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GUATEMALA RURAL WATER SUPPLY PROGRAMS

A MID-TERM EVALUATION OF USAID-FINANCED PROJECTS

TO

AGUA DEL PUEBLO AND CARE GUATEMALA

**Prepared for the USAID Mission in the
Republic of Guatemala
under Contract with the
International Science and Technology Institute (ISTI)**

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Curriculum Vitae - Guatemalan Professionals

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ACRONYMS

ACP	Agua del Pueblo
ADJC	Alianza para el Desarrollo Juvenil Comunitario
AID	Agency for International Development
BID	Interamerican Development Bank (IDB)
CARE	Cooperative for Remittances to Everywhere
CARITAS	Caritas de Guatemala
CCA	Water Committee
CCCADI	
CGFEDESCO	
CCM	Communities
COPECAS	Comite Permanente de Coordinacion de Agua Potable y Saneamiento
CRN	National Reconstruction Committee
CRS	Catholic Support Services
DESCOM	Desarrollo de la Comunidad
DIAAPS	National Plan for Water and Sanitation Supply
EEE	Non-Formal Education
EEUU	United States
FBP	Public Welfare Foundation OXFAM (England)
FIA	Interamerican Foundation
GOG	Government of Guatemala
INCAP	Instituto de Nutricion de Centro America y Panama
INFOM	Instituto de Fomento Municipal
ISTI	International Science and Technology Institute
MINDES - MOD	Ministry of Urban and Rural Development, Guatemala
MSP - MSPAS	Ministry of Public Health and Social Welfare, Guatemala
NGO	Non-Governmental Organization
PACT	Private Agencies Collaborating Together
PAHO	Pan American Health Organization
PRS	Rural Health Promoter
PVC	Polyvinyl Chloride - material used for manufacturing pipes
PVO	Private Voluntary Organization
SARUCH	Environmental Sanitation in Chimaltenango
SARUG	Rural Sanitation in El Quiche
TAR	Technicians in Rural Acueducts
TCS	Community Health Worker
TSR	Rural Health Technician
UNEPAR	Implementing Unit of the Rural Water Pipes Program
VPI	World Vision International
WASH	Water and Sanitation for Health
WS&S	Water and Sanitation Services

EXECUTIVE SUMMARY

This report is a mid-term evaluation of three water and sanitation programs conducted in Guatemala by two private, voluntary organizations (PVOs) CARE and Agua del Pueblo (ADP). The evaluation focused on the following program components: methodology; technical, managerial and financial practices; health education; environmental impacts; and perceived benefits to the users. Whenever possible, the evaluation also compared program approaches to the projects.

The details of the original agreements are summarized below:

Description	Agency/USAID Grant No.		
	Agua del Pueblo 520-0298	520-0335	CARE 520-0336
AID Contribution	\$500,000	\$1,000,000	\$1,000,000
Date Signed	01/30/84	03/08/85	03/27/85
Completion Date	12/31/86	12/31/87	04/30/88
Water Projects	39	62	60
Catrine Installations	3,000	8,000	One per household
Beneficiaries	17,550	45,000	54,000

At the request of USAID/Guatemala, ISTI (International Science and Technology Institute) contracted with an evaluation team of five consultants, one U.S. anthropologist and four Guatemalan professionals (a sanitary engineer, an economist and two social scientists with extensive health-related field experience).

In Guatemala (July 21-22, 1986) the team drafted a seven-element "Scope of Work," which was accepted by USAID/Guatemala; in a joint meeting with CARE and ADP staff members the team agreed to evaluate 14 field sites (10 ADP and 4 CARE) in 9 Guatemalan departments, which were selected to be representative of 53 projects in 14 of Guatemala's departments. (See pages xi, xii, xiii and civ.) During the period July 26-August 6, three team members made site visits; two members remained in Guatemala City to study the two organizations. The team then reconvened to present its preliminary findings informally to USAID and the agencies, to seek further clarification of issues, and to develop conclusions and recommendations within its Scope of Work.

In general, the evaluation team found that the three programs for water and sanitation systems are responding to urgent needs in the communities, which are actively participating in the planning and implementation despite technical and managerial problems. Even though between 1972 and 1982, due in great part to the efforts of private institutions, the percentage of rural families with household water connections increased from 2 percent to 6 percent and easy access to public fountains from 11 percent to 13 percent, the need for improved water and sanitation systems in rural Guatemala is still acute. (See page xv.) More than 75 percent of the rural population is without adequate coverage; infectious and intestinal diseases, many water related, are the major causes of rural deaths. 1/

Both agencies have carried out successful piped water projects in Guatemala, ADP since the early 1970s and CARE since the late 1960s. The well-designed programs, as conceived, were seemingly within the capacities of the contracting agencies.

General Conclusions

Through interviews with officials of both agencies, field observations and contacts in Guatemala City and in the field, the team agreed that

1. The objectives of the grants are not being met by either ADP or CARE within the time frame originally planned.

In ADP the beneficiaries from the projects nearly completed under 0298 are reported to be 33,292, nearly double the number projected. The number of communities served is greater than the 39, but the number of systems being completed is only 32, one of which is partially covered by grant 0335.

In its projections for project 0335 for 1986 and 1987, ADP estimates that it will complete 17 projects a year with current procedures. Thus only 34 of the 62 systems proposed under 0335 would be completed by December 1987. Only one system had been completed and only seven others were firm as of August 15, 1986.

In the case of CARE (520-0336), no systems have been completed although 9 are in various stages of implementation and 7 more have been approved. Reaching the goal of 60 completed systems before March 1988 would seem impossible. Moreover, only the construction of water systems is being carried out; no provisions have been made for implementing environmental sanitation, health education or workshops with village women.

1/ Plan Nacional para el Decenio Internacional Del Abastecimiento de Agua Potable y del Saneamiento (DIAAPS), COPECAS, PAHO/WHO-UNDP Guatemala, Septiembre 1983. (National Plan for the International Drinking Water and Sanitation Decade).

2. The technical processes currently in use to design and construct water systems are inadequate in both ADP and CARE.

ADP has a technical field staff composed of 12 rural water system technicians (Técnicos en Acueductos Rurales --TARs--) and 3 ADP engineers, who are supposed to supervise and assist the TARs. From the system designs and the site visits it can be inferred that such supervision is not being carried out.

CARE in Guatemala does not have staff engineers so it has accepted the deficient information and supervision provided by its counterpart (host) government agency.

Neither CARE nor ADP has carried out regular water sampling to ensure that their systems are providing "potable water," water ready for human consumption, that has passed regular bacteriological tests.

3. Both ADP and CARE have been negligent in their management practices. Some projects have been carried out by both agencies in locations where there were existing piped water systems, not in accordance with the purpose of the agreements, which clearly state that those areas lacking water systems are eligible for project development.

ADP's current organization is not functioning properly, even though recent organizational manuals prepared by a consulting firm include guidelines for improving administration. There are no written plans in the organization. The board of directors of the association is composed of seven members, of whom four are ADP staff members.

The process of computerizing financial management in ADP is under way but accounting records have been behind schedule since April 1986. Only Q2 million out of \$5 million has been received. The total average cost per project is Q104,535.00 and per beneficiary is Q113.00. The revolving fund has been working properly, but none of the funds have been used for new projects.

CARE's managerial and financial practices are solid and well designed, although the staff of the implementing unit for the water project is not working full time on this project (50 percent to the project and 50 percent to other projects). Little supervision or follow-up is being carried out in this project; only one of the two field supervisors has been hired and the engineering position is still vacant. No attention has been paid to the other three components of the program to be developed by CARE and/or with other agencies, which are not a direct part of the basic agreement with the counterpart government agency. Except for the engineering staff, only 5 percent of one MINDES (Ministry of Urban and Rural Development) staff member's time is now allocated to the program; no CARE field persons from related field activities in other programs are spending time on this project.

Reorganization of the responsibilities of the counterpart institutions as a result of a change of government are adversely affecting the efficiency of program development. This explains in part the more than one-year delay in carrying out the planned projects. Financial and accounting project control is being carried out in a very effective manner on computers. The total average cost per completed project to date is Q74,346.00 and per beneficiary is Q142.00, based on 34 projects for CARE-Canada/UNEPAR 1985/86.

4. The educational component, which is designed to increase utilization of the technological components and promote improvements in water use and sanitation practices, has not been fully implemented in either ADP or CARE.

ADP has developed a sound educational methodology and impressive materials but its educational activities are mostly limited to working with the water committees (primarily men) and not with the intended users, especially women. Despite this, ADP has in some communities effectively coordinated its activities with those of field staff of other private organizations and the Ministry of Public Health's hygiene education and latrination programs.

CARE has done nothing to carry out the educational component of its agreement, although health education, including workshops with village women, was to be developed with INCAF (Institute of Nutrition for Central America and Panama) and/or the Ministry of Education with direct support from CARE, including "technical assistance training materials, equipment and curriculum development."

5. The impact of improved water systems on the beneficiaries was dramatically clear in both ADP and CARE communities where the systems were not working, either because of the breakdown of the new system or the shutdown of the existing piped water supply in sites where duplicate systems were being built. Also, the obvious pleasure and innovative uses of water in communities with their first piped system were already evident.

In both ADP and CARE communities where the construction of a new system had caused a failure in an existing piped system, the water committee members as well as the users were upset that women were having to go back to traditional sources--a village well with an inadequate flow and muddy water, to the river, and in some cases to the public standpipes.

Women were aware of how clean their children were, of the convenience of being able to bathe and do the laundry at home, and of having more time to take care of cooking, cleaning, child care, etc. In most of the communities visited, the committee members exempted widows from voluntary labor or cash contributions.

Home in those communities where crafts are part of the custom were aware that they had more time for these activities but did not seem to think of this as increased production or income (or credit to the team).

6. The positive environmental benefits of latrinization were obvious in those communities where ACP had carried out the program in cooperation with the Ministry of Public Health or a cooperating agency. Even in the communities where CARE had not yet initiated a latrine program or health education, there was awareness, particularly on the part of the women, of a need for improved disposal of human excreta.

Some households had dug pits that were too deep for effective bacteriological decomposition; others had selected simple latrines but were waiting for instructions as to where they should be in relation to their piped water supply. Others had built their composting latrines far from the home and standpipe, as if they would pollute the piped water. New composting latrines, at costs varying from Q20 to Q80, were proudly shown in several communities.

No communities or families had received information about hydraulic latrines (water-seal, pour-flush) as an additional option, although such latrines have been readily accepted in other countries with household connections and are locally manufactured and available at approximately Q20.00.

Negative environmental impacts were observed in the field--sullage standing around the household standpipes, with chickens, pigs and children playing in the puddles, not to mention mosquitoes breeding.

7. Local institutional capacities are being developed by both ADP and CARE to assist the development of local water committees, which collect community contributions and disburse funds for construction costs and for operation, maintenance, etc., but ACP has carried out this aspect of project development more thoroughly.

ADP has a very carefully devised methodology, developed over the years, for assisting communities in this process, including standard forms for registering the agreements between community and agency and ways to agree upon and set time schedules, decide on contributions of labor and materials, etc., which are being followed in most sites. With a few minor exceptions the local committee members seemed to understand the agreements, including the amount of initial downpayment and loan and the schedule for repayment, and have fulfilled their obligations, often repaying loans before due dates.

