

6. HUMAN RESOURCE DEVELOPMENT TRAINING

- Objective : To build a strong and cohesive team from among the core group members and barangay officials (if appropriate)
- Expected Results : Trained core group members on Human Resource Development
- Facilitator : CO worker
- Co-facilitator : Core group members

7. PRESENTATION OF TECHNICAL DESIGN

- Objective : Generate community decision on appropriate technology to be used
- Expected Results : Generate community decision on appropriate technology to be used
- Suggested Strategy : Community meeting to discuss
- Initial findings on technical feasibility study
- Presentation of technology options
- Facilitator : Technical Team

8. FACILITATION ON LEGAL WORKS AND DOCUMENTS

- Objective : Prepare necessary legal documents
- Expected Results : Legal documents required in WATSAN projects prepared
- Facilitator : Committee Chairman
- CO-facilitator : CO Worker

LIST OF DOCUMENTS REQUIRED IN IMPLEMENTING WATSAN PROJECTS

- Barangay Resolution desiring to avail of a water facility to be submitted to the LGU
- Building permit of WATSAN facility, from LGU
- Waiver form DENR (if water system components such as the source, tank, pipelines are situated in areas other than private lands) to use the site(s) for community development
- Right of way permit from private land owners, specifically for spring sites and pipeline routes
- Deeds of donation from private landowners for water tank and tapstand sites
- Certificate of water quality source to be developed and tapped, from DOH
- Certificate of water quality produced through the water system facility, from DOH
- Letter of acknowledgment from the municipal mayor endorsing the water system management to the water users' association formed
- Accreditation pertinent papers (needed for the accreditation of RWSAs/BWSAs at the LGU level)
- Water rights
- Water permit
- Drilling permit

9. PRESENTATION OF DRAFT TECHNICAL DESIGN (Skip This Activity If Level I)

- Objective : To inform the community of the results of the feasibility study conducted

Expected Results:

- Location of major components such as well drilling site, transmission and distribution pipelines
- Tanks and tapstands are identified
- Community acceptance of design
- Local counterpart generated

Suggested Strategies:

- Community meeting
- Site visit to proposed structures/facilities' location

INFORMATION TO BE PRESENTED TO THE COMMUNITY

- Role of technical people
- Contents of typical water system technical plan
- Presentation of design specifications and explanation of plan contents /drawings in layman's terms
- Presentation of program of work (POW) , bill of materials and cost estimates
- Validation of data gathered and used in the designing
- Solicit ideas, opinions, comments and preferences
- Come-up with compromises, and if appropriate determine local counterpart

10. MOBILIZATION OF COMMITTEE ON DOCUMENTATION

(skip this activity if Level I)

- Objective : To facilitate additional legal work requirement for tapstand, pipeline and other major system components
: To ensure a formal listing of tapstand membership
- Expected Results : Completed legal documentation requirement membership per tapstand known
- Facilitator : Committee Chairman, Committee on Documentation and Education and Membership
- CO-facilitator : CO worker

11. CONFIRMATION OF MEMBERSHIP BY TAPSTAND

- Objective : To confirm final membership by tapstand
: To undertake information campaign on the importance of grouping and houserules formulation
- Expected Results : To select tapstand leader
: Final listing of membership per tapstand
: Formulated tapstand houserules
: Tapstand leader selected
- Suggested Strategy : Undertake meeting per tapstand
- Facilitator : CO worker
- CO-facilitator : Chairman, Committee on Education and Recruitment

DISCUSSION POINTS IN FORMULATING TAPSTAND HOUSE RULES

- a. Getting water:
 - How will water be fetched?
 - When will water be fetched?
 - Who can fetch water?
- b. Monitoring
 - List down who fetches and how much volume of water was taken
- c. Water tariff due the specific tapstand
- d. Sanitation around the tapstand and around the cluster
- e. Beautification and physical development in the tapstand site
- f. Financial management regarding water tariffs

12. PRESENTATION OF FINAL TECHNICAL DESIGN

- Objective : To present and approve the final technical design
- Expected Results : Finalized counterpart agreement
- : Construction scheduling developed
- Suggested Strategy : Meeting among tapstand leaders, core group and barangay council

13. TRAINING ON HYGIENE, SANITATION AND HEALTH CARE

- Objective : Conduct of training on health and hygiene
- Expected Results : Awareness on community health aspects
- Suggested Strategy : Community meeting, or
- : Meeting by tapstand grouping
- Organizer : CO Worker, community and rural sanitary inspector
- Training Management : LGU
- Audience : Core Group, Barangay Officials, Barangay Health Workers, Rural Sanitary Inspectors, and Barangay Nutrition Scholars

14. SOURCE FOR EXCRETA DISPOSAL MATERIALS AND/OR FACILITIES

- Objective : To make available to the community facilities for excreta disposal (if conditions and culture warrant)
- Expected Results : Materials/facilities for excreta disposal constructed individually by members of the community in their households
- Suggested Strategy : Core group members together with CO worker make representations with LGUs to source materials or facilities
- Facilitator : Core group members
- CO-facilitator : CO worker

15. ORGANIZATIONAL MANAGEMENT TRAINING

- Organizer : CO and the community
- Training Management : LGU
- Audience : tapstand leaders, core group and barangay officials

16. PRE-CONSTRUCTION CONFERENCE

Objective	:	To generate work plan and tasking for the construction activities
Expected Results	:	Activities and roles identified Commitment to participate generated
Suggested Strategy	:	Hold a community meeting
Facilitator	:	Technical team
Co-facilitator	:	CO worker

AGENDA IN THE PRE-CONSTRUCTION CONFERENCE

- Presentation of schedule of work and tasking
- Determine quantities of resources needed
- Labor arrangements
- Salaries/wages, if any that will be incurred
- Mobilization of committees
- Arrangement on materials storage

17. MOBILIZATION FOR DELIVERY OF MATERIALS

Objective	:	To ensure that materials delivered at the community are all accounted for
Expected Results	:	Materials delivered all accounted for and in accordance to the agreed upon specifications in the technical design
Suggested Strategy	:	Specific committee to handle delivery, and storage of materials, and, if need be, disposition of materials
Facilitator	:	Committee to be agreed upon by the core group
Co-facilitator	:	CO worker

18. ACTION PLANNING FOR CONSTRUCTION

Objective	:	To spell out what to expect during the construction processes
Expected Results	:	Smooth implementation of construction activities
Facilitator	:	CO worker
Co-facilitator	:	Technical Team
Suggested Strategy	:	Core group meeting

STEPS TO BE UNDERTAKEN:

- Identify activities related to construction
- Define activity schedule and resources required
- Identify the type of manpower skills required per activity
- Monitoring and documentation of major water system components
- Progress reporting, evaluation and action planning
- Monitoring and documentation on construction of major water system components
- Repeat cycle until completion

19. DEVELOPMENT OF EXIT PLAN

Objective	:	To plan for the transfer of responsibility from CO worker to core group members
Expected Results	:	Core group informed of activities ahead and the expected time of withdrawal of the CO worker
	:	An exit plan containing task list and specific person responsible
	:	Organizational development program developed
Suggested Strategy	:	Core group meeting
Facilitator	:	CO worker
Co-facilitator	:	Technical Team
Audience	:	Community members

At the end of the Development of Organization Phase, the following milestone must have been achieved:

- Basic organizational development training such as value formation, leadership and team building and sanitation, health care and hygiene education must be done
- CO exit plan jointly developed by the CO together with the community
- All legal documents completed
- Pre-construction conference done
- Materials for construction delivered and accepted by the community
- Organizational strengthening such as involvement of a greater number of community members participating in mobilization activities and increased awareness on key issues through information exchange

The success of the phase rests on the extent the community had participated in the activities and learned from the processes as inputs to the community's capability for self-management. On the other hand, one of the most crucial factors to participation rests on the depth and broadness of their understanding of the project concept, features, processes, stakeholders, tasks, and responsibilities coupled with the need for water supply facility, a condition validated in the first orientation meeting done by the CO upon entry to the community.

The inputs that will be provided by the CO and the technical team will provide the necessary honing skills for the core group and tapstand leaders to have the confidence to accept more challenges in the next phase. These challenges are contained in the Exit Plan, which was formulated by the local stakeholders. The Plan will be implemented in Phase III stage to signal the weaning process of the community from the CO worker.

20. PRESENTATION, COMPARISON & COLLATION OF TAPSTAND HOUSERULES (skip this activity if Level I)

Objectives	:	Collate similar houserules formulated in the previous activity
Expected Results	:	Collated houserules
	:	Identified houserules appropriate for by-laws
Suggested Strategy	:	Meeting of tapstand leaders
Facilitator	:	CO worker
Co-facilitator	:	Core Group Member

21. DRAFTING OF CONSTITUTION AND BY-LAWS

Objective	:	To develop a set of policies and by-laws that will govern the operation of the organization
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Expected Results : Constitution and by-laws ready for ratification
Suggested Strategy : Meeting of core group and tapstand leaders

22. RATIFICATION OF CONSTITUTION, BY-LAWS AND POLICIES

Facilitator : CO Worker
Co-facilitator : Core Group Member
Expected Results : Constitution ratified
: Officers elected

23. FACILITY/SYSTEM TEST RUN

The community participates in ocular operation and test run of facility installed

Facilitator : Technical Team

24. WATER QUALITY TEST

Objective : To ensure potability of water from facility
Expected Result : Water facility is to provide potable water to community
Suggested Strategy : Collect water sample from tapstand
: Submit sample to DOH for test and certification

25. TURN-OVER OF FACILITY/SYSTEM

Officers elected organize and manage facility turnover ceremony

26. OPERATION, MAINTENANCE AND REPAIR TRAINING

Trainer : Technical team
Trainees : Community-appointed Plumber, Meter Reader (if there is a meter installed), Tapstand leader and RWSA/BWSA officers

27. FINANCIAL MANAGEMENT TRAINING

Trainer : NGO, LGU or Water District
Trainees : Bookkeeper, Tapstand Leader and RWSA/BWSA officer

28. RWSA/BWSA REGISTRATION AND ACCREDITATION

Facilitator : RWSA/BWSA officer
Co-facilitator : CO worker

Registration of BWSA/RWSA to appropriate government agencies is done. Options on where to register shall be presented and decided upon by the organization.

Possible Options:

In the absence of a clear national policy on B/RWSA registration, the following Registering Agencies could be presented as options:

- a. Securities and Exchange Commission
- b. Bureau of Rural Workers
- c. Local Waterworks Utilities Administration

- d. Department of Social Welfare and Development
- e. Cooperatives Development Authority

Accreditation of BWSA/RWSA is done through the municipal local government unit.

