situational Analysis: Developing the Vision - Service Provision Policies and Objectives - Operating Policies - Regulatory Policies - Financing System	F9.2.1 Sector Management Model F9.2.2 Flow of Funds		
9.3	Institutional Arrangements				
9.4	Project Management Arrangements	- Level I - Level II - Level III		F9.4.1 Formats for Level I Project Data and Level II Feasibility Study	
9.5	Community Involvement Models	- Policy; responsibilities - Potential future development needs	T9.5.1 Summary of Community Development Study Sites		
9.6	Human Resources Development and Training	- Policy; responsibilities			
10.	COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT				
10.1	General	(1) Methodology adopted to cost estimates (2) Composition of cost estimates - Costs for required facilities by urban and rural areas at municipal level together with equipment for construction/rehabilitation and O&M			

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		- Costs for sector management and recurrent costs					
10.2	Assumptions for Cost Estimates	(1) Unit Cost of facilities Establish unit cost (per capital/HH or facility) by type and level of service based on: - Existing standard unit costs of sector agencies concerned (DPWH, LWUA and DOH) - Typical standards development for PW4SP (i.e., deep wells by different depths)	T10.2.1	Unit Cost of Facilities by Type and Service Level	T10.2.1	Unit Cost of Level I (Deep Well - 30m Depth)	
			T10.2.2	Unit Cost of Equipment and Vehicle	T10.2.2	Unit Cost of Level I (Deep Well - 50m Depth)	
					T10.2.3	Unit Cost of Level I (Deep Well - 70m Depth)	
					T10.2.4	Unit Cost of Level I (Deep Well Rehabilitation)	
		(2) Unit costs of equipment based on the standard unit cost and recent procurement record at sector agencies concerned (DPWH, LWUA, DOH)			T10.2.5	Unit Cost of Level I (Shallow Well-18m Depth)	
					T10.2.6	Unit Cost of Level II (600 Service Population)	
					T10.2.7	Unit Cost of Level III (5,000 Service Population)	
		(3) Sector management costs Establish percentages to base cost or unit cost for following sector management activities: - Engineering studies - Community development and training - Health and hygiene education - Logistics support			T10.2.8	Unit Cost of Level III (10,000 Service Population)	
					T10.2.9	Unit Cost of Level III (15,000 Service Population)	

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	(4) Recurrent costs Establish unit cost or percentage to base cost for following purposes: - Regular operation cost - Spare parts and equipment replacement, and - Management cost		T10.2.10 Unit Cost of Flush Water Sealed with Septic Tank Toilet T10.2.11 Unit Cost of Pour Flush with Double Pit Latrine T10.2.12 Unit Cost of Ventilated Improved Pit Latrine (VIP) T10.2.13 Unit Cost of School Toilet T10.2.14 Unit Cost of Public Toilet	
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