These committees obtain legal status to collect funds and keep them in the communities, and most will continue managing the operation and maintenance of the system after it is turned over to them. The

committees assume responsibility for the supervision and payment of water repairmen--~~selected~~ selected by the community and trained on-the-job in minor repairs and maintenance.

CARE has in the past used forms and agreements similar to ADP in setting up water committees in its projects, but for 0336 it has not developed forms and has not had sufficient counterpart staff in the field to discuss community obligations and responsibilities. Some committees had signed agreements, others had not and they wondered what their functional obligations would be. Some water committees were planning to dissolve when construction was over, with new operation and maintenance committees taking over. Water minders were being trained on the job by contracted masons, but no defined monthly user fees had been set nor manner of payment.

Specific Findings and Recommendations

1. Agua del Pueblo

Agua del Pueblo has developed an exceedingly effective methodology for assisting rural communities to design improvements in their water supplies and sanitary practices as well as to operate and maintain them; however, the recent sudden expansion of operations and funding seem to have impeded effective implementation of the projects and donations from sources other than USAID seem to be diminishing.

RECOMMENDATION: That no more funds be allocated by USAID to Agua del Pueblo until:

- (a) ADP has changed its board of directors to provide autonomous representation by non-staff members with recognized interest in its work and the confidence of the Guatemalan community;
- (b) ADP has carefully examined, with its new board of directors, its organizational and managerial structure in relation to achieving most effectively its goals and policies as an institution, and has made adjustments in present grants and requests to reflect the new scale of operations decided on;
- (c) ADP also considers establishing an international advisory board, composed of representatives from its primary donors as well as some of the original founders, to work with the agency through the reorganizational processes described above.

In addition to the above, the team noted that during the past few years ADP has started building larger, multi-community systems, which require much more complicated engineering skills, present much more difficult operation and maintenance problems, and create the potential for intercommunity conflicts. ADP has moved from an average project beneficiary size of 350-600 in earlier years to a current average size of over 1000.

The TARs, who have had field experiences primarily with small systems seem to have assumed much responsibility for designing and constructing even the larger ones without sufficient direct field supervision from ADP engineers.

ADP, instead of having TARs at field offices as in the past, where communication with local communities and supervision of studies and construction activities could be readily carried out in some coordination with government and private agencies, now appears to primarily base them at the central office.

ADP, despite having developed excellent and creative health/hygiene education materials seems not to have adequately field-tested them with users nor trained trainers of trainees to extend the outreach impact to the household level. There are no women on their educational staff.

RECOMMENDATION: - That ADP consider again selecting only small gravity-flow system sites to serve populations of around 600 or less and where TARs can be stationed in the regions to give close supervision to a small number of projects simultaneously, to provide better preliminary studies/approaches and to coordinate activities with other intervening agencies.

- That ADP add one or more women at a professional level to the central ADP staff to participate in the planning and feasibility studies, to carry out baseline studies of water use and hygiene practices at the community level more effectively, and to develop effective village-level outreach health activities.

2. CARE

CARE Guatemala has a well-organized office and a history of completing more than 275 rural water projects for well over 130,000 beneficiaries since 1969. In USAID grant 0336, however, CARE has concentrated solely on the construction of water systems. After one and a half years NCNE has been completed and NO organizational plans for environmental sanitation, health education or workshops with village women exist, all integral parts of the agreed-on program, which is entitled "Women, Water and Health." These missing components do not depend entirely on the counterpart agency, with which CARE has reported engineering difficulties for more than a year.

During this same period CARE has successfully mounted a similar program for CARE/Canada with UNEPAR, which includes most of the support components agreed upon for the USAID program.

CARE Guatemala has had no engineers on its staff and has regularly accepted deficient site selection, technical inputs and construction supervision from its only-now reorganizing counterpart.

RECOMMENDATION: That no more funds be allocated by USAID Guatemala in this program and no more sites be selected until:

- a. CARE has successfully negotiated its agreement (which was still being revised by CARE in mid-August 1986) with MINCES, the newly reorganizing counterpart agency, or some other unit, such as utilizing the private sector, contracting with other agency;
- b. CARE, as executing agency, has begun fulfilling its responsibilities in the other three components of the AID agreement, as well as in the technical component.

The health education component, including promotion and support of women through workshops, etc. should start immediately as part of project preparations and implementations and should be closely coordinated with the introduction of family latrines, if the objectives of the program are to be met.

In accordance with the above, in order to fulfill the missing components of its agreement under 0336 in its 16 targeted sites, including health education, promotion and support of women through workshops, etc., and the introduction of family latrines, the team recommends:

- a. That the CARE director, in intensive cooperation with personnel from other program areas, should carefully analyze what CARE can do to get strategies to implement the missing components defined and immediately operative;
- b. That program personnel working in water and sanitation projects should devote more time to project supervision and control;
- c. That the vacant position for a field supervisor be filled by a woman professional, as soon as possible;
- d. That a civil-sanitary engineer be contracted to supervise all technical aspects of the program or that additional staff should be hired for this purpose;
- e. That additional temporary personnel be hired.

RECOMMENDATION: That CARE consider adding to the selection criteria for at least a percentage of new projects one of the following requirements:

- a. That health education or training of primary health care workers be under way, so that improved quality and quantity of accessible water is seen to be directly related to the users' needs.
- b. That some existing (or introduced) income-generating activity for women be in place so that the opportunity costs of time and effort saved by better water supplies can be locally appreciated.

These additional criteria would give CARE an opportunity to gain synergistic effects by linkage with its other programs.

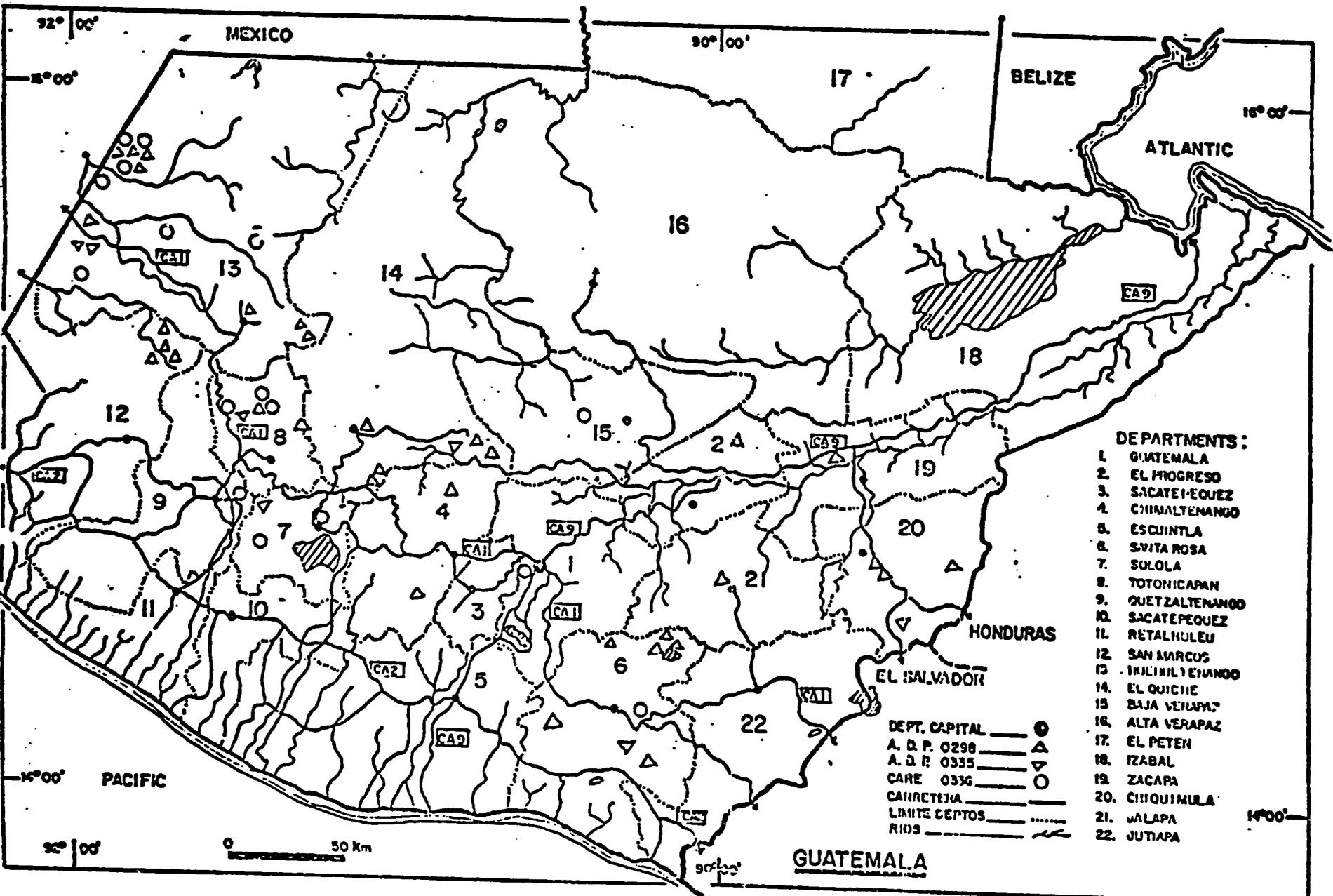
3. USAID-Guatemala

RECOMMENDATIONS on future USAID funding:

- a. That before more funds are allocated to either CARE or ADP a brief evaluation by USAID staff or a consulting team made up of a sanitary engineer and a social scientist be made of all systems under these grants to examine both technical and community aspects and determine whether completed projects are working and designs are appropriate for long-term services, operation and maintenance.
- b. That USAID-Guatemala consider technical assistance to both agencies (and perhaps others in the water and sanitation sector) to improve their use of computers and develop ways of coordinating with each other and overall GOG planning.
 1. Both CARE and ADP, in order to improve their program performance, avoid duplication, and participate in national planning to meet International Drinking Water and Sanitation Decade goals, should make available to the Guatemala office of COPECAS (water and Sanitation Permanent Committee, UNDP-PAHO) the computerized data they have prepared on their completed projects. These will be included in a national inventory that is being compiled on a departmental basis of all communities of over 50 people. This data base will include types of services and percentage of coverage and indicate priorities derived from needs, including local mortality rates compared with national averages.
 2. Both CARE and ADP seem eager to improve their use of computers in their operations. By agreeing on a standard reporting system, which could also be used to encode USAID's other water and sanitation projects, immediate linkages to related AID programs, such as health, nutrition, women and development, maternal and child health, irrigation and agriculture, would be possible.
- c. That short, periodic training workshops be set up on a departmental or regional basis so that water minders, foremen, and selected members of the water committees from completed ADP and CARE projects can discuss their problems and solutions to same. These workshops could cover both technical and organizational problems, including basic accounting. Perhaps other USAID projects and/or other donor groups, i.e., CARE-Canada, could be included in these workshops.
- d. That a support system be set up on a departmental level, perhaps within one of the official governmental water agencies, to assist in major repairs, stock basic supplies, etc. Information on this support system and how to use it could be a part of the workshops.