29. FORMAL EXIT OF THE CO WORKER

Facilitator	:	RWSA Officer
Co-facilitator	:	CO worker
Suggested Strategy	:	Hold a community meeting
Agenda	:	Assessment of CO Exit Plan
	:	Planning for the operation and management of water facility
	:	Scheduling of CO visits
	:	Scheduling of RWSA/BWSA and CO formal linking with other organizations and agencies
	:	Formal turn-over of CO responsibility to RWSA/BWSA
	:	

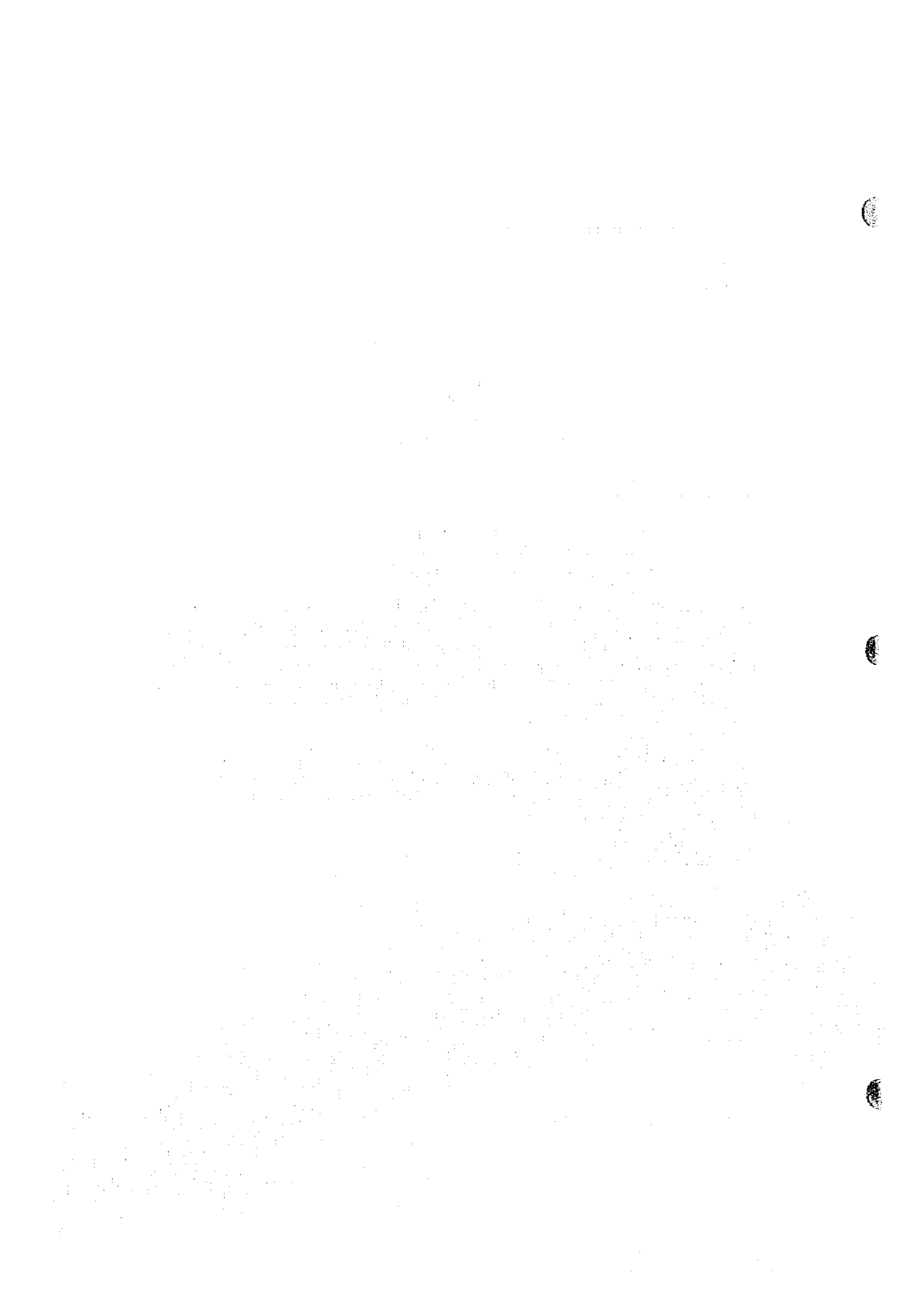
At the end of the Consolidation Phase, the following milestones are achieved:

- Facility is turned-over to the RWSA/BWSA and is functioning as intended and has its set of officers, constitution and by-laws and policies
- Plan for operation, maintenance and repair of system is installed

At the end of the community organizing process, the degree of capability of RWSA/BWSA in the operation and maintenance of water supply facility and maintaining their organizational health can be gauged on the extent of participation of the members in resolving problems and making decisions. The extent of focus of team building and leadership inputs is crucial in how the members of the RWSAs/BWSAs are willing to make amend allow some compromises among each other. On the other hand, the technical soundness of the design and execution of the construction ensures the long-term sustainability of the system.

By this time, the CO has exited but maintains monitoring visits until he/she is fully confident that the organization is strong enough to take decisions, plan and implement their WATSAN related activities and knows where to access support (in terms of financial, institutional and technical) when needed.

*Source: Water Supply and Sanitation Program Management Office
Department of the Interior and Local Government*



10 COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT

10.2 Assumption for Cost Estimates

(1) Unit Construction Cost

The base information in previous PW4SP, such as bill of quantities and unit cost of respective component facilities was fully utilized, which was referred to the standards of relevant sector agencies. Escalation rates experienced between 1995 and 1998 in terms of major construction materials and equipment rental were studied using NSO statistics (wholesale price index). Market prices of these items were also canvassed to compare with calculated prices in 1998 from those in 1995 in application of the escalation rates.

In general, escalated prices meet canvassed prices in most of the materials. Escalation rates between 1995 and 1998 were employed in round figures. Some of them (pipe materials, etc.) were, however, deferred at previous level due to considerable price stabilization in the last year.

The Table 10.2.1 shows the prices of the major materials by facility.

Table 10.2.1 Price of Major Materials by Facility

Major Materials	Water Supply			Sanitation		Projection by Major Materials				Canvassed & Collected Price		Comparison (1), (2) & (3)		
	L-I	L-II	L-III	ST, PT	Flush type	VP, Dry	NSO Wholesale Price Index		Escalation	Price				
							1995	1998		1995	1998 ⁽¹⁾			
1. Aggregate Sand Gravel	x	x	x	x	x	x	311.6	367.5	5.7%	304	359	330	350	Almost the same with (2) & (3).
2. Cement	x	x	x	x	x	x	197.4	214.1	2.7%	117	127	126	105	ditto
3. Fuel	x	x	x				601.6	742.6	7.3%	1,100	1,358	1,306		ditto
4. Metal pipe 4" x 3m, GI 4" x 3m, Screen	x	x	x				208.7	226.3	2.7%	2,625	2,846	2763		Price of GI casing is almost the same with (2) and screen is 12% lower than (2).
5. PVC pipe 2" x 3m 1-1/2" elbow	x	x	x	x	x	x	199.2	223.4	3.9%	813	912	882	852	Price of PVC pipe is almost the same with (2) and 7% higher than (3).
6. Reinforcing 12mm x 6m 10mm x 6m	x	x	x	x	x	x	201.4	221.9	3.3%	13	15			Almost the same with (3).
7. Lumber				x	x	x	268.5	296.8	3.4%	68	75			
8. Paint Enamel, QDE				x			128.0	140.1	3.1%	49	54			
9. Machinery	x						254.8	254.8	0.0%	266	291		310	Almost the same with (3).

L-I: Deep well/shallow well, L-II: Major materials are the same as those of L-I spring development,
 ST: School toilet, PT: Public toilet, Flush type: Flush water sealed w/ septic tank and Pour flush w/ double latrine,
 CIA: Construction Industry Authority of the Philippines, prevailing prices for the month of December 1998
 GI: Galvanized iron steel pipe for well casing, Screen: Low carbon steel and wound wire type

Table 10.2.2 (a) Unit Cost of Level I (Gravel Packed Deep Well - 40m Depth)

(Cost Peso)

Description	Qty.	Unit	Unit Cost	Amount
A. Mobilization/Demobilization/Site Preparation		LS		52,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	11	pcs.	2,846	31,306
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 200mm borehole	40	m	2,500	100,000
3. Borehole Logging	1	no	16,000	16,000
4. Freight Cost (10% of Materials)		LS		4,749
Sub-Total of B				168,236
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	6	pcs.	1,880	11,280
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				27,409
2. Labor (40% of D-1.)				10,964
3. Freight Cost (10% of Materials)		LS		2,741
Sub-Total of D				41,114
E. Indirect Cost				
Profit (10% of A, B, C & D)				42,335
Overhead Expense (13% of A, B, C & D)				55,030
VAT (10% of Labor, Profit & Overhead Expense)				20,834
Sub-Total of E				63,169
Total of Construction Cost (A+B+C+D+E)				354,519
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				361,919
SAY				361,900

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost Adjusted to 1998 Price Level

Table 10.2.2 (b) Unit Cost of Level I (Natural Gravel packed Deep Well - 40m Depth)

(Cost: Peso)

Description	Qty.	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		52,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	11	pcs.	2,846	31,306
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	0	set	1,925	0
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 150mm borehole	40	m	1,600	64,000
3. Borehole Logging	1	no	16,000	16,000
4. Freight Cost (10% of Materials)		LS		4,364
Sub-Total of B				128,001
C. Well Development and Pumping Test				
Well Development	12	hr.	5,500	66,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				96,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	6	pcs.	1,880	11,280
(3) #10 Sieved Gravel	0	cu.m	1,026	0
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	3	bags	127	381
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				26,256
2. Labor (40% of D-1.)				10,502
3. Freight Cost (10% of Materials)		LS		2,626
Sub-Total of D				39,384
E. Indirect Cost				
Profit (10% of A, B, C & D)				31,539
Overhead Expense (13% of A, B, C & D)				41,000
VAT (10% of Labor, Profit & Overhead Expense)				14,704
Sub-Total of E				46,243
Total of Construction Cost (A+B+C+D+E)				295,628
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				303,028
SAY				303,000

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost Adjusted to 1998 Price Level

Table 10.2.2(c) Unit Cost of Level I (Gravel Packed Deep Well - 40m Depth) for Acid Water

(Cost: Peso)

Description	Qty.	Unit	Unit Cost	Amount
A. Mobilization/Demobilization/Site Preparation		LS		52,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m PVC Casing with Socket	11	pcs.	2,038	22,418
(2) 100mm x 3m PVC Casing with Plug	1	pc.	980	980
(3) 100mm x 3m Stainless Steel Screen	2	pcs.	12,700	25,400
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 200mm borehole	40	m	2,500	100,000
3. Borehole Logging	1	no	16,000	16,000
4. Freight Cost (10% of Materials)		LS		5,265
Sub-Total of B				173,913
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 3m PVC Riser Pipe and SUS Pump Rod	12	pcs.	2,450	29,400
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				45,529
2. Labor (40% of D-1.)				18,212
3. Freight Cost (10% of Materials)		LS		4,553
Sub-Total of D				68,294
E. Indirect Cost				
Profit (10% of A, B, C & D)				45,621
Overhead Expense (13% of A, B, C & D)				59,307
VAT (10% of Labor, Profit & Overhead Expense)				22,314
Sub-Total of E				67,935
Total of Construction Cost (A+B+C+D+E)				392,142
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				399,542
SAY				399,500

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.3 (a) Unit Cost of Level I (Gravel Packed Deep Well - 80m Depth)

(Cost, Peso)

Description	Qty.	Unit	Unit Cost	Amount
A. Mobilization/Demobilization/Site Preparation		LS		54,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	24	pcs.	2,846	68,304
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 200mm borehole	80	m	2,500	200,000
3. Borehole Logging	1	no	18,000	18,000
4. Freight Cost (10% of Materials)		LS		8,449
Sub-Total of B				310,934
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	8	pcs.	1,880	15,040
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				31,169
2. Labor (40% of D-1.)				12,468
3. Freight Cost (10% of Materials)		LS		3,117
Sub-Total of D				46,754
E. Indirect Cost				
Profit (10% of A, B, C & D)				57,369
Overhead Expense (13% of A, B, C & D)				74,579
VAT (10% of Labor, Profit & Overhead Expense)				34,442
Sub-Total of E				91,811
Total of Construction Cost (A+B+C+D+E)				533,499
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				540,899
SAY				540,900

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.3 (b) Unit Cost of Level I (Natural Gravel Packed Deep Well - 80m Depth)

(Cost - Peso)

Description	Qty.	Unit	Unit Cost	Cost
A. Mobilization/Demobilization/Site Preparation		LS		54,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	24	pcs.	2,846	68,304
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	0	set	1,925	0
2. Labor, Fuel, Lubricant and others				
Well Drilling for 80 m depth at 150mm borehole	80	m	1,600	128,000
3. Borehole Logging	1	no	18,000	18,000
4. Freight Cost (10% of Materials)		LS		8,064
Sub-Total of B				234,699
C. Well Development and Pumping Test				
Well Development	12	hr.	5,500	66,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				96,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	8	pcs.	1,880	15,040
(3) #10 Sieved Gravel	0	cu.m	1,026	0
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	3	bags	127	381
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				30,016
2. Labor (40% of D-1.)				12,006
3. Freight Cost (10% of Materials)		LS		3,002
Sub-Total of D				45,024
E. Indirect Cost				
Profit (10% of A, B, C & D)				42,972
Overhead Expense (13% of A, B, C & D)				55,864
VAT (10% of Labor, Profit & Overhead Expense)				23,884
Sub-Total of E				66,856
Total of Construction Cost (A+B+C+D+E)				430,579
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				437,979
SAY				438,000

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.3 (c) Unit Cost of Level I (Gravel Packed Deep Well - 80m Depth) for Acid Water