- e. That present project objectives for both CARE and ADP should be more flexible to allow resources to be used to serve the greatest number of beneficiaries with the full range of support services rather than a specific number of water systems and should emphasize the effective and long-term viability of the water systems constructed.

Instead of attempting to evaluate the health impact of the projects, the team agreed to suggest various approaches for future evaluations. Given the fact that impact evaluation is usually more complex and costly than evaluation of the functioning and utilization of the systems, the latter is recommended. However if impact evaluations are to be conducted, time-series and quasi-experimental research designs are recommended, and the need for obtaining baseline data before projects are started is emphasized. Impact indicators decreases in morbidity due to water-related diseases, decreasing infant-child mortality, and improvement of anthropometric measurements of pre-school and primary school children.



DEPARTMENTS :

- 1. GUATEMALA
- 2. EL PROGRESO
- 3. SACATEPEQUEZ
- 4. CHIMALTENANGO
- 5. ESCUINTLA
- 6. SVITA ROSA
- 7. SOLOLA
- 8. TOTONICAPAN
- 9. QUETZALTENANGO
- 10. SACATEPEQUEZ
- 11. RETALHULEU
- 12. SAN MARCOS
- 13. HUILIUTENANGO
- 14. EL QUICHÉ
- 15. BAJA VERAPAZ
- 16. ALTA VERAPAZ
- 17. EL PETEN
- 18. IZABAL
- 19. ZACAPA
- 20. CHIMULULA
- 21. JALAPA
- 22. JUTIAPA

- DEPT. CAPITAL — ●
- A. D. P. 0298 — — — — —
- A. D. P. 0335 — — — — —
- CARE 0336 — — — — —
- CANRETEJA — — — — —
- LIMITE DEPTOS — — — — —
- RIOS — — — — —

RESUMEN DE LOS DATOS DE PROYECTOS PROPORCIONADOS POR
 AGUA DEL PUEBLO Y CARE - GUATEMALA
 (August, 1986)

Departamento	Municipalidad	ADP 522-0298 *	ADP 522-0325 *	CARE 522-0336	Observaciones
Guatemala	Villa Nueva			La Selva (461) Est. 9/30/86	Field visit 8/8/86. System not completed.
El Progreso	San Agustín Acasaguestán	"Guaytan" 14 (2200) (Comb. 7 comun.) + 6/28/85			
Chimaltenango	San Martín Jilotepeque	Estancia San Martín (260) + 3/14/86	27		
	Acatenango	Los Planes (1225) + 5/10/86	28		
Santa Rosa	Santa Rosa de Lima	La Casita (600) Est. 9/86	29		Field visit 8/86. System not completed.
	San Rafael Las Flores	El Chanita (254) + 5/17/85	13		
	Casillas	"4 Aldeas" (1170) + 7/86	30		
		Llano Grande (442) + 9/84	6		
	Santa María Ixhuatec			El Irayol (250) 9	
	Oratorio	El Espino (204) + 11/84	8		
	Pueblo Nueva Vinas	Ixpaco (620) + 9/84	7		
Solola	Nahuala		Pacanal II (300)	34 Xolcaja (500) Est. 9/30/86	Field visit 7/86 operating with problems. Not yet completed.
	Santa Catarina Ixtehuacan			Simajutiú (258) Est. 9/30/86	

<u>DEPARTAMENTOS</u>	<u>MUNICIPIOS</u>	<u>OPC 520-0278 *</u>	<u>OPC 520-0275 *</u>	<u>CANE 520-0274</u>	<u>OBSERVACIONES</u>
Solela	Solela			Verba Buena (525)	
Quetzaltenango	Cantel			La Estancia (1097) Est. 8/30/86	Field visit 8/86. Overlaps INFOM 1957. Near completion.
San Marcos	San Miguel Ixhuacan	Florida (258) + 4/30/85	9		
		Exial (153) + 4/29/85	10		
		Sala (68) + 4/29/85	11		
		Chiniquitz (168) + 4/29/85	12		
	San Pedro Sacatepequez			La Cuchilla (650)	
Totonicapan	Homostenaigo	Rancho (1992) + 5/86	24	Rachoquel (1716)	38
				Centro San Vicente Buenabaj (602) Est. 10/30/86	Rancho field visit 8/86. Not operating. Duplication of CRS, INFAM systems.
				Buena Vista San Vicente (420) Buenabaj Est. 10/30/86	
				Paraje Paloma (736) Est. 10/30/86	
El Quiche	Santa Maria Chiquimula and San Antonio Ilotenango	Comb. 14 Comun. Temala etc. (3772) + 12/84			Inadequate field observation 8/1/86.

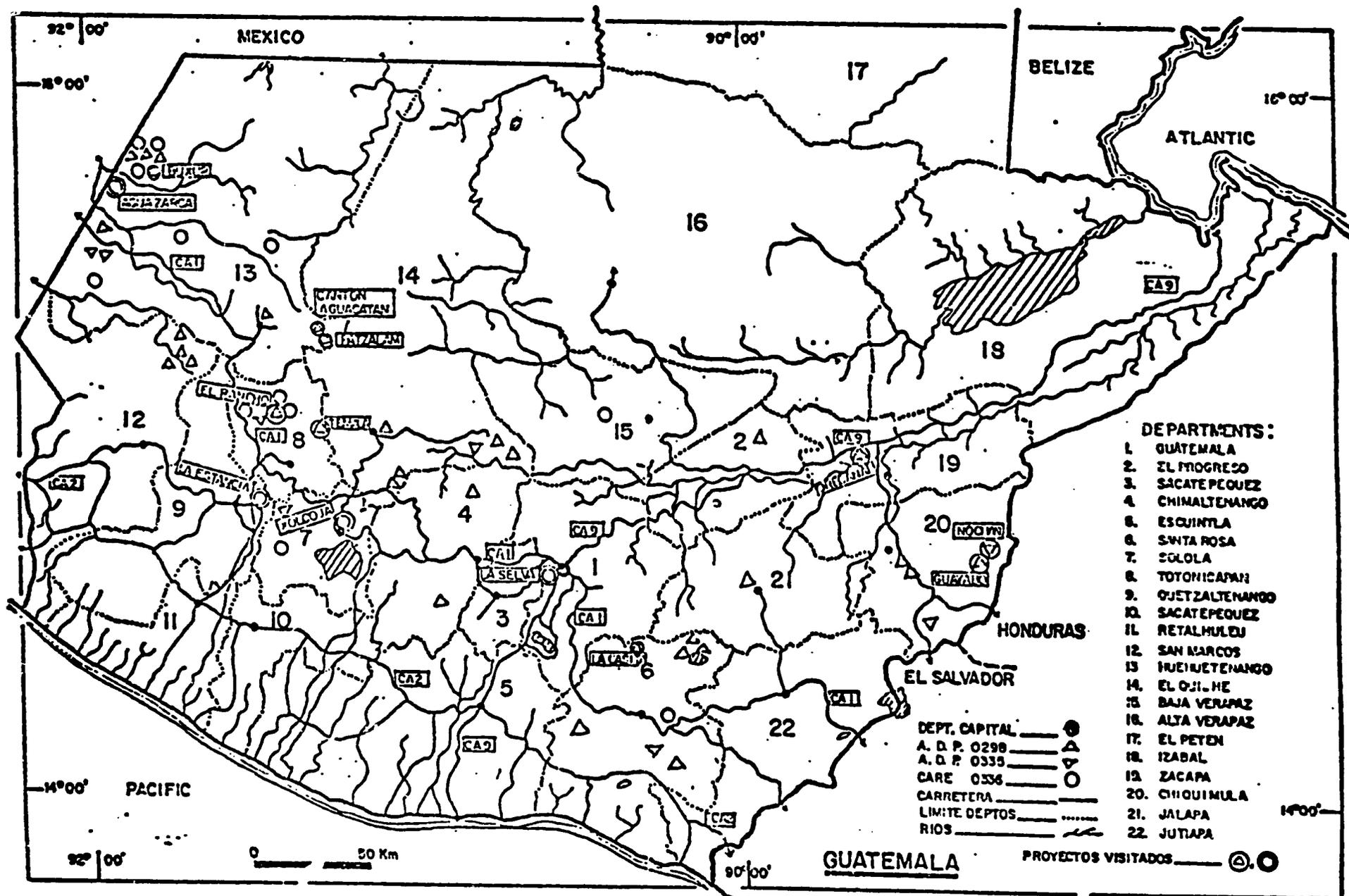
<u>Espectáculos</u>	<u>Municipios</u>	<u>ADP 520-0278 *</u>	<u>ADP 520-0273 *</u>	<u>CAGE 520-0334</u>	<u>Observaciones</u>
El Quiché	Chichicastenango		"Xajunan" (3 comunidades) 31 (3240) + 7/26/86		Xajunan funded from 0298, 0333. Brief field visit 7/26/86 for inauguration fiesta.
	Santa Cruz del Quiché	Chumenzana 32 (180) + 3/15/86			
		Xatlap (3000) 33 Est. 10/86			
	Joyabaj	Guapinol (53) 3 + 9/84	Pachilip (273)		
		Infiernito 2 (528) + 9/30/84			
Huehuetenango	La Democracia and La Libertad	"La Union" (3 Aldeas) 16 (2478) + 1/25/86	Chalum (330) 39 La Barranca (338) 40		
	Jacaltenango	Buxup (1204) 17 + 8/85		Xeyomaj (333) Est. 12/15/86	Buxup field visit 7/31/86. Out of order.
		Inchehuex (1590) 18 + 2/15/86		Mutzobal (496) Est. 12/15/86	
		Ojobna (240) 22 + 4/26/86			
		Barrio San Juan 23 + 4/26/86 (190)			
	Aguacatan	"Patzalam I", (7 comunidades) 15 (2190) + 7/86			Working 7/30/86 field visit.
		Canton Aguacatan 4 + 7/84 (713)			Working 7/30/86 field visit.
	Huehuetenango	Ruinas Taculeu 25 (2460) Est. 9/86			
	Concepcion			Dniaj (819) Est. 5/340/87	

Departamento	Municipios	ADP 520-0298 *	ADP 520-0335 *	CARE 520-0336	Observaciones	
Huehuetenango	San Juan Incoy			Quintaj (509) Est. 12/30/86		
	Cuilco			Ixmulej (600) Est. 12/30/86		
	Santa Ana Huista			Agua Zarca Santa Ana (847) Est. 5/30/87	Field visit 7/31/86. Duplicates old 1971 CARE/DESCOM system, neither operating.	
Baja Verapaz	Rabinal			Guachipilin (836) Est. 9/30/86		
Jalapa	Jalapa	San Yuyo (2718) 21 + 2/11/85				
Chiquimula	Olopa	El Guayabo 26 + 5/16/86 (615)			Field visit 8/6/86. Out of order.	
	San Jacinto	Pueblo Nuevo 19 + 11/15/85 (275)				
		Ticanlu (254) 5 + 9/84				
	Concepción Las Minas	San Antonio 37 Obraje/Otros (935)				
	Guetzaltepeque		Nochon (Prelim.) -			
Zacapa	Teculatan	Oreganal (684) 20 + 3/1/86			Field visit 8/6/86. Planning meeting. Field visit to Oreganal 8/5/86. Operating.	
TOTALS		32	33,088 (1,034) (53-3772)	0 (6,685) (836) 44-3240	16 (9 active) (594) (7 Large) 258-1097	9,509 (594)
Av. Size (Pop.)						
Range (Pop.)						
Completed Projects 8/15/86		30 (32045)		1 (3240)	None	
Communities (aldeas, etc.) Comp.		23		3	None	
Departments		10		6	7	
Municipios		23		8	13	
Incomplete 8/15/86		3 (6300)		7 (3445)	16 (9509)	
* 1986 ADP Nos. 0298, 0335						
Est. Estimated Completion Date						
+ Inauguration Date						
(360) Population Benefitted						