(Cost: Peso)

Description	Qty.	Unit	Unit Cost	Cost
A. Mobilization/Demobilization/Site Preparation		LS		54,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m PVC Casing with Socket	24	pcs.	2,038	48,912
(2) 100mm x 3m PVC Casing with Plug	1	pc.	980	980
(3) 100mm x 3m Stainless Steel Screen	2	pcs.	12,700	25,400
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 40 m depth at 200mm borehole	80	m	2,500	200,000
3. Borehole Logging	1	no	18,000	18,000
4. Freight Cost (10% of Materials)		LS		7,914
Sub-Total of B				305,056
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 3m PVC Riser Pipe and SUS Pump Rod	16	pcs.	2,450	39,200
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				55,329
2. Labor (40% of D-1.)				22,132
3. Freight Cost (10% of Materials)		LS		5,533
Sub-Total of D				82,994
E. Indirect Cost				
Profit (10% of A, B, C & D)				60,405
Overhead Expense (13% of A, B, C & D)				78,527
VAT (10% of Labor, Profit & Overhead Expense)				36,106
Sub-Total of E				96,511
Total of Construction Cost (A+B+C+D+E)				568,561
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				575,961
SAY				576,000

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.4 (a) Unit Cost of Level I (Gravel Packed Deep Well - 120m Depth)

(Cost Peso)

Description	Qty.	Unit	Unit Cost	Amount
A. Mobilization/Demobilization/Site Preparation		LS		56,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	37	pcs.	2,846	105,302
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 120 m depth at 200mm borehole	120	m	2,500	300,000
3. Borehole Logging	1	no	20,000	20,000
4. Freight Cost (10% of Materials)		LS		12,148
Sub-Total of B				453,631
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	10	pcs.	1,880	18,800
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				34,929
2. Labor (40% of D-1.)				13,972
3. Freight Cost (10% of Materials)		LS		3,493
Sub-Total of D				52,394
E. Indirect Cost				
Profit (10% of A, B, C & D)				72,403
Overhead Expense (13% of A, B, C & D)				94,123
VAT (10% of Labor, Profit & Overhead Expense)				48,050
Sub-Total of E				120,453
Total of Construction Cost (A+B+C+D+E)				712,478
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				719,878
SAY				719,900

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost Adjusted to 1998 Price Level

Table 10.2.4 (b) Unit Cost of Level I (Natural Gravel Packed Deep Well - 120m Depth)

(Cost: Peso)

Description	Qty.	Unit	Unit Cost	Cost
A. Mobilization/Demobilization/Site Preparation		LS		56,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	37	pcs.	2,846	105,302
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,667	9,334
(4) Casing Centralizer	0	set	1,925	0
2. Labor, Fuel, Lubricant and others				
Well Drilling for 120 m depth at 150mm borehole	120	m	1,600	192,000
3. Borehole Logging	1	no	20,000	20,000
4. Freight Cost (10% of Materials)		LS		11,763
Sub-Total of B				341,396
C. Well Development and Pumping Test				
Well Development	12	hr.	5,500	66,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				96,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 6m Riser Pipe and Pump Rod	10	pcs.	1,880	18,800
(3) #10 Sieved Gravel	0	cu.m	1,026	0
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	3	bags	127	381
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				33,776
2. Labor (40% of D-1.)				13,510
3. Freight Cost (10% of Materials)		LS		3,378
Sub-Total of D				50,664
E. Indirect Cost				
Profit (10% of A, B, C & D)				54,406
Overhead Expense (13% of A, B, C & D)				70,728
VAT (10% of Labor, Profit & Overhead Expense)				33,064
Sub-Total of E				87,470
Total of Construction Cost (A+B+C+D+E)				565,530
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				572,930
SAY				572,900

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.4(c) Unit Cost of Level I (Gravel Packed Deep Well - 120m Depth) for Acid Water

(Cost, Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization/Site Preparation		LS		56,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m PVC Casing with Socket	37	pcs.	2,038	75,406
(2) 100mm x 3m PVC Casing with Plug	1	pc.	980	980
(3) 100mm x 3m Stainless Steel Screen	2	pcs.	12,700	25,400
(4) Casing Centralizer	2	set	1,925	3,850
2. Labor, Fuel, Lubricant and others				
Well Drilling for 120 m depth at 200mm borehole	120	m	2,500	300,000
3. Borehole Logging	1	no	20,000	20,000
4. Freight Cost (10% of Materials)		LS		10,564
Sub-Total of B				436,200
C. Well Development and Pumping Test				
Well Development	24	hr.	5,500	132,000
Pumping Test	6	hr.	5,000	30,000
Sub-Total of C				162,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Afridev Type)	1	set	11,815	11,815
(2) 63mm x 3m PVC Riser Pipe and SUS Pump Rod	20	pcs.	2,450	49,000
(3) #10 Sieved Gravel	1	cu.m	1,026	1,026
(4) Coarse Sand	1	cu.m	359	359
(5) Cement for Sanitary Seal	4	bags	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of D-1				65,129
2. Labor (40% of D-1.)				26,052
3. Freight Cost (10% of Materials)		LS		6,513
Sub-Total of D				97,694
E. Indirect Cost				
Profit (10% of A, B, C & D)				75,189
Overhead Expense (13% of A, B, C & D)				97,746
VAT (10% of Labor, Profit & Overhead Expense)				49,899
Sub-Total of E				125,038
Total of Construction Cost (A+B+C+D+E)				744,982
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		3,600
2. Construction Supervision		LS		2,400
3. Water Quality Analysis		LS		1,400
Sub-Total of F				7,400
GRAND TOTAL				752,382
SAY				752,400

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1993 Price Level

Table 10.2.5 Unit Cost of Level I (Deep Well Rehabilitation)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		8,000
B. Well Rehabilitation				
1. Materials				
(1) Cylinder Pump Set	1	set	9,570	9,570
(2) Cement for Surface Sealing	4	bags	127	508
(3) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	2	cu.m	454	908
3) Sand	1	cu.m	359	359
4) Plywood (4' x 8' x 1/4")	1	pc.	294	294
5) Form Lumber (2" x 3" x 6")	6	pcs.	52	312
6) Nail	1	kg.	40	40
Sub-Total of B-1				12,499
2. Labor (40% of B-1)				5,000
3. Freight Cost (10% of Materials)				1,250
Sub-Total of B				18,749
C. Well Development		LS		31,000
D. Indirect Cost				
Profit (10% of A, B & C)				5,775
Overhead Expense (13% of A, B & C)				7,507
VAT (10% of Profit & Labor)				4,178
Sub-Total of D				17,460
Total of Construction Cost (A+B+C+D)				75,209
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		1,300
2. Supervision		LS		800
3. Water Quality Analysis		LS		1,400
Sub-Total of E				3,500
GRAND TOTAL				78,709
SAY				78,700

Note: LS - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.6 Unit Cost of Level I (Shallow Well - 18m Depth)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		20,000
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 63mm x 6m PVC Pipe with socket	2	pcs.	912	1,824
(2) 63mm x 3m PVC Pipe with plug	1	pc.	452	452
(3) 63mm PVC Socket	1	pc.	12	12
(4) 63mm x 3m PVC Screen	1	pc.	1,443	1,443
(5) Casing Centralizer	2	set	725	1,450
2. Labor, Fuel, Lubricant and others				
Well Drilling for 18 m depth at 150mm borehole	18	m	1,600	28,800
3. Freight Cost (10% of Materials)		LS		373
Sub-Total of B				34,354
C. Well Development	4	hr.	2,000	8,000
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1	set	2,807	2,807
(2) 50mm Riser Pipe and Foot Valve	1	pc.	118	118
(3) #10 Sieved Gravel	0.1	cu.m	1,026	103
(4) Coarse Sand	0.07	cu.m	359	25
(5) Cement for Sanitary Seal	4	bag	127	508
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	1	cu.m	454	454
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mm x 75mm x 1,800 mm)	1	pc.	52	52
6) Nail	1	kg.	40	40
Sub-Total of D-1				5,268
2. Labor (40% of D-1.)				2,107
3. Freight Cost (10% of Materials)		LS		527
Sub-Total of D				7,902
E. Indirect Cost				
Profit (10% of A to D)				7,026
Overhead Expense (13% of A to D)				9,133
VAT (10% of Profit & Overhead Expense)				1,616
Sub-Total of E				8,642
Total of Construction Cost (A+B+C+D+E)				78,898
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		1,300
2. Construction Supervision		LS		800
3. Water Quality Analysis		LS		1,400
Sub-Total of F				3,500
GRAND TOTAL				82,398
SAY				82,400

Note: LS - Lump Sum

Source: DPWH standard price in 1994 & LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.7 Unit Cost of Level I (Spring Development)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		24,000
B. Construction of Spring Box				
1. Materials		LS		42,700
2. Labor (35% of 1.)		LS		14,945
3. Freight Cost (10% of Materials)		LS		4,270
Sub-Total of B				61,915
C. Installation of Pipelines & Fittings				
1. Transmission Materials				
63mm dia. PVC Pipe (Class 12.5 with socket)	330	pcs.	959	316,470
63mm dia. Tee	1	no.	172	172
Solvent Cement	26	cans	140	3,640
63mm dia. Elbow (90 deg.)	3	nos.	89	267
63mm dia. Elbow (45 deg.)	1	pc.	99	99
50mm dia. Gate Valve	2	pcs.	900	1,800
50mm dia. x 1m Stand Pipe	1	pc.	177	177
63mm x 50mm GI Nipple	1	pc.	123	123
50mm dia. Union Patent	3	pcs.	192	576
63mm x 50mm dia. Reducing Socket	2	pcs.	113	226
50mm dia. GI Elbow (90 deg.)	2	pcs.	79	158
63mm x 50mm dia. Socket Adapter	2	pcs.	167	334
50mm dia. GI Gate Valve	2	pcs.	791	1,582
13mm dia. Brass Faucet	2	pcs.	59	118
Sub-Total of Materials				325,624
Labor (35% of Material Cost)		LS		113,968
Freight Cost (10% of Materials)		LS		32,562
Sub-Total of C				472,154
D. Indirect Cost				
1. Transmission Main				
Profit (10% of C)				47,215
Overhead Expense (13% of C)				61,380
VAT (10% of Profit, Overhead Expense & Labor)				22,256
2. Source Facilities				
Profit (10% of A, B)				25,775
Overhead Expense (13% of A, B)				8,592
VAT (10% of Profit, Overhead Expense & Labor)				4,931
Sub-Total of D				170,149
Total Construction Cost (A+B+C+D)				728,218
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering and RWSA Formation		LS		2,400
2. Supervision		LS		15,000
3. Water Quality Analysis		LS		1,400
Sub-Total of E				18,800
GRAND TOTAL				747,018
SAY				747,000

Note: LS - Lump Sum

Source:

DPWH standard price in 1994

LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.8 Unit Cost of Level II (600 Service Population)