ITINERARY FOR SITE VISITS *
(Mary Elmendorf, Carlos Solares, Lisa Vielman)

<u>Dia/Fecha</u>	<u>Estado de Avance</u>	<u>Comunidad/Departamento</u>	<u>Agencia</u>	<u>Geografia</u>
L 7/28	90%	Xoicaja, Solola	CARE	Altiplano
MA 7/29	90%	Cantel, Quetzaltenango	CARE	Altiplano
	100%	El Rancho, Momostenango, Totonicapan	ADP	Altiplano
MI 7/30	100%	Canton Aguacatan, Aguacatan, Huehuetenango	ADP	Altiplano
	100%	Patzalam, Aguacatan, Huehuetenango	ADP	Altiplano
J 7/31	15%	Agua Zarca, Santa Ana Huista, Huehuetenango	CARE	Altiplano
		Buxup, Jacaltenango, Huehuetenango	ADP	Altiplano
V 8/01	100%	*Temala, (Aldea Xicaxul) Santa Maria Chiquimula, Totonicapan San Antonio Ilotenango, El Quiche	ADP	Altiplano
L 8/04	97%	Casita, Santa Rosa de Lima, Santa Rosa	ADP	Oriente
MA 8/05		San Antonio Oreganal, Teculután, Zacapa	ADP	Oriente
MI 8/06		El Guayabo, Olopa, Chiquimula	ADP	Altiplano
--		Nochan, Quetzaltepeque Chiquimula	ADP	Altiplano
<u>Otras Visitas</u>		La Selva, Villa Nueva, Guatemala	CARE	Central
		Xajunam, Chichicastenango, Chichicastenango	ADP	Altiplano

* En esta localidad, el tiempo, clima y las condiciones de los caminos impidieron realizar una observación a fondo de los sistemas de distribución.



- DEPARTMENTS:**
- 1. GUATEMALA
 - 2. EL PROGRESO
 - 3. SACATEPEQUEZ
 - 4. CHIMALTENANGO
 - 5. ESQUINTLA
 - 6. SANTA ROSA
 - 7. SOLOLA
 - 8. TOTONICAPÁN
 - 9. QUETZALTENANGO
 - 10. SACATEPEQUEZ
 - 11. RETALHULEU
 - 12. SAN MARCOS
 - 13. HUEHUETENANGO
 - 14. EL OJÍ, HE
 - 15. BAJA VERAPAZ
 - 16. ALTA VERAPAZ
 - 17. EL PETEN
 - 18. IZABAL
 - 19. ZACAPA
 - 20. CHIQUIMULA
 - 21. JALAPA
 - 22. JUTIAPA

- DEPT. CAPITAL 
- A. D. P. 0298 
- A. D. P. 0335 
- CARE 0336 
- CARRETERA 
- LIMITE DEPTOS 
- RIOS 

PROYECTOS VISITADOS  

- XIV -

Salud Pública y Asistencia Social (1971 a 1980) y estimada la de 1982 con las reservas correspondientes por la falta de datos confiables.

COBERTURA NACIONAL DE LOS SERVICIOS - 1971 - 1982

POBLACION SERVIDA	1971	1976	1980	1982
ABASTECIMIENTO DE AGUA				
AREA URBANA				
Por conexión domiciliaria	% 40.0	41.0	51.0	55.0
Por pilas públicas (fácil acceso)	% 49.0	45.0	38.0	35.0
Total población servida	% 89.0	86.0	89.0	90.0
AREA RURAL				
Por conexión domiciliaria	% 2.0	3.0	4.0	6.0
Por fuentes públicas e individuales (fácil acceso)	% 11.0	11.0	18.0	18.0
Total población servida	% 13.0	14.0	22.0	24.0
<u>COBERTURA GLOBAL (Urbana y Rural)</u>	% <u>39.0</u>	<u>29.0</u>	<u>47.0</u>	<u>49.8</u>
SANEAMIENTO				
AREA URBANA				
Por conexión al alcantarillado	% 42.0	40.0	35.0	37.0
Con fosas sépticas, letrinas, etc.	% s.i	s.i	10.0	10.0
Total población servida	% 42.0	40.0	45.0	47.0
AREA RURAL				
Con disposición sanitaria de excretos	% 13.0	18.0	20.0	25.0
<u>COBERTURA GLOBAL (Urbana y Rural)</u>	% <u>23.0</u>	<u>26.2</u>	<u>29.6</u>	<u>33.6</u>

Fuente: 1971-1980: Ministerio de Salud Pública y A. S.
 1982: Cobertura estimada
 s.i: Sin Información

FORMATIVE EVALUATION OF ADP AND CARE PROJECTS

1. INTRODUCTION

1.1 Purpose and Scope of the Evaluation

The purpose of this assignment was (a) to analyze the effectiveness, efficiency and significance of the water and sanitation projects of two private, voluntary organizations (PVOs) -- Cooperative for Remittances to Everywhere (CARE) and Agua del Pueblo (ADP)-- with respect to the following project elements: methodology; technical, managerial and financial practices; health education; environmental impacts; and benefits to the users; and (b) to compare CARE's and Agua del Pueblo's technical, managerial and financial approaches.

USAID had three major concerns:

- Are the projects effective in achieving their goals and if not, why not? (The focus here is on management, technical practices, implementation and difficulties working with Government of Guatemala agencies.)
- Are projects efficient? Do they make the best use of funds, resources and personnel?
- Are the projects significant? Do they contribute to development?

The purpose of the mid-term formative evaluation was to measure the general progress of the programs, to identify implementation problems, and to make recommendations for institutional and program changes in ADP and CARE in order to achieve the general project objective of providing better health conditions in selected communities through improved quantity and quality of water and sanitary services (WS&S).

The main tasks in the scope of work are

1. Determine the extent to which objectives are being met within the time frame originally planned.
2. Describe the technical processes currently in use to design and construct water systems and latrines.
3. Examine the educational component designed to increase utilization of the technological components and promote improvements in WS&S practices.
4. Examine the managerial and financial practices of implementing agencies.

5. Examine the effects projects have had with regard to both negative and positive environmental impacts.
6. Compare the perceived impact on intended beneficiaries, especially women, and their roles in reaching project objectives.
7. Assess whether local institutional capacities are being developed so that project benefits can be sustained once USAID support is terminated.

At a meeting with USAID the evaluation team discussed outstanding issues, scope of work, time schedule, table of contents of the report, and work plan. Several points were clarified, i.e., the impossibility of doing a cost/benefit analysis, of ascertaining whether there has been a decrease in water-related diseases, and of trying to "link incidences of disease/increase of shigellosis, trachoma, conjunctivitis, scabies and scabies to appropriate education as well as use of potable water and hygiene" during a mid-term evaluation. Those tasks require a data base, careful research, and a much longer time frame than provided by the contract. Instead, the team agreed to include recommendations for developing baseline information.

The end products of the assignment are to be

- Draft report in Spanish, with executive summary in English, to be left with USAID Mission before end of August 1986.
- Final, edited report in English and Spanish, to be submitted to AID by September 30, 1986.

The report is to

- Provide findings, conclusions and recommendations.
- Suggest health indicators and protocols for collecting baseline information necessary for impact evaluation.

1.2 ISII Involvement

ISTI (International Science and Technology Institute) contracted with a team of five consultants, one American anthropologist with wide experience in water and sanitation projects in Latin America and elsewhere and four bilingual Guatemalan professionals. These included a sanitary engineer who has designed and evaluated water supply and sanitation projects in several Latin America countries; an economist, who has specialized experience as a financial analyst; and two anthropologists with extensive field experience.

Before the initiation of the assignment, the team coordinator collected baseline data on the two agencies with the assistance of representatives from AID, the World Bank, Pan American Health Organization (PAHO), Water and

Sanitation for Health (WASH) and CARE (see Annex A). Several evaluation reports were obtained for use in Guatemala.

ISTI is a member of the consortium WASH, which is headed by Camp Dresser and McKee. As part of the evaluation, ISTI arranged for Mr. J. Ellis Turrer from WASH to conduct an intensive two-day planning meeting, during which the general scope of work was discussed and a work plan developed in cooperation with USAID and the two agencies to be evaluated.

The following specific tasks were allocated to the various members:

1. Technical

- Conduct technical evaluation of the design and construction of water systems.
- Conduct technical evaluation of latrines with regard to design, construction, maintenance and cost.
- Compare and contrast technical approaches of CARE and Agua del Pueblo.

2. Health Education

- Observe and report on what kind of health education is being carried out to change health-related attitudes and behaviors that can improve household sanitation in communities.
- Note which agencies are collaborating with CARE and ADF and how.
- Ascertain whether there are more sanitary methods of waste disposal when an education program is presented or has been carried out.
- Recommend a program to establish a baseline and indicators to measure shigellosis, trachoma, cons. aspias and scabies and link those diseases to education, use of potable water and hygiene. Provide qualitative perceptions of health.

3. Managerial and Financial Practices

- Ascertain the extent to which tariff funds or user fees are being collected by communities and being utilized according to terms of grant agreement.
- Ascertain whether grant funds are being used to increase the "rotating credit fund" (Proj. 52C-0298) and if not, why not.

- Determine whether there has been any significant change in the purpose of planned outputs as originally agreed with USAID/Guatemala (hereafter USAID/G).
- Compare and contrast actual expenditures of USAID/G with planned expenditures in both agreements.
- Make financial comparisons based on original line items specified in grant agreements.
- Determine if USAID/G is receiving financial reports on a timely basis.
- Determine if implementing agencies are submitting required reports on a timely basis to USAID.
- Determine if managerial capacity of implementing agencies is sufficient.
- Compare and contrast CARE and ADP in terms of their overall approach to administrative and financial matters.
- Assess whether local institutional capacities are being developed so that project benefits can be sustained once USAID support is terminated.

4. Environmental

- Determine impact of projects on physical environment.
- Determine whether water systems and latrines are being built in the most appropriate environmental regions (in terms of benefits to users and environment).

5. Beneficiaries

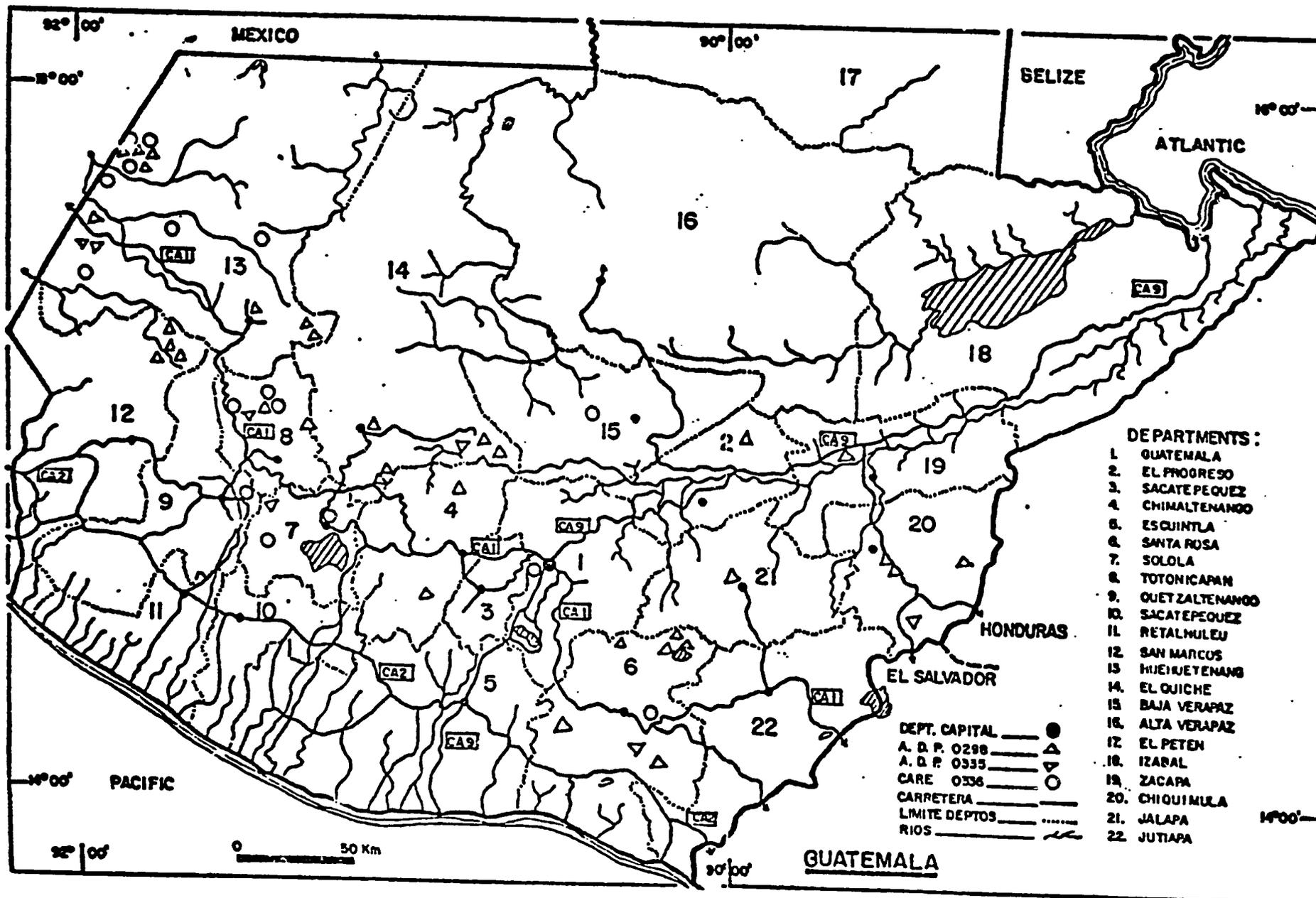
- Provide insofar as possible data that include the precise number of beneficiaries from all three projects.
- Develop a system, based on indicators, for determining what in fact is a beneficiary (what benefits are being realized?).
- Investigate impacts on women as beneficiaries of projects.
- Determine if sociocultural factors have had a negative impact on project impacts, including women's roles in community participation.

- Determine if the beneficiaries of the projects will be able to maintain the services once the agencies have withdrawn their support.

1.3 Report Organization

The organization of this report is described in the table of contents at the beginning of the document.

Chart 1



- DEPARTMENTS :**
- 1. GUATEMALA
 - 2. EL PROGRESO
 - 3. SACATEPEQUEZ
 - 4. CHIMALTENANGO
 - 5. ESQUINTLA
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DEPT. CAPITAL ●
 A. D. P. 0298 ▲
 A. D. P. 0335 ▼
 CARE 0336 ○
 CARRETERA ———
 LIMITE DEPTOS - - - - -
 RIOS ~~~~~

2. BACKGROUND

2.1 Agua del Pueblo

2.1.1 History

Agua del Pueblo, a Guatemalan, private, voluntary organization, was founded in 1970 by a group of Americans. One of the first legal arrangements instituted by this group was to establish a nongovernmental organization (NGO), according to U.S. laws, in Saint Louis, Missouri, under the name of People's Consultants. This NGO was established to collect funds for development projects in Guatemala. All the information on ACP's development presented here was provided by the ADP director, who has been in that position for six years.

ACP has gone through various stages of development. The first (1970-1977) took place in El Cuiche as part of a rural sanitation project (SARUQ) being carried out by CARE and the Ministry of Public Health (MSP). During this stage, methodological principles and procedures were developed for providing potable water and environmental sanitation services to more than 20 communities (an average of five projects per year). Also, training a new type of human resource technician, similar to the rural health technician (TSR), was considered. The ADP team, in collaboration with other Guatemalans involved in the institution, initiated negotiations to obtain legal status for ACP in Guatemala through a governmental decree.

During the second stage, from 1977 to 1981, and in collaboration with the Behrhorst Foundation and the MSP, a similar project was developed in Chimaltenango (SARUCH).* At this point, a revolving fund for water projects as well as a plan for training rural water pipe technicians (TARs) were established. In July 1981 the first group of 16 TARs graduated from the training course and in 1982 the second and last group graduated. The SARUCH project handled only requests in two departments. ADP initiated the promotion of a cooperative program among NGOs to increase the number of requests that could be handled.

During the third stage (1981 to present), ADP tried to integrate a federation of NGOs interested in the provision of water and sanitation projects, and at the end of 1981, it established working relations with five NGOs. During this stage the first mid-term plan (1983-1985) was developed. This plan included the implementation of 12 projects during the first two years and 15 projects during the third year. During the first year of this plan, the NGOs realized that the terms agreed upon for participation would be difficult to accomplish, and even if they were modified, ADP maintained a

* Environmental Sanitation in Chimaltenango.

working relationship with only one of them.

At the present time, ADP is working as an independent Guatemalan association. It has a revolving fund for loans of more than half a million quetzales and maintains a close relationship with more than six NGOs. ACP is now in the process of expansion, which includes improving existing facilities.

2.1.2 Water Supply Achievements and Policies

ADP has carried out various projects to date and it is estimated that during the past three years (1983-1985) it has benefited an average of 9,000 rural Guatemalan inhabitants per year. Chart 2 summarizes ADP achievements in 80 water projects, from 1972 to 1986, which benefited approximately 60,000 persons.

2.1.3 Program Purpose

ADP is the implementing unit for two water and environmental sanitation projects financed by USAID. The first project (agreement 520-C298) was initiated in January 1984 and is scheduled to be completed by December 1986. The objective of this project is to install 39 potable water systems and approximately 3,000 latrines in rural communities. Also, the project is expected to establish a credit system to finance the construction of water systems and latrines and to provide sanitary education courses in participating communities. AID's contribution was \$500,000 and the number of beneficiaries was estimated to be 17,500.

The purpose of the other project financed by AID and implemented by ADP (agreement 520-0335) is to install 62 potable water systems and approximately 8,000 latrines in rural communities. The project will run for three years (January 1, 1985 to December 31, 1987) and is expected to benefit 45,000 inhabitants.

2.2 CARE

2.2.1 History

CARE (Cooperative for American Remittances to Europe), a private, nonprofit, voluntary organization, was founded in the United States in 1945 as a cooperative of various agencies to aid victims of the Second World War in Europe. By 1952, CARE had extended its activities to include technical assistance and self-help programs in Latin America, Asia and Africa. In 1951 CARE International was formed by CARE-US, CARE-Canada, and CARE-Germany, which together raise funds to finance CARE's overseas development efforts in 37 countries of Latin America, Africa, Asia and the Middle East.

CARE-Guatemala opened its mission in 1956, closed in 1958, and reopened in 1959. CARE's programs include a variety of activities ranging from nutrition, primary health care, school construction and forestry, to potable water and environmental sanitation projects.

Chart 2

AGUA DEL PUEBLO
Summary of Water Projects in Guatemala
8/15/86

Year	No. of Projects	Population Served	Population Average per Project
1972-77	20	10,000	500
1977-81	17	7,125	415
1982	3	1,014	338
1983	9	5,796	644
1984	8	6,618	827
1985	9	11,603	1,289
1986 to	13	13,824	1,063
8/15/86	1	3,240	3,240
	---	-----	-----
	80	59,220	750

1/ Based on the Annual Reports of 1983-1985 and Summary of Completed Projects,
1984-1986, ADP.

2.2.2 Water Supply Achievements and Policies

CARE's first water supply project was a pilot project in rural Mexico in 1952. Between 1967 and 1975 CARE implemented water projects in 25 countries. These included construction of 655 water distribution systems of various types, the digging of 1,548 wells and the distribution of 3,712 pumps. By 1976 the improvement of community water systems was the largest single CARE activity after food and nutrition. In 1981 CARE's activity included water supply projects in 14 countries, as well as irrigation systems. CARE has assisted in conducting health, sanitation, and hygiene education courses and helped to train technicians in construction, maintenance, and management. In 1986 CARE, the most active PVO in the sector, budgeted nearly \$11 million in 17 countries for 22 water and sanitation projects affecting 1.3 million people.

In recent years there has been a shift in CARE's donor rationale to the idea "that the developmental impact of water supply projects extends far beyond their direct health benefits" and should include linkages to such areas as agriculture, overall environmental sanitation including excreta disposal, health and hygiene education, agriculture and animal or artisanal production.

CARE-Guatemala has been actively involved in water and sanitation projects since 1968. Between 1968 and 1974, 116 projects were carried out at a total cost of more than \$275,000 and with an estimated 118,600 beneficiaries. Since the late seventies CARE's projects have involved a three-pronged approach: potable water and latrine installation and sanitary education for beneficiaries. At the end of 1984 CARE-Guatemala had completed more than 250 water projects in Guatemala. Chart 3 summarizes CARE's achievements in potable water projects in Guatemala.

2.2.3 Program Purpose

The purpose of the CARE project is to provide support for the construction and utilization of potable water systems and latrines in 60 villages serving approximately 54,800 rural inhabitants. The project was to operate from March 27, 1985 to June 30, 1988. However, the project was not initiated until July 1985.

Originally, the host government institution for the project was Desarrollo de la Comunidad (DESCOM). During September and October 1985, CARE and DESCOM elaborated the projects' plans. CARE approved the majority of these projects, but some were not approved because they did not meet the established criteria. At the beginning of 1986, the newly elected Government of Guatemala (GCG) established a new agency, the Ministry of Urban and Rural Development (MINDES), which absorbed DESCOM and which is supposed to be the government agency working with CARE.