Sheet 1 of 2

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		36,000
B. Construction of Spring Box & Ground Reservoir				
1. Materials		LS		128,000
2. Labor (35% of 1.)		LS		44,800
3. Freight Cost (10% of Materials)		LS		12,800
Sub-Total of B				185,600
C. Installation of Pipelines & Fittings				
1. Transmission Pipeline Materials				
63mm dia. PVC Pipe (Class 12.5 with socket)	500	pcs.	959	479,500
63mm dia. Tee	1	no.	172	172
Solvent Cement	40	cans	140	5,600
63mm dia. x 50mm Nipple	3	nos.	159	477
63mm dia. Union Patent	1	pc.	203	203
63mm dia. x 50mm dia. Reducing Socket	2	pcs.	123	246
63mm dia. Elbow (90 deg.)	1	pc.	89	89
63mm dia. Elbow (45 deg.)	1	pc.	99	99
63mm dia. Gate Valve	3	pcs.	1,320	3,960
Sub-Total of Materials				490,346
Labor (35% of Material Cost)		LS		171,621
Freight Cost (10% of Materials)		LS		49,035
Sub-Total of Transmission Main				711,002
2. Distribution Pipeline Materials				
50mm dia. PVC Pipe (Class 12.5 with socket)	20	pcs.	531	10,620
38mm dia. PVC Pipe (Class 12.5 with socket)	30	pcs.	353	10,590
20mm dia. PVC Pipe (Class 40 with socket)	10	pcs.	118	1,180
13mm dia. x 1 m Stand Pipe	10	pcs.	110	1,100
Solvent Cement	4	cans	140	560
Fittings				
a. 50mm dia. x 150mm PVC Nipple	3	pcs.	147	441
b. 32mm dia. x 150mm PVC Nipple	3	pcs.	89	267
c. 13mm dia. x 150mm GI Nipple	40	pcs.	29	1,160
d. 50mm dia. Union Patent	1	pcs.	192	192
e. 32mm dia. Union Patent	2	pcs.	83	166
f. 13mm dia. Union Patent	10	pcs.	29	290
g. 50mm dia. x 32mm dia. Reducing Socket	6	pcs.	106	636
h. 32mm dia. x 20mm dia. Reducing Socket	10	pcs.	82	820
i. 20mm dia. x 13mm dia. Reducing Socket	10	pcs.	64	640
j. 50mm dia. PVC Elbow (90 deg.)	2	pcs.	64	128
k. 13mm dia. GI Elbow (90 deg.)	20	pcs.	15	300
l. 20mm dia. x 13mm dia. Socket Adapter	10	pcs.	48	480
m. 50mm dia. GI Gate Valve	2	pcs.	791	1,582
n. 32mm dia. GI Gate Valve	2	pcs.	447	894
o. 13mm dia. GI Gate Valve	24	pcs.	271	6,504
p. 13mm dia. Brass Faucet	24	pcs.	59	1,416
q. 50mm dia. Tee	4	pcs.	153	612
r. 32mm dia. Tee	6	pcs.	129	774
s. Water Meter	24	pcs.	1,004	24,096
t. Water Meter Box	24	pcs.	1,297	31,128
Sub-Total of Materials				96,576

Table 10.2.8 Unit Cost of Level II (600 Service Population)

Sheet 2 of 2

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
Labor (35% of Material Cost)		LS		33,802
Freight Cost (10% of Materials)		LS		9,658
Sub-Total of Distribution Pipeline				140,036
Sub-Total of C				851,038
D. Indirect Cost				
1. Transmission Main				
Profit (10% of C-1)		LS		71,100
Overhead Expense (13% of C-1)		LS		92,430
VAT (10% of Profit, Overhead Expense and Labor)		LS		33,515
2. Source Facilities and Distribution Pipeline				
Profit (10% of A, B, C-2)		LS		36,164
Overhead Expense (13% of A, B and C-2)		LS		47,013
VAT (10% of Profit, Overhead Expense and Labor)		LS		16,178
Sub-Total of D				296,400
Total Construction Cost (A+B+C+D)				1,369,038
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering and RWSA Formation		LS		2,400
2. Supervision		LS		15,000
3. Water Quality Analysis		LS		1,400
Sub-Total of E				18,800
Total Estimated Cost				1,387,838
Unit Cost per Person Served				2,313
SAY				2,300

Note: LS - Lump Sum

Source:

DPWH standard price in 1994

LWUA Water Supply Feasibility Study Methodology Manual 1998

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.9 Unit Cost of Level III (5,000 Service Population)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		360,000
B. Source Development and Storage				
1. Deep Well	1	No.	2,001,000	2,001,000
2. Deep Well Pump	1	No.	832,000	832,000
3. Chlorinator House & Equipment	1	LS	632,000	632,000
4. Storage Tank (250 cu.m)	1	No.	1,300,000	1,300,000
Sub-Total of B				4,765,000
C. Transmission Main				
1. 160mm dia.	500	LM	1,320	660,000
Sub-Total of C				660,000
D. Distribution Main				
1. 160mm dia.	1,000	LM	1,320	1,320,000
2. 110mm dia.	3,000	LM	1,090	3,270,000
3. 90mm dia.	3,000	LM	684	2,052,000
4. 75mm dia.	6,000	LM	637	3,822,000
Sub-Total of D				10,464,000
E. Service Connections	1,000	Nos.	2,288	2,288,000
F. Miscellaneous				
1. Vehicle	1	No.	649,000	649,000
2. Office & Workshop Bldg.	1	No.	645,000	645,000
3. Office Equipment	1	LS	118,000	118,000
4. Tools and Spare Parts	1	LS	110,000	110,000
Sub-Total of F				1,522,000
Total Direct Cost (A+B+C+D+E+F)				20,059,000
G. Indirect Cost (25% of Direct Cost)				5,014,750
Total Estimated Cost				25,073,750
Unit Cost per Person Served For New Construction				5,015
			SAY	5,000
For Expansion of Existing System (Exclude F.)				4,634
			SAY	4,600

Note: LS - Lump Sum

Cost of spring development includes additional transmission main, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.10 Unit Cost of Level III (10,000 Service Population)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		360,000
B. Source Development and Storage				
1. Deep Well	1	No.	2,001,000	2,001,000
2. Deep Well Pump	1	No.	832,000	832,000
3. Chlorinator House & Equipment	1	LS	632,000	632,000
4. Storage Tank (250 cu.m)	1	No.	1,300,000	1,300,000
Sub-Total of B				4,765,000
C. Transmission Main				
1. 160mm dia.	500	LM	1,320	660,000
Sub-Total of C				660,000
D. Distribution Main				
1. 160mm dia.	2,000	LM	1,320	2,640,000
2. 110mm dia.	5,000	LM	1,090	5,450,000
3. 90mm dia.	6,000	LM	684	4,104,000
4. 75mm dia.	9,000	LM	637	5,733,000
Sub-Total of D				17,927,000
E. Service Connections	2,000	Nos.	2,288	4,576,000
F. Miscellaneous				
1. Vehicle	1	No.	649,000	649,000
2. Office & Workshop Bldg.	1	No.	645,000	645,000
3. Office Equipment	1	LS	118,000	118,000
4. Tools and Spare Parts	1	LS	110,000	110,000
Sub-Total of F				1,522,000
Total Direct Cost (A+B+C+D+E+F)				29,810,000
G. Indirect Cost (25% of Direct Cost)				7,452,500
Total Estimated Cost				37,262,500
Unit Cost per Person Served For New Construction				3,726
For Expansion of Existing System (Exclude F.)				3,700
				3,536
				3,500

Note: LS - Lump Sum

Cost of spring development includes additional transmission main, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.11 Unit Cost of Level III (15,000 Service Population)

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization/Demobilization		LS		360,000
B. Source Development and Storage				
1. Deep Well	2	No.	2,001,000	4,002,000
2. Deep Well Pump	2	No.	832,000	1,664,000
3. Chlorinator House & Equipment	2	LS	632,000	1,264,000
4. Storage Tank (250 cu.m)	2	No.	1,300,000	2,600,000
Sub-Total of B				9,530,000
C. Transmission Main				
1. 160mm dia.	1,000	LM	1,320	1,320,000
Sub-Total of C				1,320,000
D. Distribution Main				
1. 160mm dia.	3,000	LM	1,320	3,960,000
2. 110mm dia.	7,000	LM	1,090	7,630,000
3. 90mm dia.	8,000	LM	684	5,472,000
4. 75mm dia.	10,000	LM	637	6,370,000
Sub-Total of D				23,432,000
E. Service Connections	3,000	Nos.	2,288	6,864,000
F. Miscellaneous				
1. Vehicle	1	No.	649,000	649,000
2. Office & Workshop Bldg.	1	No.	645,000	645,000
3. Office Equipment	1	LS	118,000	118,000
4. Tools and Spare Parts	1	LS	110,000	110,000
Sub-Total of F				1,522,000
Total Direct Cost (A+B+C+D+E+F)				43,028,000
G. Indirect Cost (25% of Direct Cost)				10,757,000
Total Estimated Cost				53,785,000
Unit Cost per Person Served For New Construction				3,586
For Expansion of Existing System (Exclude F.)				3,600
				3,459
				3,500

Note: LS - Lump Sum

Cost of spring development includes additional transmission main, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.12 Unit Cost of Flush Water Sealed with Septic Tank Toilet

(Cost: Peso)

Description		Q'ty	Unit	Unit Cost	Amount
A:	Demolition		LS		1,100
B:	Earthwork				
	1. Materials				
	(1) Gravel Fill	1	cu.m	454	454
	Sub-Total of B-1				454
	2. Labor				
	(1) Excavation	6	cu.m	140	840
	(2) Backfill	2	cu.m	127	254
	(3) Gravel Fill	1	cu.m	166	166
	Sub-Total of B-2				1,260
	Sub-Total of B				1,714
C:	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	pc.	58	174
	(3) #16 Tie Wire	0.5	kg	58	29
	(4) Cement	10	bag	137	1,370
	(5) Sand	1.5	cu.m	359	539
	(6) Gravel	2	cu.m	454	908
	(7) Stone Lining with Mortar	1	LS	1,250	1,250
	Sub-Total of C-1				5,294
	2. Labor (30% of C-1)				1,588
	Sub-Total of C				6,882
D:	Carpentry Work				
	1. Materials				
	(1) Nipa	60	pc.	2	120
	(2) 1.5m x 1.8m, amakan	3	pc.	75	225
	(3) 2" x 3" x 10' Coco Lumber	20	bd.ft	11	220
	(4) 2" x 2" x 10' Coco Lumber	33.3	bd.ft	10	333
	(5) 3" dia. Bamboo	3	light	21	63
	(6) Assorted CWN	4	kg	43	172
	(7) Rattan wire	20	pc.	1	20
	Sub-Total of C-1				1,153
	2. Labor (30% of C-1)				346
	Sub-Total of C				1,499
E:	Plumbing				
	1. Materials				
	(1) Water Closet	1	set	4,900	4,900
	(2) Water line and sanitary fixtures	1	LS	1,650	1,650
	Sub-Total of E-1				6,550
	2. Labor (30% of E-1)				1,965
	Sub-Total of E				8,515
F:	Transportation Cost (excluding indigenous materials)	1	LS	540	540
G:	Indirect Cost				
	Profit (10% of A - F)				2,025
	VAT (10% of Profit & Labor)				718
	Sub-Total of F				2,743
	Total of Construction Cost (A+B+C+D+E+F+G)			SAY	22,993
					23,000

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1993 Price Level

Table 10.2.13 Unit Cost of Pour Flush with Double Pit Latrine

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Earthwork				
1. Materials				
(1) Gravel Fill	1	cu.m	454	454
Sub-Total of A-1				454
2. Labor				
(1) Excavation	6	cu.m	140	840
(2) Backfill	2	cu.m	127	254
(3) Gravel Fill	1	cu.m	166	166
Sub-Total of A-2				1,260
Sub-Total of A				1,714
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	pc.	58	174
(3) #16 Tie Wire	0.5	kg	58	29
(4) Cement	10	bag	137	1,370
(5) Sand	1.5	cu.m	359	539
(6) Gravel	2	cu.m	454	908
(7) Stone Lining with Mortar	1	LS	1,250	1,250
Sub-Total of B-1				5,294
2. Labor (25% of B-1)				1,323
Sub-Total of B				6,617
C. Carpentry Work				
1. Materials				
(1) Nipa	60	pc.	2	120
(2) 1.5m x 1.8m, amakan	3	pc.	75	225
(3) 2" x 3" x 10' Coco Lumber	20	bd.ft	11	220
(4) 2" x 2" x 10' Coco Lumber	33.3	bd.ft	10	333
(5) 3" dia. Bamboo	3	light	21	63
(6) Assorted CWN	4	kg	43	172
(7) Rattan wire	20	pc.	1	20
(8) Pale (medium)	1	pc.	203	203
(9) 3" dia. PVC x 3m	1	pc.	665	665
(10) 3" dia. PVC Elbow	2	pc.	70	140
(11) PVC solvent	1	pint	54	54
(12) Ga. 31" x 8' plain GI sheet	1	sheet	214	214
Sub-Total of C-1				2,429
2. Labor (25% of C-1)				607
Sub-Total of C				3,036
D. Plumbing				
1. Material				
(1) Toilet Bowl-Squat Type	1	pc.	703	703
(2) 75mm dia x 6.0m PVC Pipe	1	pc.	152	152
Sub-Total of D-1				855
2. Labor (25% of D-1)				214
Sub-Total of D				1,069
E. Transportation Cost (excluding indigenous materials)	1	LS	340	340
F. Indirect Cost				
Profit (10% of A - D)				1,547
VAT (10% of Profit & Labor)				495
Sub-Total of F				2,042
Total Construction Cost (A+B+C+D+E+F)			SAY	14,818
				14,800

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost Adjusted to 1998 Price Level

Table 10.2.14 Unit Construction Cost of Ventilated Improved Pit Latrine

(Cost: Peso)

Description		Q'ty	Unit	Unit Cost	Amount
A.	Earthwork				
	1. Materials				
	(1) Gravel Fill	0.5	cu.m	454	227
	Sub-Total of A-1				227
	2. Labor				
	(1) Excavation	3	cu.m	140	420
	(2) Backfill	1	cu.m	127	127
	(3) Gravel Fill	0.5	cu.m	166	83
	Sub-Total of A-2				630
	Sub-Total of A				857
B.	Concrete Work				
	1. Materials				
	Slab on wood planks				
	(1) 2" x 8" x 6' Coco Lumber	64	bd.ft	8	512
	(2) 10mm dia x 6.0m Rebar	2	pc.	58	116
	(3) #16 Tie Wire	0.5	kg	58	29
	(4) Cement	4	bag	137	548
	(5) Sand	0.5	cu.m	359	180
	(6) Gravel	0.5	cu.m	454	227
	(7) Stone Lining with Mortar	1	LS	1,200	1,200
	Sub-total of B-1				2,812
	2. Labor (25% of B-1)				703
	Sub-Total of B				3,515
C.	Carpentry Work				
	1. Materials				
	(1) Nipa	60	pc.	2	120
	(2) 1.5m x 1.8m, amakan	3	pc.	75	225
	(3) 2" x 3" x 10' Coco Lumber	20	bd.ft	11	220
	(4) 2" x 2" x 10' Coco Lumber	33.3	bd.ft	10	333
	(5) 3" dia. Bamboo	3	light	21	63
	(6) Assorted CWN	4	kg	43	172
	(7) Rattan wire	20	pc.	1	20
	(8) 3" x 3" hinges	2	pc.	32	64
	Sub-Total of C-1				1,217
	2. Labor (25% of C-1)				304
	Sub-Total of C				1,521
D.	Plumbing				
	1. Material				
	(1) 50mm dia. PVC Pipe	1	pc.	76	76
	(2) Fly Screen	1	pc.	59	59
	Sub-Total of D-1				135
	2. Labor (25% of D-1)				41
	Sub-Total of D				176
E.	Transportation Cost (excluding indigenous materials)	1	LS	170	170
F.	Indirect Cost				
	Profit (10% of A - E)				624
	VAT (10% of Profit & Labor)				230
	Sub-Total of F				854
	Total Construction Cost (A+B+C+D+E+F)			SAY	7,093
					7,100

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.15 Unit Construction Cost of Pit Latrine

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Earthwork				
1. Materials				
(1) Gravel Fill	0.3	cu.m	454	136
Sub-Total of A-1				136
2. Labor				
(1) Excavation	2	cu.m	140	280
(2) Backfill	0.6	cu.m	127	76
(3) Gravel Fill	0.3	cu.m	166	50
Sub-Total of A-2				406
Sub-Total of A				542
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 2" x 8" x 6' Coco Lumber	38	bd.ft	8	304
(2) 10mm dia x 6.0m Rebar	1	pc.	58	58
(3) #16 Tie Wire	0.5	kg.	58	29
(4) Cement	3	bag	137	411
(5) Sand	0.3	cu.m	359	108
(6) Gravel	0.3	cu.m	454	136
(7) Stone Lining with Mortar	1	LS	700	700
Sub-total of B-1				1,746
2. Labor (25% of B-1)				436
Sub-Total of B				2,182
C. Carpentry Work				
1. Materials				
(1) Nipa	30	pc.	2	60
(2) 1.0m x 1.8m, amakan	3	pc.	75	225
(3) 2" x 3" x 10' Coco Lumber	14	bd.ft	11	154
(4) 2" x 2" x 10' Coco Lumber	24	bd.ft	10	240
(5) 3" dia. Bamboo	3	light	21	63
(6) Assorted CWN	3	kg	43	129
(7) Rattan wire	14	pc.	1	14
(8) 3" x 3" hinges	2	pc.	32	64
Sub-Total of C-1				949
2. Labor (25% of C-1)				237
Sub-Total of C				1,186
D. Transportation Cost (excluding indigenous materials)	1	LS	170	170
E. Indirect Cost				
Profit (10% of A -D)				391
VAT (10% of Profit & Labor)				164
Sub-Total of E				555
Total Construction Cost (A+B+C+D+E)			SAY	4,635
				4,600

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.16 Unit Cost of School Toilet

Sheet 1 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization and Demobilization		LS		6,000
B. Earthwork				
1. Materials				
(1) Gravel Fill	3	cu.m	454	1,362
Sub-Total of B-1				1,362
2. Labor				
(1) Excavation	16	cu.m	140	2,240
(2) Backfill	5	cu.m	127	635
(3) Gravel Fill	3	cu.m	166	498
Sub-Total of B-2				3,373
Sub-Total of B				4,735
C. Concrete Work				
1. Materials				
(1) Cement	61	bags	137	8,357
(2) Sand	4	cu.m	359	1,436
(3) Gravel	8	cu.m	454	3,632
(4) Rebars: 12mm dia x 6m	38	pcs.	79	3,002
10mm dia x 6m	57	pcs.	58	3,306
(5) #16 Tie Wire	8	kg.	58	464
(6) Formworks:				
1/4" Plywood	6	pcs.	477	2,862
2" x 2" x 10', Coco Lumber	200	bd.ft.	10	2,000
Sub-Total of C-1				25,059
2. Labor (30% of C-1)		LS		7,518
Sub-Total of C				32,577
D. Masonry Work				
1. Materials				
(1) 6" CHB	800	pcs.	6	4,800
(2) 4" CHB	260	pcs.	5	1,300
(3) Cement	97	bags	137	13,289
(5) Sand	10	cu.m	359	3,590
(6) Rebars: 12mm dia x 6m	30	pcs.	79	2,370
10mm dia x 6m	11	pcs.	58	638
(7) #16 Tie Wire	4	kg.	58	232
(8) Scaffolding:				
2" x 4" x 8' x 10pcs., Coco Lumber	53	bf.	8	424
Sub-Total of D-1				26,643
2. Labor (30% of D-1)		LS		7,993
Sub-Total of D				34,636
E. Roofing Work				
1. Materials				
(1) GA #26 Corr. GI (1 = 10')	20	pcs.	310	6,200
(2) GA #24 Pln. GI Flashing	3	pcs.	300	900
(3) GA #24 Pln. GI Gutter (Pre-Fab)	9	pcs.	300	2,700
(4) Umbrella Nails 2-1/2"	12	kg.	50	600
(5) Rafter - 2" x 5" x 18' = 5pcs.	75	bf.	35	2,625
(6) Purlins - 2" x 2" x 12' = 18pcs.	72	bf.	35	2,520
(7) WD Cleats - 2" x 2" x 10" = 6pcs.	20	bf.	35	700
(8) Nailers - 2" x 2" x 12' = 30pcs.	120	bf.	35	4,200
- 2" x 2" x 10' = 36pcs.	120	bf.	35	4,200

Table 10.2.16 Unit Cost of School Toilet

Sheet 2 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
(9) Fascia Board				
1" x 12" x 12' = 4pcs.	48	bf.	35	1,680
1" x 12" x 18' = 2pcs.	36	bf.	34	1,224
(10) Wood Plate				
2" x 4" x 20' = 2pcs.	27	bf.	34	918
(11) 1/4" Thk. Mar. Plywood 4'x8'	14	pcs.	32	448
(12) C.W.N. Assorted	15	kg.	43	645
(13) 3" dia x 3m Downspout (PVC)	3	pcs.	91	273
(14) 3" dia Elbow (PVC)	2	pcs.	70	140
(15) 3" dia Coupling (PVC)	1	pcs.	26	26
(16) Ceiling Vent				
1" x 1" x 8' = 4pcs.	3	bf.	29	87
(17) Screen (1/8" x 1/8")	1	yd.	91	91
Sub-Total of E-1				30,177
2. Labor (30% of E-1)		LS		9,053
Sub-Total of E				39,230
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile Flush Type Door w/ Louver (.80x2.20)	2	sets	1,620	3,240
(2) D - 2 Hollow Core Tanguile Flush Type Door (.60x2.10)	1	sets	1,216	1,216
(3) D - 3 Louver Door (.60x1.40)	5	sets	1,013	5,065
(4) Door Jambs (Apitong)				
2" x 6" x 14" = 1pc.	14	bf.	37	518
2" x 6" x 10" = 2pcs.	20	bf.	36	720
2" x 6" x 10" = 1pc.	18	bf.	35	630
2" x 4" x 12" = 5pcs.	40	bf.	34	1,360
(7) Wooden Jalousie Window With 5 Blades (.40x.50)	14	set	338	4,732
(8) Window Jambs (Apitong)				
2" x 6" x 16" = 5pcs.	80	bf.	36	2,880
2" x 6" x 14" = 1pc.	14	bf.	35	490
2" x 6" x 10" = 1pc.	10	bf.	34	340
(9) Cabinet				
3/4" x 4' x 8' = 1pc. (plyboard)	1	pc.	878	878
Sub-Total of F-1				22,069
2. Labor (30% of F-1)		LS		6,621
Sub-Total of F				28,690
G. Tile Work				
1. Materials				
(1) 4-1/4" x 4-1/4", Glazed Tiles	1,950	pcs.	5	9,750
(2) 0.10m x 0.20m, Floor Tiles	900	pcs.	7	6,300
(3) Cement	4	bags	137	548
(4) White Cement	1	bag	742	742
Sub-Total of G-1				17,340
2. Labor (30% of G-1)		LS		5,202
Sub-Total of G				22,542

Table 10.2.16 Unit Cost of School Toilet

Sheet 3 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
H. Plumbing Work				
1. Materials				
(1) Toilet Bowl - Squat Type	3	sets	703	2,109
(2) Toilet Bowl - Sit Type	2	sets	703	1,406
(3) Lavatory	2	sets	3,300	6,600
(4) 4" dia x 3m PVC San. Pipe	4	pes.	175	700
(5) 3" dia x 3m PVC San. Pipe	7	pes.	98	686
(6) 1-1/2" dia x 3m, PVC San. Pipe	4	pes.	59	236
(7) 2" dia. x 3m, PVC San. Pipe	4	pes.	62	248
(8) 6" x 4", Floor Drain	5	pes.	98	490
(9) 2" dia. Elbow PVC	4	pes.	53	212
(10) 4" dia WYB PVC	2	pes.	38	76
(11) 4" dia. x 3" dia. WYB PVC	12	pes.	35	420
(12) 4" dia. x 2" dia. TEE PVC	4	pes.	36	144
(13) 4" dia. TEE PVC	3	pes.	47	141
(14) 1-1/2" dia. WYB PVC	1	pes.	20	20
(15) 4" dia. Clean Out PVC	3	pes.	41	123
(16) 3" dia. Clean Out PVC	1	pes.	32	32
(17) Faucet	3	pes.	59	177
(18) 3" dia. x 2" dia. WYB PVC	2	pes.	32	64
(19) 1-1/2" dia. Elbow PVC	6	pes.	40	240
(20) PVC Cement	1	can	142	142
(21) Check Valve 1-1/2"	1	pes.	214	214
(22) 4" P-Trap	5	pes.	77	385
Sub-Total of H-1				14,865
2. Labor (30% of H-1)		LS		4,460
Sub-Total of H				19,325
I. Painting				
1. Materials				
(1) Acrylic, Semi Gloss	8	gals.	295	2,360
(2) Concrete Sealer	4	gals.	233	932
(3) Acri Color: Wood	4	gals.	200	800
(4) Enamel, QDE	6	gals.	310	1,860
(5) Wood Putty	1	gals.	342	342
(6) Paint Thinner	1	gals.	67	67
(7) Tinting Color	4	pint	45	180
(8) Sand Paper (Assorted)	15	pes.	8	120
(9) Miscellaneous	1	LS	1,200	1,200
(10) Roof Paint (green, ready-mix)	2	gals.	319	638
Sub-Total of I-1				8,499
2. Labor (30% of I-1)		LS		2,550
Sub-Total of I				11,049
J. Electrical Work				
1. Materials				
(1) 40 Watts Fluorescent Lamp	2	sets	289	578
(2) Elect. Wire TW #12	24	M	7	168
(3) Elect. Conduit - 1/2" dia x 10"	4	pes.	88	352
(4) Entrance Cap. 1/2" dia	1	pc.	32	32
(5) Switch Outlet, Flush Type	2	pes.	44	88
(6) Utility Box 2"x3"	2	pes.	12	24