Project intervention in all 60 villages was to include the following:

Chart 3

CARE
Summary of Water Projects in Guatemala
1968-1986 - 8/15/86 1/

Year	No. of Projects	Population Served	Average Population Per Project
1968	25	36,902	1,476
1969	22	19,063	866
1970	21	27,982	1,332
1971	13	11,563	889
1972	23	10,205	443
1973	11	12,757	1,159
1974	14	11,692	835
1975 2/	25	12,500	500
1976-80 3/		No information available	
1981	6	2,034	339
1982	26	23,312	897
1983	12	10,036	836
1984	17	9,500	558
1985	11	2,483	226
1986 to	34	17,852	525
8/15/86	16	2,502 4/	524
	276	180,857	655

1/ From "Annex A", 8/11/86 and "Summary" 68-74, April, 1975, CARE Guatemala.

2/ From P. Buckles, "A Study of Two Potable Water Projects in Guatemala" in Appropriate Technology for the Supply of Water and Sanitation, Volume V, ed. Elmendorf and Buckles, World Bank, 1980.

3/ No information available.

4/ None completed.

- Improved water supplies and house connections;
- Improved waste disposal systems with use of family latrines;
- Improved family health by reaching village women through health extension workshops;
- Established maintenance tariff systems through functioning community water committees.

The piped water supply systems were to be gravity-flow systems with house connections of 6 kms. Also, the projects were to be located primarily in the highland regions of Guatemala, including the heavily Indian-populated departments of Huehuetenango, San Marcos, Quetzaltenango, Solola, El Quiché, Totonicapán and Baja Verapaz, areas identified by the government as priority departments for improved sanitation services.

This project can be seen as part of CARE-Guatemala's overall development strategies. The emphasis on health and nutrition as an on-going project, with outreach field activities in maternal-child health and training of primary health workers and midwives (traditional birth attendants), is actively helping in the "formation of community decision-making bodies in matters relating to local health and environmental issues" (Village Health Outreach Project Proposal, revised June 1986). Another CARE project with very similar goals is supported by CARE-Canada and implemented in the northern regions jointly with UNEPAR (Unidad Ejecutora el Programa de Acueductos Rurales), a semiautonomous agency organized in 1975 under the Ministry of Public Health.

3. EVALUATION

3.1 Procedures

This mid-term evaluation has been designed to provide information on three water and environmental sanitation projects implemented by two NGOs and was carried out in Guatemala from July 17 to August 27, 1986. The evaluation team was composed of a U.S. coordinator and four Guatemalan professionals.

3.1.1 Communities Selected

Since it would have been impossible to visit all 63 projects in the 14 Guatemalan departments (see Chart 1) covered by the three agreements, the evaluation team selected, in a joint meeting with CARE and ADP, a representative sample of communities with systems, taking into consideration geographic differences (highlands and lowlands), ethnic (indigenous and "ladinos") and different project implementation stages. Charts 4, 5 and 6 present a list of sites visited by team members. In all, 14 communities were visited, 10 with ADP projects and 4 with CARE projects. Eight (25 percent) ADP projects were included in AID agreement 520-0298 and the other two, one recently inaugurated and the other one recently approved by the ADP evaluation commission, under AID agreement 520-0335. The four CARE projects visited are part of the 16 under implementation, 9 are under construction and 7 have been approved.

3.1.2 Chronogram

Chart 7 shows the chronogram of activities of the evaluation team. As can be seen, field visits were carried out during six days in the Western highlands, three days in the Eastern lowlands and two additional one-day visits.

3.1.3 Methodology of the Evaluation

A multiphase strategy for data collection was carried out by the members of the evaluation team to obtain necessary information to respond to evaluation questions. The history of the projects was obtained through document review and interviews with AIC, CARE and ADP officials participating in project design and/or implementation. Annex A presents a list of persons interviewed.

In the communities visited, general information on each community was gathered, water systems and house connections for water and sanitation were inspected and members of the local water committee (CDA), operation and maintenance personnel and beneficiaries (women) were interviewed. Finally, pictures were taken to show positive and negative aspects of the projects.

3.2 Techniques and Field Instruments

The following instruments for data collection were designed and utilized by the team in the communities visited:

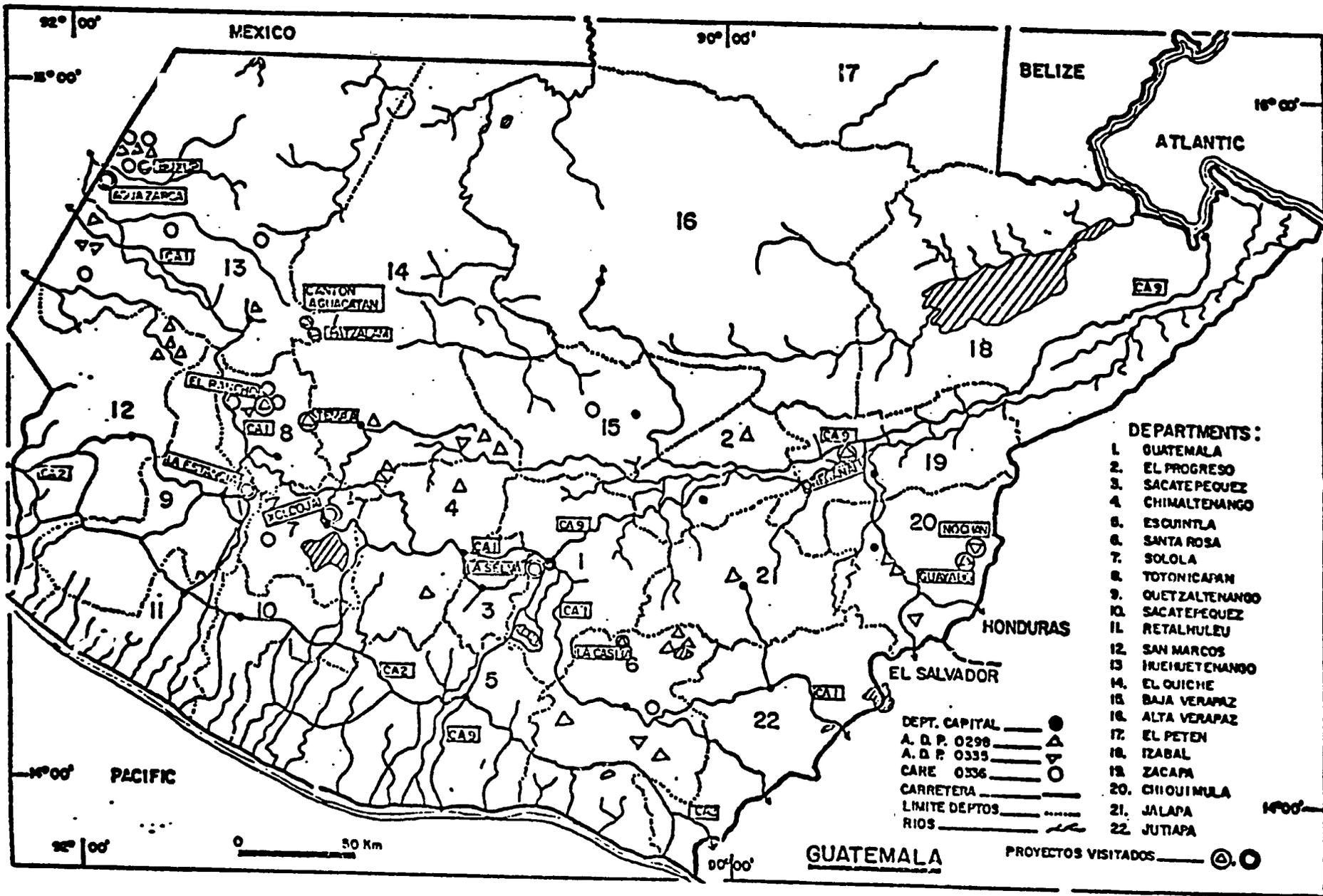


Chart 4

RESUMEN DE LOS DATOS DE PROYECTOS PROPORCIONADOS POR
 AGUA DEL PUEBLO Y CARE - GUATEMALA
 (August, 1986)

Departamentos	Municipios	ADP 520-0228 *	ADP 520-0335 *	CARE 520-0336	Observaciones	
Guatemala	Villa Nueva			La Selva (461) Est. 9/30/86	Field visit 8/8/86. System not completed.	
El Progreso	San Agustin Acasaguestian	"Guaytan" 14 (2200) (Comb. 7 comun.) + 6/28/85				
Chimaltenango	San Martin Jilotepeque	Estancia San Martin (560) + 3/14/86	27			
	Acatenango	Los Planes (1225) + 5/10/86	28			
Santa Rosa	Santa Rosa de Lima	La Casita (600) Est. 9/86	29		Field visit 8/86. System not completed.	
	San Rafael Las Flores	El Chanito (254) + 5/17/85	13			
	Casillas	"4 Aldeas" (1170) + 7/86	30			
		Llano Grande (442) + 9/84	6			
	Santa Maria Ixhuatean		El Irayol (250)	9		
	Oratorio	El Espino (204) + 11/84	8			
	Pueblo Nueva Vinas	Ixpaco (650) + 9/84	7			
Solola	Nahuala		Pacanal II. (300)	34	Xolcaja (500) Est. 9/30/86	Field visit 7/86 operating with problems. Not yet completed.
	Santa Catarina Ixtehuacan				Sinajutiu (258) Est. 9/30/86	

Chart No. 5

<u>Desplazamientos</u>	<u>Municipios</u>	<u>ADP 520-0298 *</u>	<u>ADP 520-0335 *</u>	<u>CARE 520-0336</u>	<u>Observaciones</u>
Solola	Solola			Verba Buena (525)	
Quetzaltenango	Cantel			La Estancia (1097) Est. 8/30/86	Field visit 8/86. Overlaps INFCM 1957. Near completion.
San Marcos	San Miguel Ixhuacan	Florida (258) + 4/30/85	9		
		Exial (153) + 4/29/85	10		
		Sala (68) + 4/29/85	11		
		Chininguitz (168) + 4/29/85	12		
	San Pedro Sacatepequez			La Cuchilla (650)	
Totonicapan	Homostenango	Rancho (1992) + 5/86	24	Rachoquel (1716)	38
				Centro San Vicente Buenabaj (602) Est. 10/30/86	Rancho field visit 8/86. Not operating. Duplication of CRS, INFAM systems.
				Buena Vista San Vicente (420) Buenabaj Est. 10/30/86	
				Paraje Paloma (756) Est. 10/30/86	
El Quiche	Santa Maria Chiquimula and San Antonio Ilotenango	Comb. 14 Commun. Temala etc. (5772) + 12/84	1		Inadequate field observation 8/1/86.