Table 10.2.16 Unit Cost of School Toilet

Sheet 4 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
(7) Porcelain Receptacle 2" dia	2	pcs.	7	14
(8) Safety Switch 60A, 250V	1	set	555	555
(9) Electrical Tape	1	roll	25	25
Sub-Total of J-1				1,836
2. Labor (30% of J-1)		LS		551
Sub-Total of J				2,387
K. Hardware				
1. Materials				
(1) 3" x 3" Butt Hinges (Loose Pin)	10	pcs.	20	200
(2) 4" x 4" Butt Hinges (Loose Pin)	12	pcs.	36	432
(3) Door Lockset (Schlage US)	3	pcs.	650	1,950
(4) Barrel Bolt (4")	5	pcs.	45	225
(5) Cabinet Pull (4")	5	pcs.	7	35
(6) Water Storage Cover				
Checkered Plate 1/4" thick				
1-7/16" x 5/8", L-bar & flat bar	1	set	1,116	1,116
5/8" x 9/16", L-bar & flat bar	2	set	629	1,258
(7) Padlock	1	pcs.	429	429
Sub-Total of K-1				5,645
2. Labor (30% of K-1)		LS		1,694
Sub-Total of K				7,339
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180	pcs.	5	900
(2) Cement	18	bags	137	2,466
(3) Sand	2	cu.m	359	718
(4) Gravel	1	cu.m	454	454
(5) Rebars: 10mm dia x 6m	29	pcs.	58	1,682
(6) #16 Tie Wire	2	kg.	58	116
(7) Formworks: Coco Lumber				
2" x 3" x 10' = 12pcs.	60	bf.	11	660
1/4" x 4' x 8', Plywood ord.	2	pcs.	477	954
C.W.N. (Assorted)	2	kg.	43	86
Sub-Total of L-1				8,036
2. Labor (30% of L-1)		LS		2,411
Sub-Total of L				10,447
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	pcs.	912	1,824
(2) 63mm x 3m PVC Pipe with plug	1	pc.	452	452
(3) 63mm PVC Socket	1	pc.	12	12
(4) 63mm x 3m PVC Screen	1	pc.	1,443	1,443
Sub-Total of M-a-1				3,731
2. Labor, Fuel, Lubricant and others				
Well Drilling for 18m depth at 150mm borehole	18	m	1,600	28,800
Sub-Total of M-a				32,531
b. Well Development	1	LS	600	600

Table 10.2.16 Unit Cost of School Toilet

Sheet 5 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
M. c. Gravel Packing, Installation of Hand-Pump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1	set	2,807	2,807
(2) 50mm x 1m GI Pipe (Sch. 40)	1	pc.	118	118
(3) #10 Sieved Gravel	0.1	cu.m	1,026	103
(4) Coarse Sand	0.07	cu.m	359	25
(5) Cement for Sanitary Seal	1	bag	127	127
(6) Pump Base and Platform				
1) Cement	4	bags	127	508
2) Gravel	1	cu.m	454	454
3) Sand	1	cu.m	359	359
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	294	294
5) Form Lumber (50mmx75mmx1,800mm)	1	pc.	52	52
6) Nail	1	kg.	40	40
Sub-Total of M-c-1				4,887
2. Labor (40% of M-c-1)		LS		1,955
Sub-Total of M-c				6,842
Sub-Total of M				39,973
N. Freight Cost (11% of Materials for A - M excluding sand and gravel)		LS		18,042
O. Indirect Cost				
Profit (10% of A - N)				27,697
VAT (10% of Profit & Labor)				8,108
Sub-Total of O				35,805
Total of Construction Cost (A to O)				312,777
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost	1	LS	2,400	2,400
2. Construction Supervision	1	LS	1,800	1,800
Sub-Total of P				4,200
GRAND TOTAL.			SAY	316,977
				317,000

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level

Table 10.2.17 Unit Cost of Public Toilet

Sheet 1 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
A. Mobilization and Demobilization (2.4% of B - M)		LS		7,000
B. Earthwork				
1. Materials				
(1) Gravel Fill	3	cu.m	454	1,362
Sub-Total of B-1				1,362
2. Labor				
(1) Excavation	15.88	cu.m	140	2,223
(2) Backfill	4.97	cu.m	127	631
(3) Gravel Fill	3	cu.m	166	498
Sub-Total of B-2				3,352
Sub-Total of B				4,714
C. Concrete Work				
1. Materials				
(1) Cement	61	bags	137	8,357
(2) Sand	4	cu.m	359	1,436
(3) Gravel	8	cu.m	454	3,632
(4) Rebars: 12mm dia x 6m	38	pcs.	79	3,002
10mm dia x 6m	57	pcs.	58	3,306
(5) #16 Tie Wire	8	kg.	58	464
(6) Formworks:				
1/4" Plywood	6	pcs.	477	2,862
2" x 2" x 10" (Coco Lumber)	200	bd.ft.	10	2,000
Sub-Total of C-1				25,059
2. Labor (30% of C-1)				7,518
Sub-Total of C				32,577
D. Masonry Work				
1. Materials				
(1) 6" CHB	800	pcs.	6	4,800
(2) 4" CHB	260	pcs.	5	1,300
(3) Cement	97	bags	137	13,289
(5) Sand	10	cu.m	359	3,590
(6) Rebars: 12mm dia x 6m	30	pcs.	79	2,370
10mm dia x 6m	11	pcs.	58	638
(7) #16 Tie Wire	4	kg.	58	232
(8) Scaffolding:				
2" x 4" x 8" = 10pcs. (Coco Lumber)	53.33	bf.	8	427
Sub-Total of D-1				26,646
2. Labor (30% of D-1)				7,994
Sub-Total of D				34,640
E. Roofing Work				
1. Materials				
(1) GA #26 Corr. GI (1 = 10')	20	pcs.	310	6,200
(2) GA #24 Pln. GI Flashing	3	pcs.	300	900
(3) GA #24 Pln. GI Gutter (Pre-Fab)	9	pcs.	300	2,700
(4) Umbrella Nails 2-1/2"	12	kg.	50	600
(5) Rafter - 2" x 5" x 18' = 5pcs.	75	bf.	35	2,625
(6) Purlins - 2" x 2" x 12' = 18pcs.	72	bf.	35	2,520
(7) WD Cleats - 2" x 2" x 10" = 6pcs.	20	bf.	35	700

Table 10.2.17 Unit Cost of Public Toilet

Sheet 2 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
(8) Nailers - 2" x 2" x 12' = 30pcs.	120	bf.	35	4,200
- 2" x 2" x 10' = 36pcs.	120	bf.	35	4,200
(9) Fascia Board				
1" x 12" x 12' = 4pcs.	48	bf.	35	1,680
1" x 12" x 18' = 2pcs.	36	bf.	34	1,224
(10) Wood Plate				
2" x 4" x 20' = 2pcs.	26.66	bf.	34	906
(11) 1/4" Thk. Mar. Plywood 4' x 8'	14	pcs.	32	448
(12) C.W.N. Assorted	15	kg.	43	645
(13) 3" dia x 3m Downspout (PVC)	3	pcs.	91	273
(14) 3" dia Elbow (PVC)	2	pcs.	70	140
(15) 3" dia Coupling (PVC)	1	pcs.	26	26
(16) Ceiling Vent, 1" x 1" x 8' x 4pcs.	2.67	bf.	29	77
(17) Screen (1/8" x 1/8")	1	yd.	91	91
Sub-Total of E-1				30,156
2. Labor (30% of E-1)				9,047
Sub-Total of E				39,203
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile Flush Type Door w/ Louver (0.80 x 2.2)	2	sets	1,620	3,240
(2) D - 2 Hollow Core Tanguile Flush Type Door (0.60 x 2.10)	1	sets	1,216	1,216
(3) D - 3 Louver Door (0.60 x 1.40)	5	sets	1,013	5,065
(4) Door Jambs (Apitong)				
2" x 6" x 14" = 1pc.	14	bf.	37	518
2" x 6" x 10" = 2pcs.	20	bf.	36	720
2" x 6" x 10" = 1pc.	18	bf.	35	630
2" x 4" x 12" = 5pcs.	40	bf.	34	1,360
(7) Wooden Jalousie Window With 5 Blades (0.40 x 0.50)	14	set	338	4,732
(8) Window Jambs (Apitong)				
2" x 6" x 16" = 5pcs.	80	bf.	36	2,880
2" x 6" x 14" = 1pc.	14	bf.	35	490
2" x 6" x 10" = 1pc.	10	bf.	34	340
(9) Cabinet 3/4" x 4' x 8' = 1pc. (plyboard)	1	pc.	878	878
Sub-Total of F-1				22,069
2. Labor (30% of F-1)				6,621
Sub-Total of F				28,690
G. Tile Work				
1. Materials				
(1) 4-1/4" x 4-1/4" Glazed Tiles	1,950	pcs.	5	9,750
(2) 0.10 x 0.20m Floor Tiles	900	pcs.	7	6,300
(3) Cement	4	bags	137	548
(4) White Cement	1	bag	742	742
(5) Tiles Fittings		LS		5,650
Sub-Total of G-1				22,990
2. Labor (30% of G-1)				6,897
Sub-Total of G				29,887

Table 10.2.17 Unit Cost of Public Toilet

Sheet 3 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
ff. Plumbing Work				
1. Materials				
(1) Urinal	3	sets	1,253	3,759
(2) Toilet Bowl - Squat Type	6	sets	703	4,218
(3) 4" dia x 3m PVC San. Pipe	6	pcs.	175	1,050
(4) 3" dia x 3m PVC San. Pipe	4	pcs.	98	392
(5) 2" dia x 3m PVC San. Pipe	3	pcs.	62	186
(6) 3/4" dia x 6m GI Pipe Sch. 40	5	pcs.	288	1,440
(7) 1/2" dia x 6m GI Pipe Sch. 40	1	pcs.	213	213
(8) 4" x 4" WYE PVC	1	pcs.	38	38
(9) 3" dia Elbow PVC	10	pcs.	70	700
(10) 3" dia 45 degrees Bend PVC	2	pcs.	85	170
(11) 2" dia Elbow PVC	6	pcs.	53	318
(12) 2" dia 45 degrees Bend PVC	2	pcs.	68	136
(13) 1/2" dia Elbow GI	5	pcs.	40	200
(14) 4" dia 3" dia WYE PVC	8	pcs.	52	416
(15) 3/4" dia TEE GI	7	pcs.	70	490
(16) 1/2" dia TEE GI	5	pcs.	55	275
(17) 4" dia x 2" dia TEE PVC	6	pcs.	36	216
(18) 4" dia Clean Out PVC	3	pcs.	41	123
(19) 2" dia Clean Out PVC	1	pcs.	29	29
(20) Faucet	10	pcs.	59	590
(21) 3" dia x 2" dia Elbow Reducer PVC	1	pcs.	85	85
(22) 3" dia x 2" dia WYE PVC	3	pcs.	29	87
(23) 2" dia x 2" dia WYE PVC	3	pcs.	17	51
(24) PVC Cement	1	can	142	142
(25) 4" dia x 2" dia WYE PVC	2	pcs.	47	94
(26) Gate Valve 3/4" dia	1	pcs.	142	142
(27) Gate Valve 1/2" dia	1	pcs.	112	112
(28) Water Meter 3/4" dia	1	pcs.	1,488	1,488
(29) 3/4" dia x 1/2" dia Elbow Reducer GI	1	pcs.	21	21
Sub-Total of H-1				17,181
2. Labor (30% of H-1)				5,154
Sub-Total of H				22,335
I. Painting				
1. Materials				
(1) Acrylic, Semi Gloss	8	gals.	295	2,360
(2) Concrete Sealer	4	gals.	233	932
(3) Acri Color: Wood	4	gals.	200	800
(4) Enamel, QDE	6	gals.	310	1,860
(5) Wood Putty	1	gals.	342	342
(6) Paint Thinner	1	gals.	67	67
(7) Tinting Color	4	pint	45	180
(8) Sand Paper (Assorted)	15	pcs.	8	120
(9) Miscellaneous		LS		1,200
(10) Roof Paint (green, ready-mix)	2	gals.	319	638
Sub-Total of I-1				8,499
2. Labor (30% of I-1)				2,550
Sub-Total of I				11,049