<u>Departamentos</u>	<u>Municipios</u>	<u>ADP 520-0298 *</u>	<u>ADP 520-0335 *</u>	<u>CARE 520-0336</u>	<u>Observaciones</u>
El Quiche	Chichicastenango		"Xajunan" (3 communities) 31 (3240) + 7/26/86		Xajunan funded from 0298, 0335. Brief field visit 7/26/86 for inauguration fiesta.
	Santa Cruz del Quiche	Chumanzana 32 (180) + 3/15/86			
		Xatinap (3000) 53 Est. 10/86			
	Joyabaj	Guapinol (53) 3 + 9/84	Pachilip (223)		
Huehuetenango	La Democracia and La Libertad	Infiercito 2 (528) + 9/30/84			
		"La Union" 15 (3 Aldeas) (2478) + 1/25/86	Chalum (336) 39 La Barranca (338) 40		
	Jacaltenango	Buxup (1204) 17 + 8/85		Xayomlaj (335) Est. 12/15/86	Buxup field visit 7/31/86. Out of order.
		Inchehuex (1590) 18 + 2/15/86		Huitzobal (496) Est. 12/15/86	
		Ojobna (240) 22 + 4/26/86			
		Barrio San Juan 23 + 4/26/86 (190)			
	Aguacatan	"Patzalam I", 15 (7 communities) (2190) + 7/86			Working 7/30/86 field visit.
		Canton Aguacatan 4 + 7/84 (713)			Working 7/30/86 field visit.
	Huehuetenango	Ruinas Zaculeu 25 (2460) Est. 9/86			
	Concepcion			Onlaj (819) Est. 5/340/87	

Cuadro No. 6

ITINERARIO PARA VISITAS DE CAMPO*
(Mary Elmendorf, Carlos Solares, Lisa Vielman)

<u>Dia/Eecha</u>	<u>Estado de --Avance--</u>	<u>Comunidad/Departamento</u>	<u>Agencia</u>	<u>Geografia</u>
L 7/28	90%	Xolcaja, Soioia	CARE	Altiplano
MA 7/29	90%	Cantel, Quetzaltenango	CARE	Altiplano
	100%	El Rancho, Momostenango, Totonicapan	ADP	Altiplano
MI 7/30	100%	Canton Aguacatan, Agua- catan, Huehuetenango	ADP	Altiplano
	100%	Patzalam, Aguacatan, Huehuetenango	ADP	Altiplano
J 7/31	15%	Agua Zarca, Santa Ana Huista, Huehuetenango	CARE	Altiplano
		Buxup, Jacaltenango, Huehuetenango	ADP	Altiplano
V 8/01	100%	*Temala, (Aldea Xicaxul) Santa Maria Chiquimu- la, Totonicapan San Antonio Ilotenan- go, El Quiche	ADP	Altiplano
L 8/04	97%	Casita, Santa Rosa de Lima, Santa Rosa	ADP	Oriente
MA 8/05		San Antonio Oreganal, Teculután, Zacapa	ADP	Oriente
MI 8/06		El Guayabo, Olopa, Chi- quimula	ADP	Altiplano
		Nochan, Quetzaltepeque Chiquimula	ADP	Altiplano
<u>Otras Visitas</u>		La Selva, Villa Nueva, Guatemala	CARE	Central
		Xajunam, Chichicastenan- go, Chichicastenango	ADP	Altiplano

* En esta localidad, el tiempo, clima y las condiciones de los caminos impidieron realizar una observación a fondo de los sistemas de distribución.

Departamentos	Municipios	ADP 520-0298 *	ADP 520-0335 *	CARE 520-0336	Observaciones	
Huastecanango	San Juan Ixcay			Quixtaj (509) Est. 12/30/86		
	Cuilco			Ixmulej (600) Est. 12/30/86		
	Santa Ana Huista			Agua Zarca Santa Ana (847) Est. 5/30/87	Field visit 7/31/86. Duplicates old 1971 CARE/DESCOM system, neither operating.	
Baja Verapaz	Rabinal			Guachipilin (836) Est. 9/30/86		
Jalapa	Jalapa	San Yuyo (2718) 21 + 2/11/85				
Chiapas	Olopa	El Guayabo 26 + 5/16/86 (615)			Field visit 8/6/86. Out of order.	
	San Jacinto	Pueblo Nuevo 19 + 11/15/85 (275)				
	Ticanlu	(254) 5 + 9/84				
	Concepcion Las Minas		San Antonio 37 Obraje/Otros (935)			
	Quetzaltepeque		Nochon (Prelim.) -		Field visit 8/6/84. Planning meeting.	
Zacapa	Teculatan	Oreganal (684) 20 + 3/1/86			Field visit to Oreganal 8/5/86. Operating.	
TOTALS		32	33,088 (1,034) (53-3772)	8 (6,685) (836) 44-3240	16 (9 active) (7 targ) 258-1097	9,509 (594)
Av. Size (Pop.)						
Range (Pop.)						
Completed Projects 8/15/86		30 (32045)		1 (3240)	None	
Communities (aldeas, etc.) Comp.		23		3	None	
Departments		10		6	7	
Municipios		23		8	13	
Incomplete 8/15/86		3 (6300)		7 (3445)	16 (9509)	

* 1986 ADP Nos. 0298, 0335
 Est. Estimated Completion Date
 + Inauguration Date
 (567) Population Benefitted

Cuadro No. 7

CRONOGRAMA

	Día	Actividad
L. Ma	Jul. 21, 22	- Reunion de Planificacion en Equipo
MI	Jul. 23	- Reunion en AID - Llamadas a ADP y CARE - Informacion de base - Instrumentos de investigacion
J	Jul. 24	- Reunion con ADP y CARE - Informacion de base - Instrumentos de investigacion
V	Jul. 25	- Informacion de base - Instrumentos de investigacion
S, D	Jul. 26, 27	- Fin de semana
L - S	Jul. 28 - Ago. 2	- Trabajo de campo - altiplano
D	Ago. 3	- Fin de semana
L - MI	Ago. 4 - 6	- Trabajo de campo - oriente
J	Ago. 7	- Reuniones de equipo - Elaborar informe
V	Ago. 8	- Reunion con AID - Elaborar informe
S, D	Ago. 9, 10	- Fin de semana
L, MA	Ago. 11, 12	- Elaborar informe
MI	Ago. 13	- Pasar a maquina informe
J	Ago. 14	- Preparar conclusiones y recomendaciones generales
V	Ago. 15	- Feriado
S, D	Ago. 16, 17	- Fin de semana
L, MA	Ago. 18, 19	- Revisar informe final
L	Ago. 25	- Presentar borrador del informe a AID
MI	Ago. 27	- Revisar el informe - Reunion informativa con AID y CARE
V	Ago. 29	- Entregar el informe final a AID

- Formzt for project visits (SANAM-C1).
- Guides for observation of water household connections and latrines.
- Guides for obtaining general information on the community.
- Guides for interviewing CCA members.
- Guides for interviewing the system operation and maintenance personnel.
- Guides for interviewing beneficiaries.

Copies of the instruments used in the evaluation can be found in Annex B.

4. FINDINGS FOR AGUA DEL PUEBLO

4.1. Implementation Plan

4.1.1 Project Development

According to the ADP director, 39 projects were planned under the first AID agreement, of which 32 have been completed in two and a half years, benefiting approximately 20,000 inhabitants, which exceeds the number of beneficiaries originally planned. However, there are no funds to implement the remaining seven projects. Under the second agreement, the first project was inaugurated during the period of this evaluation and 15 more are ready for implementation.

ADP has developed a very careful, basic methodology for screening communities before final approval and implementation. This process was spelled out carefully as early as 1977 and is still being used as a model by many other agencies. Discussions with community leaders, a technical feasibility study, careful involvement of the total community in preparing a village map, taking a census, and the simultaneous promotion of improvements in both water and latrination are commendable and effective components of the process. (See Chart 8).

Based on the team's field visits to ADP project sites the TARs seemed to be successful in relating to community members and explaining to the CDAs their responsibilities, both committee work and financial obligations for construction as well as later operation and maintenance.

In Nochan, a team member had the opportunity to observe unobtrusively how the TAR explained to the new CDA members at an informal meeting that their proposed project had been approved by ADP for follow-through. The dialogue was open and frank, with committee members asking questions about commitments they might have trouble fulfilling, e.g., obtaining sand from their isolated, sandless hills. The CDA members carefully repeated to the TAR how they would proceed to obtain their legal status and how they could request the MSP to expand the TAR's zone to include their community. The mutual respect between the TAR and the committee members was obvious. The process had started and everyone was aware of the challenges and responsibilities ahead.

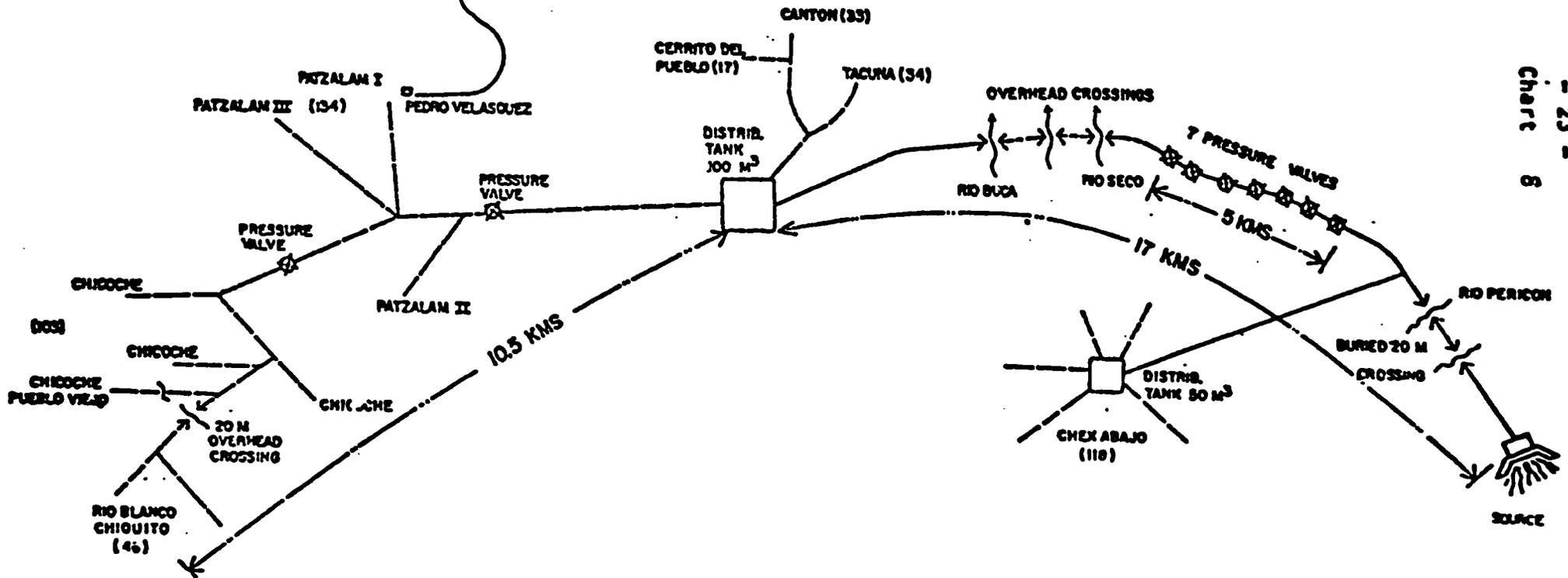
The major criticism the team had regarding project development concerned the seeming duplication of effort in some communities. When requests are made for new water systems, ADP should collect more information on existing water supply and sanitation services before improved systems or duplicative installations are considered. Such studies should indicate where both public and private piped water systems are located, how they are functioning, which houses have access or not, and what the source(s) of water is(are).



agua del pueblo

DIAGRAM, NOT TO SCALE PROYECTO COMBINADO PATZALAM

AGUACATAN, HUEHUETENANGO
POP. 2190
(452 CONNECTIONS)
FIELD VISIT 30 JULY 1986



- 23 -
Chart 6

In some instances the selection of a community with existing piped water might be justified, but the existence of an adequate source and an active community does not seem enough when considered in relation to the large number of communities with no piped water. The selection committee set up by ADP should of course make the final decision, but full information on all existing water and sanitation facilities should be available in the baseline data when the case is presented.