Table 10.2.17 Unit Cost of Public Toilet

Sheet 4 of 5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
J. Electrical Work				
1. Materials				
(1) 40 Watts Fluorescent Lamp	2	sets	289	578
(2) Elect. Wire TW #12	24	m	7	168
(3) Elect. Conduit - 1/2" dia x 10"	4	pcs.	88	352
(4) Entrance Cap. 1/2" dia	1	pc.	32	32
(5) Switch Outlet, Flush Type	2	pcs.	44	88
(6) Utility Box 2" x 3"	2	pcs.	12	24
(7) Porcelain Receptacle 2" dia	2	pcs.	7	14
(8) Safety Switch 60A, 250V	1	set	555	555
(9) Electrical Tape	1	roll	25	25
Sub-Total of J-1				1,836
2. Labor (30% of J-1)				551
Sub-Total of J				2,387
K. Hardware				
1. Materials				
(1) 3" x 3" Butt Hinges (Loose Pin)	10	pcs.	20	200
(2) 4" x 4" Butt Hinges (Loose Pin)	12	pcs.	36	432
(3) Door Lockset (Schlage US)	3	pcs.	650	1,950
(4) Barrel Bolt (4")	5	pcs.	45	225
(5) Cabinet Pull (4")	5	pcs.	7	35
(6) Water Storage Cover Checkered Plate 1/4" thick 1.44x0.633 w/L bar & flat bar	1	set	1,116	1,116
(7) 0.645x0.633 w/L bar & flat bar	2	set	629	1,258
(8) Padlock	1	pcs.	429	429
Sub-Total of K-1				5,645
2. Labor (30% of K-1)				1,694
Sub-Total of K				7,339
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180	pcs.	5	900
(2) Cement	18	bags	137	2,466
(3) Sand	1.50	cu.m	359	539
(4) Gravel	1	cu.m	454	454
(5) Rebars: 10mm dia x 6m	29	pcs.	58	1,682
(6) #16 Tire Wire	2	kg.	58	116
(7) Formworks: Coco Lumber 2" x 3" x 10' = 12pcs.	60	bf.	11	660
1/4" plywood ord. 4' x 8'	2	pcs.	477	954
C.W.N. (Assorted)	2	kg.	43	86
Sub-Total of L-1				7,857
2. Labor (30% of L-1)				2,357
Sub-Total of L				10,214
M. Concrete Water Tank (Elevated)				
1. Earth Work				
(1) Materials				
1) Gravel Fill	1	cu.m	454	454
Sub-Total of M-1 (1)				454

Table 10.2.17 Unit Cost of Public Toilet

Sheet-5

(Cost: Peso)

Description	Q'ty	Unit	Unit Cost	Amount
(2) Labor				
1) Excavation	14.70	cu.m	140	2,058
2) Backfill	13.08	cu.m	127	1,661
3) Gravel Fill	1	cu.m	166	166
Sub-Total of M-1 (2)				3,885
Sub-Total of M-1				4,339
2. Materials				
(1) Cement	62	bags	137	8,494
(2) Sand	4.50	cu.m	359	1,616
(3) Gravel	8	cu.m	454	3,632
(4) Rebars: 12mm dia x 6m	160	pcs.	79	12,640
(5) #16 Tie Wire	4	kg.	58	232
(6) Formworks:				
1/4" plywood	12	pcs.	477	5,724
2" x 3" x 16' = 60pcs.	480	bf.	9	4,320
(7) C.W.N. (Assorted)	5	kg.	43	215
Sub-Total of M-2				49,890
3. Labor (30% of M-2)				14,967
Sub-Total of M				69,196
N. Freight Cost (11% of Materials for A - M excluding sand and gravel)				22,322
O. Indirect Cost				
Profit (10% of A - M)				32,155
VAT (10% of Profit & Labor)				10,474
Sub-Total of O				42,629
Total of Construction Cost (A to O)				364,182
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		LS		2,400
2. Construction Supervision		LS		1,800
Sub-Total of P				4,200
GRAND TOTAL			SAY	368,382
				368,400

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level

(3) Sector Management 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:

- a. The 12% was derived on the basis of DII.G's past experience in BWSA formation; and
- b. The 3% was derived on the basis of LWUA's past experience in the institutional strengthening needs of WDs.

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 10.2.18 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
2. Conduct of Training Activities	53
2.1 Transportation	5
2.2 Food	12
2.3 Accommodation	33
2.4 Training Room Rental	1
2.5 Miscellaneous	2
3. Field Visits to Support BWSA Formation	37
3.1 Transportation	5
3.2 Food	15
3.3 Accommodation	12
3.4 Field	4
Total	100

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 (2004)

Unit: P 1,000

Name of Municipality	Urban Water Supply Level III	Rural Water Supply										Level I Rehabilitation	Total	Grand Total	
		New System					Level I								
		Level II		Deep Well			Shallow Well	Spring Dev.	Subtotal	Level I					
		40 m	80 m	120 m	80 m	120 m				40 m	80 m				120 m
Almeria	3,087										247	1,494	24	1,494	4,581
Biliran											247	247	24	271	271
Cabugayan	12,760				1,623						247	2,988	47	4,905	17,666
Caibiran	5,745											11,205		11,205	16,950
Culaba	4,706				2,705							2,988	39	5,752	10,438
Kawayan					1,623							4,482	24	6,128	6,128
Manipi					13,523							747	197	14,466	14,466
Naval (Capital)	11,316											1,494		1,494	12,810
Provincial Total (w/ ADB Assisted Project)	37,614				19,472						494	25,398	331	45,695	83,310
Provincial Total (PW4SP)	37,614														37,614

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

Unit: P 1,000

Name of Municipality	Rural Water Supply											Grand Total		
	Urban Water Supply Level III						New System						Level I Rehabilitation	Total
	Level I						Level I							
	Deep Well		Shallow Well		Spring Dev.		Subtotal		Level I Rehabilitation	Total				
40 m	80 m	120 m	Shallow Well	Spring Dev.	Subtotal									
Almeria	724			247	1,494	2,465	16	2,481	4,040					
Biliran	362			247	1,494	2,103	8	2,111	20,876					
Cabucgayan				82	8,964	11,751	39	11,790	18,276					
Caibiran		2,705		412	5,229	7,264	24	7,287	19,321					
Culaba		1,623		82	5,229	5,852	8	5,860	9,995					
Kawayan		541			15,687	15,687		15,687	22,972					
Maripipi		4,327		989	1,494	6,810	63	6,873	11,326					
Naval (Capital)		9,195		2,060	45,567	57,908	157	58,065	148,468					
Provincial Total	1,086	9,195		2,060	45,567	57,908	157	58,065	148,468					

Table 10.3.3 Cost for Sanitation Facilities Required for Phase I (2004)

Unit: P 1,000

Name of Municipality	Urban Sanitation						Rural Sanitation						Total Public Investment Cost	Total Construction Cost	Public School Toilets	Total Public Investment Cost
	Household Toilets			Sub-total of Public Investment	Public Toilets	Total Construction Cost	Household Toilets			Sub-total of Public Investment	Public School Toilets	Total Construction Cost				
	Flush	Pour Flush	VIP/Dry				Flush	Pour Flush	VIP/Dry							
Almeria	2,645		163	2,808	234	737	3,779	970			667	667	934	1,601	934	934
Biliran		4,351		4,351	467	368	5,187	1,053			7,415	7,415	934	8,349	1,505	1,505
Cabugayan	10,534	5,802	653	16,989	1,401	1,105	19,495	2,796			277	277		18,004	2,202	2,202
Caribinan		7,770	298	8,068	701	1,105	9,874	2,194			539	16,603	1,401	9,589	1,145	1,145
Culaba	3,473	5,091	213	8,777	467	737	9,981	1,458			412	8,655	934	9,589	8,523	8,523
Kawayan			128	128		737	865	737			795	8,523		8,523	660	660
Maripipi		1,317	71	1,388		737	2,125	803			348	4,211	193	4,678	660	660
Napali (Capital)			646	646	1,168	737	2,550	1,904			1,179	12,633	2,102	14,734	2,102	2,102
Provincial Total (w/ADB-Assisted Proj.)	16,652	24,331	2,173	43,156	4,437	6,263	53,855	11,916			4,267	58,983	1,575	65,755	8,347	8,347
Provincial Total (PW4SP)	16,652	24,331	2,173	43,156	4,437	4,052	51,645	9,705			4,267	28,643	134	34,014	5,505	5,505

Table 10.3.4 Cost for Sanitation Facilities Required for Phase II (2010)

Unit: P. 1,000

Name of Municipality	Urban Sanitation						Rural Sanitation						Total Public Investment Cost	Total Construction Cost	Public School Toilets	Total Public Investment Cost		
	Household Toilets			Public School Toilets	Total Construction Cost	Total Public Investment Cost	Household Toilets			Public School Toilets	Sub-total of Public Investment	Sub-total of Construction Cost					Total Public Investment Cost	Total Construction Cost
	Flush	Pour Flush	VIP/Dry				Flush	Pour Flush	VIP/Dry									
Almendra	7,429	1,347	8,776	67	9,611	903	11,063	548	11,611	27	3,269	14,880	3,296	18,179	934	3,571		
Biliran	12,144	2,901	15,045	145	15,890	980	15,377	15,377	15,377	769	2,802	18,179	3,571	21,751	934	4,505		
Cabugayan	30,475	6,068	36,543	303	38,411	2,171	1,748	14,104	15,852	705	3,970	19,822	4,675	24,497	934	5,609		
Caibiran	13,432	2,437	15,869	123	17,191	1,425	6,532	12,491	19,023	625	3,036	22,059	3,660	25,719	934	4,604		
Culoba	12,765	3,730	16,495	186	17,330	1,022	7,705	11,529	19,234	576	4,437	23,671	5,013	28,684	934	5,947		
Kawayan	5,244		5,244		5,244			8,717	8,717	436	1,868	10,585	2,304	12,889	934	3,238		
Mampipi	4,117		4,117		4,117			16,236	27,322	812	5,838	33,159	6,649	39,808	934	7,583		
Naval (Capital)	36,754		36,754		38,290	1,536	38,134	79,002	112,136	3,950	26,152	143,288	30,102	173,390	934	31,036		
Provincial Total	172,360	16,502	138,862	825	146,075	8,038	106,157	112,136	112,136	3,950	26,152	143,288	30,102	173,390	934	31,036		

10.3.2 Unit Cost of Required Equipment and Vehicles

Unit cost (CIF Manila) of equipment was referred to the market price in 1998 as follows.

(1) Medium size rotary drilling rig

Type: Truck-mounted top head drive mud circulation type

Rated drilling capacity: 150m depth for 250mm diameter of borehole

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 32,314,000 per set

(2) Medium size percussion drilling equipment

Type: Truck-mounted cable percussion type

Rated drilling capacity: 150m depth for 250mm diameter of borehole

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 25,582,000 per set

(3) Well rehabilitation equipment

Equipment composition:

One unit of diesel engine driven air compressor (7.5 kg/cm² x 500 liter/min.)

One set of air hose and hose fittings

Unit cost: Peso 280,000 per set

(4) Service truck

Type: Diesel engine driven 4 tons truck equipped with crane

Unit cost: Peso 1,200,000 per unit

(5) Support vehicle

Type: Diesel engine driven pick-up truck with electric winch

Unit cost: Peso 590,000 per unit

(6) Refuse collection truck

Type: Closed type compactor truck with 5m³ of payload capacity

Unit cost: Peso 2,057,000 per unit including spare parts

(7) Maintenance tools

One set of maintenance tools for O&M of Level I facility shall be provided to respective municipality.

Unit cost: Peso 11,000 per unit

(8) Water quality testing kits

One set of water quality testing kits for O&M of Level I facility shall be provided to respective municipality.

Type: Ammonia-nitrogen/Iron testing kit

Unit cost: Peso 16,400 per unit

10.3.3 Cost for Laboratory

Required cost for new laboratory including building/facility and instruments/chemicals and additional cost for upgrading of existing laboratory are shown in Table 10.3.5 and Table 10.3.6, respectively.

Table 10.3.5 Cost for New Laboratory

(Cost: Peso)

Item	Unit	Unit Cost	Q'ty	Amount
1. Building				
New Building	m ²	15,000	57	855,000
2. Instruments				
Turbidity meter	set	37,500	1	37,500
Color meter	set	10,500	1	10,500
pH/Residual chlorine checker	set	16,000	1	16,000
Incubator	set	105,000	1	105,000
Refrigerator	set	26,800	2	53,600
Sterilizer	set	54,000	1	54,000
Water quality testing kits	set	320,000	1	320,000
Electric stove	set	1,100	1	1,100
Range hood	set	11,000	1	11,000
Sub-total				608,700
3. Accessories				
Sink	LS			
Working table	LS			
Shelf	LS			
Office desk	LS			
Chair	LS			
Sub-total				65,000
4. Glassware/Chemicals				
Glassware/Chemicals	LS			110,000
Total				1,638,700

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level

Table 10.3.6 Cost for Upgrading Laboratory

(Cost: Peso)

Item	Unit	Unit Cost	Q'ty	Amount
1. Instruments				
Turbidity meter	set	37,500	1	37,500
Color meter	set	10,500	1	10,500
pH/Residual chlorine checker	set	16,000	1	16,000
Incubator	set	105,000	0	0
Refrigerator	set	26,800	1	26,800
Sterilizer	set	54,000	0	0
Water quality testing kits	set	320,000	1	320,000
Electric stove	set	1,100	1	1,100
Range hood	set	11,000	1	11,000
Sub-total				422,900
2. Glassware/Chemicals				
Glassware/Chemicals	LS			55,000
Total				477,900

Note: LS - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1998 Price Level



11. FINANCIAL ARRANGEMENTS FOR MEDIUM-TERM DEVELOPMENT PLAN

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	2000	2001	2002	2003	2004	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
	Institutional Development	30	20	20	20	10	100
Rural Water Supply	Level I Facility						
	Detail Design	50	50	0	0	0	100
	Construction & Supervision	0	20	30	30	20	100
	Institutional Development	30	30	20	10	10	100
	Level II System						
	Detail Design	100	0	0	0	0	100
	Construction & Supervision	50	50	0	0	0	100
	Institutional Development	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	0	20	30	30	20	100
Institutional Development	30	30	20	10	10	100	

Note: Institutional development includes:

1. Capacity enhancement program
2. Community management program,
3. Health and hygiene education
4. Water quality surveillance, and
5. Administrative support.

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 presents the comprehensive investment need ranking for the municipalities.

11.5 National Government Assisted Level I Water Supply and Sanitation Project

Presented in Table 11.5.1 are the available IRA for GOP-Assisted Level I Water Supply and Rural Sanitation Project for Eligible Municipalities. Allotment of IRA for rural water supply and rural sanitation comprise of provincial available IRA and municipal available IRA.

Table 11.5.2 presents the urban sanitation project for eligible municipalities, while Table 11.5.3 presents the summary of the total available IRA for GOP-assisted Level I Water Supply and Sanitation project.

The FIRR for Level I water supply project is calculated using a discount rate of 0.09 percent, as presented in Table 11.5.4.

Table 11.6.1 presents the investment program of GOP-assisted Level I Water supply and Sanitation Project.

O&M for Rural Water Supply

Table 11.6.2 shows the O&M cost for Level I facilities which include the reconstruction cost, rehabilitation cost and recurrent cost per household per year for O&M. Table 11.6.3 presents the O&M cost per III per month by facility and proportion to monthly family income while Table 11.6.4 shows the family income.

O&M for Sanitation

Table 11.6.5 presents the O&M cost for rural sanitation while Table 11.6.6 presents the O&M cost for urban sanitation.

Table 11.4.1 Comprehensive Investment Need Ranking of the Municipalities.

Name of Municipality	Evaluation Factor (% of Underserved and Unserved Population or Households)				Score by Sub-Sector				Weighted Score by Sub-Sector				Total Weighted Score	Synthetic Investment Need Ranking
	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Urban Sanitation	Rural Water Supply	Rural Sanitation	Urban Water Supply	Urban Sanitation	Rural Water Supply	Urban Sanitation		
Almora	N.A.	19	30	13	0.67	0.60	0.20	0.20	0.17	0.05	0.15	0.05	0.42	7
Biliran	N.A.	8	35	54	0.26	0.80	0.20	0.80	0.07	0.05	0.20	0.20	0.52	5
Catbusayan	N.A.	46	46	50	0.90	1.00	0.60	0.60	0.23	0.15	0.25	0.15	0.78	2
Caribran	N.A.	33	68	54	0.67	1.00	0.40	0.80	0.17	0.10	0.25	0.20	0.72	3
Culaba	N.A.	32	89	58	0.94	1.00	0.40	0.80	0.24	0.10	0.25	0.20	0.79	1
Kawayan	N.A.	8	5	28	0.26	0.20	0.20	0.20	0.07	0.05	0.05	0.05	0.22	8
Manglip	N.A.	28	66	49	0.49	1.00	0.20	0.60	0.12	0.05	0.25	0.15	0.57	4
Naval (Capital)	N.A.	39	15	42	0.27	0.40	0.40	0.60	0.07	0.10	0.10	0.15	0.42	6
Provincial Total	N.A.	22	41	41										

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						Allocated Weight			
	61 < %	51 < % < 60	41 < % < 50	31 < % < 40	21 < % < 30	11 < % < 20	% < 10	0.25	0.25	0.25
1.0			41 < %				61 < %			
0.8			31 < % < 40				51 < % < 60			
0.6			21 < % < 30				41 < % < 50			
0.4			11 < % < 20				31 < % < 40			
0.2			% < 10				% < 30			

Table 11.5.4 FIRR for Level I Water Supply

Year	Nos. of Deep Well	Nos. of Shallow Well	Spring Devt	Construction Cost	Rehab. And Replacement Cost	O&M Cost	Cash Outflow	No. of Households	Water Rate Per Month Per Household	Loans and Subsidies	Cash Inflow	Net Value
1	0	0	0	0	0	0	0	0	256	0	0	0
2	7	1	7	9,135,395	0	0	9,135,395	225	256	0	691,200	(8,444,195)
3	11	2	10	13,643,935	0	91,354	13,735,289	570	256	0	1,751,040	(11,984,249)
4	11	2	10	13,643,935	0	227,793	13,871,728	915	256	0	2,810,880	(11,060,848)
5	7	1	7	9,135,395	0	364,233	9,499,628	1,140	256	0	3,502,080	(5,997,548)
6					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
7					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
8					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
9					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
10					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
11					0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
12				633,300	0	455,587	1,088,887	1,140	256	0	3,502,080	2,413,193
13				1,030,500	0	455,587	1,486,087	1,140	256	0	3,502,080	2,015,993
14				1,030,500	0	455,587	1,486,087	1,140	256	0	3,502,080	2,015,993
15				633,300	0	455,587	1,088,887	1,140	256	0	3,502,080	2,413,193
16				0	0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
17				0	0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
18				0	0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
19				0	0	455,587	455,587	1,140	256	0	3,502,080	3,046,493
20				0	0	455,587	455,587	1,140	256	0	3,502,080	3,046,493

TOTAL 4,882,961
 FIRR 1.3%
 NPV 1,400,478

Discount rate for NPV = 0.09 per year

Table 11.6.1 Investment Program of GOP-Assisted Level I Water Supply and Sanitation Project (Unit: Pesos)

Category	Total Amount	1st year	2nd year	3rd year	4th year	5th year
A. Const. & Civil Works						
1. Water Supply	0	0	0	0	0	0
2. Sanitation	12,754,660	0	2,550,932	3,826,398	3,826,398	2,550,932
3. Land Acquisition	0	0	0	0	0	0
B. Equip./Logistic Support	1,047,100	0	1,047,100	0	0	0
C. Consultancy Services						
1. Hydrogeological Survey	0	0	0	0	0	0
2. D/D and Const. Sv.	1,403,013	561,205	280,603	280,603	140,301	140,301
D. Institutional Devt.						
1. Capacity Enhanc. Prog.	3,200,000	960,000	960,000	640,000	320,000	320,000
2. Commu. Manag. Prog.	43,080	12,924	12,924	8,616	4,308	4,308
3. Health & Hygiene Educ.	7,200	2,160	2,160	1,440	720	720
4. Water Quality Surveil.	2,800	840	840	560	280	280
5. NGO Assistance	4,800	1,440	1,440	960	480	480
6. Administrative Support	1,200,000	360,000	360,000	240,000	120,000	120,000
E. Physical Contingency (10% of sub-total A+B+C+D)	1,966,265	189,857	521,600	499,858	441,249	313,702
Total (A+B+C+D+E+F)	21,628,918	2,088,426	5,737,598	5,498,434	4,853,736	3,450,723
F. Others						
1. Price Contingency	6,325,880	610,809	1,678,094	1,608,145	1,419,588	1,009,244
2. Value Added Tax (VAT)	537,345	51,884	142,544	136,602	120,585	85,729
Grand Total	28,492,142	2,751,119	7,558,236	7,243,181	6,393,909	4,545,697

Note: Item A includes equity of users.

O&M Cost for GOP Assisted Level I Water Supply Project

Table 11.6.2 O&M Cost for Level I Facilities

	Deep Well	Shallow Well	Spring Dev't
Nos. of Facilities to be Constructed	36	6	34
Nos. of HHs to be Served	540	90	510
Reconstruction Cost (Peso)			
Unit Cost	546,285	82,400	747,000
Ttl. Reconst. Cost	19,666,260	494,400	
Ttl. Reconst. Cost/year	983,313	49,440	
Cost per HH/year	1,821	549	
Rehabilitation Cost (Peso)			
Unit Cost	78,700		
Ttl. Rehab. Cost	2,833,200		
Ttl. Rehab. Cost/year	283,320		
Cost per HH/year	525		
Recurrent Cost for O&M (Peso)			
Cost per HH/year	100	50	50
O&M Cost Total (Peso)			
Cost per HH/year	2,446	599	50

Note: 1) Number of facility is physical targets under ADB assisted project.

2) Rehabilitation is applicable to deep wells every 10 years.

3) Reconstruction of deep and shallow wells shall be conducted every 20 and 10 years, respectively.

Spring development is excluded due to more than 20 years facility life.

Table 11.6.3 O&M Cost per HH/month by Facility and Proportion to Monthly Family Income

	Deep Well	Shallow Well	Spring Dev't
O&M Cost per HH/month	204	50	4
Proportion (Mean)	2.4%	0.6%	0.0%
Proportion (Median)	3.5%	0.8%	0.1%

Table 11.6.4 Family Income (Unit: Pesos)

Annual ¹⁾		Monthly ²⁾	
Mean	Median	Mean	Median
51,042	35,944	8,367	5,892

Note: 1) 1994 NSO Family Income and Expenditure Survey

2) Estimated value in 2004 applying 7% inflation rate/year

O&M Cost for GOP Assisted Sanitation Project

Table 11.6.5 O&M Cost for Rural Sanitation (Unit: Pesos)

Nos. of Facilities to be Constructed		Unit Construction Cost		Yearly O&M Cost
Public Toilets	School Toilets	Public Toilets	School Toilets	
0	88	358,400	233,500	1,027,400

Note: O&M cost includes the salaries of maintenance staff, cost of pumping sludge from septic tanks, and rehabilitation cost, which is assumed to be equivalent to 5% of construction cost.

Table 11.6.6 O&M Cost for Urban Sanitation (Unit: Pesos)

Nos. of Facilities to be Constructed		Unit Construction Cost		Yearly O&M Cost
Public Toilets	School Toilets	Public Toilets	School Toilets	
3	37	358,400	233,500	485,735

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										

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 _____
 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							Others (10)	
			Water Source Development (4)	Water Supply Transmission (5)	Water Storage/ Treatment & Distribution (6)	Household Toilets (7)	School Toilets (8)	Public Toilets (9)			
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											





JICA