4.1.2 Technical

The ADP technical group is made up of engineers and TARs. Each engineer is supposed to supervise and advise the TAR during project development. As observed during the team's visits to the projects, however, this supervision is not being provided as intended. Design and construction should be supervised directly by the engineers.

Emphasis should be placed on making the rural water systems simple in design in order to facilitate their operation and, in this way, guarantee continuity of service. (See Chart 9.)

4.1.3 System Operation and Maintenance

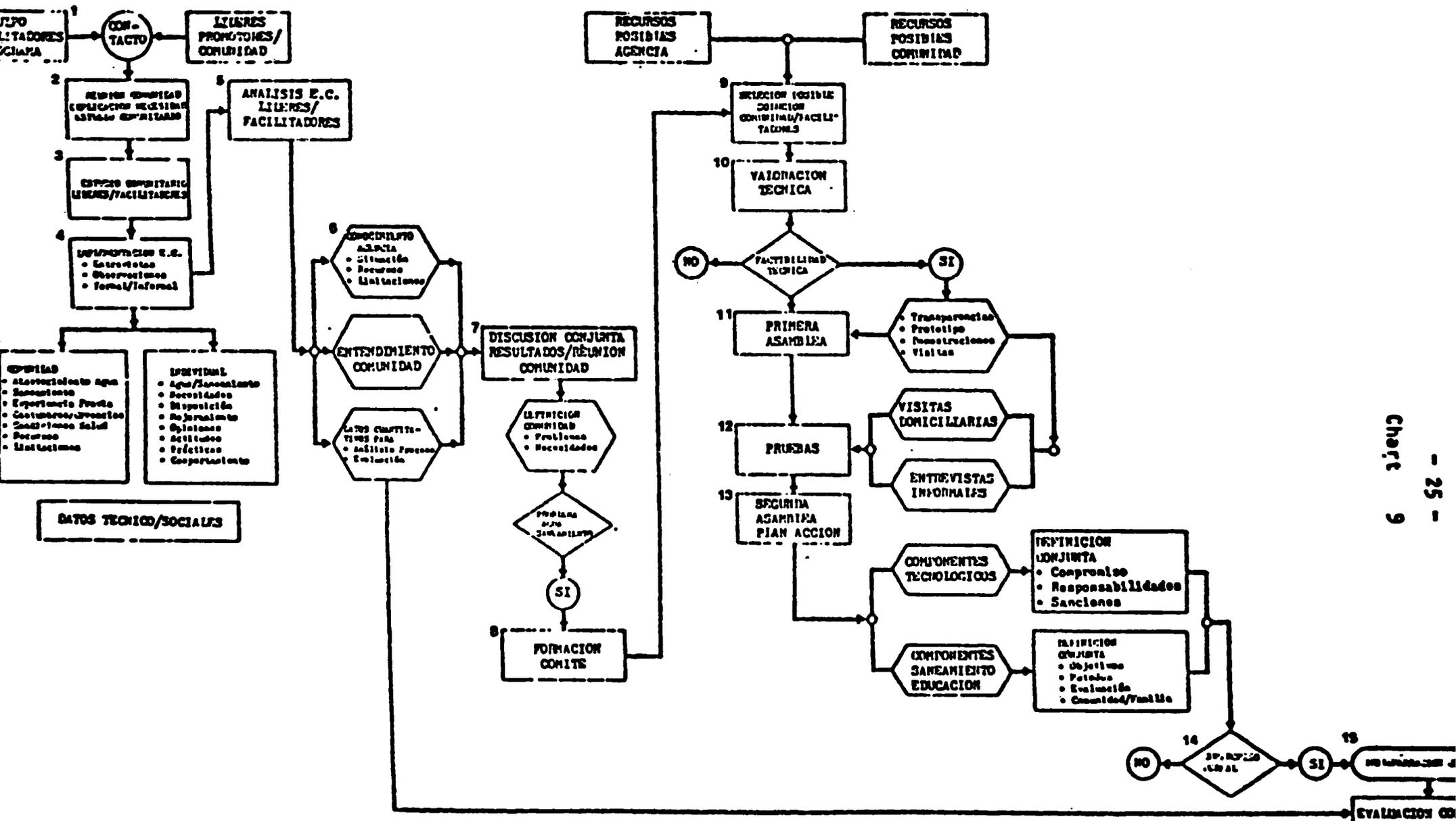
The people from the community who take over system operation and maintenance when construction is finished have no more knowledge about the system than what they might have learned during their participation as workers in the construction. In most instances they might learn how to lay the pipe and place accessories, which is not sufficient knowledge to assure responsibility for operating and maintaining a system.

In order to carry out this important work, ADP may have to organize a section that continuously revises the functioning of the systems, carries out major repairs, and trains the workers.

4.1.4 Training and Health Education

ADP, as a PVO specializing in water and sanitation projects has from its first project in early 1972 coordinated its health activities with the MSP, especially with the TSRs. In the mid-1970s when ADP projects were carried out with CARE in El Quiche (SARUC), the introduction of latrines was initiated as a parallel activity.

Beginning in 1980, ADP expanded its cooperative relationships with other NGOs that had experienced field staff in health education or group training and that were interested in improving water and sanitation as an integral component of their own development projects. During 1983-1985 project plans were made at weekly meetings with five NGOs, and executed jointly. However all of the group, except for Alianza para el Desarrollo Juvenil Comunitario (ADJC), felt the co-financing of projects was too difficult to manage. ADP continues to carry out projects in close cooperation



FUENTE: Aspectos Socio-Culturales del Suministro de Agua y Saneamiento en Tecnología Apropiada para el Suministro de Agua y Saneamiento, Vol. 5, Banco Mundial, Washington, 1980.

SOURCE: Socio-Cultural Aspects of Water Supply and Sanitation in Appropriate Technology for Water Supply and Sanitation, Vol. 5, The World Bank, Washington, 1980.

with several NGOs, especially Catholic Support Services (CRS), which has contracted the services of ADP to provide "technical services and management" for projects identified by CRS. Consistent with both CRS and ADP philosophy, complementary health education services are provided. Emphasis is placed on water use and conservation as well as construction and use of latrines. ADP has developed innovative educational materials, but the TARs, both in the office and in the field, said that they had problems reaching the women.

Some NGOs with women staff members have been very effective working with the TARs. ADJC has field staff in five departments (El Quiché, San Marcos, Sololá, Chiquimulá and Santa Rosa), where ADP is active. In El Quiché, a bilingual field worker said she had organized several women's groups in communities with newly installed ADP water systems to make soap from local materials. Such activities are part of the health education and improved hygiene components of the project as well as an income-generating activity (or at least a family saving).

During the field visits, the team observed instances of close collaboration, particularly in health education, between the TARs and the TRSs of the MSP. In all of the ADP projects visited the latrines had been provided by the MSP, based on an agreement with ADP; individual families provided the labor, and in some instances, received a token payment for transportation expenses. In some communities where latrines were being introduced, the local leaders mentioned cooperation from World Vision International (VMI), COCACI, ADJC, Caritas de Guatemala (CARITAS), CRS, and sometimes the "sisters." Some communities were also aware of assistance from other donor groups such as Dutch and Canadian groups.

Coordination among ADP field members, field workers from other NGOs and the village school teacher was observed in one site visit. This increases communication with the women and children, so that needed behavioral changes in the household will also be supported by community leaders.

4.1.5 Administration and Finance

The organizational structure of ADP is somewhere between the poles of government and private organizations. It has some disadvantages of the first and some advantages of the second. Nevertheless, because of a recent organizational analysis, ADP now has written handbooks, standards and guides, all of which should improve performance. These are in the process of implementation but, if the staff really does not believe in such administrative principles, the changes will not have the desired results.

With respect to the financial area, all the necessary accounting data have not been entered into the computer. Those in charge should be aware that such information is necessary in order to improve, control and evaluate the functioning of all projects.

Finally, ADP is run by a board of directors made up of seven members, four of whom are also employees of ADP. This creates a conflict of

interest since the majority of the members are employees and directors at the same time, a possibly dangerous arrangement with respect to compliance with the objectives and the functioning of the organization, not to mention managing grant funds. (See also Section 4.3, "Managerial and Financial Aspects.")

4.1.6 Implementation Constraints

Despite the fact that ACP has a specialized technical staff of 12 TARs and three engineers, it considers 17 projects a year as the maximum number it can complete under the operating procedures it has established. However, between January 30, 1954 and July 1986 (one and a half years), under AID agreement 52C-0298, 32 projects, covering 20,000 rural inhabitants, were inaugurated in different communities. Moreover, according to ADP information, 40 projects were completed in 36 months between 1983-85, covering an average of 2.2 communities per project and 175,000 beneficiaries. This would indicate that a larger number of communities could be provided with potable water in a year.

4.2 Technical Aspects

4.2.1 Introduction

The purpose of both AID grants to ADP is to improve the environmental sanitation of a certain number of communities in the rural area through the supply of potable water systems and latrines to Guatemalan communities that do not have these services. Taking into consideration their low operating cost as well as their simplicity, water systems that can function by gravity have been preferred.

In none of the already constructed systems, or those being constructed, has disinfection through chlorine or any of its derivatives been contemplated. In one of the projects visited by the evaluation team a treatment plant with grit chamber, sedimentation tank and slow sand filters is being constructed. This is usual practice for projects that will serve more than one community with the same water system. The total cost per capita of the water systems constructed to date is approximately Q113.00 (US\$40 in August 1986).

Because construction costs have varied greatly in the past few years, necessary adjustments in project plans are regularly made. Up to now, priority has been given to simple pit latrines or those known as composting latrines. The program for latrine construction is started before the construction of the water system.

ACP has had no experience with hydraulic or water seal latrines, although the necessary household connections have been placed in the water systems constructed, which would facilitate their use and acceptance. The cost per capita of the simple pit latrine is around Q10.00 and that of the composting latrine varies between Q70.00 and Q90.00. The cost of the

hydraulic seal latrine is approximately Q20.00. The hydraulic seal latrines are manufactured in Guatemala and are being exported to other Central American countries, where they are being successfully used.

4.2.2 Community Selection

A definite ADP program for constructing water systems or implementing sanitation programs does not exist. Practically, the order in which projects are being carried out corresponds to the order in which requests are presented to ADP. Accordingly, the initial step for the selection of the projects corresponds to a request being initiated by the community.

After ADP receives a request, its first step is to inform the community of the economic, political, social and technical requirements it has to meet to be selected. Next, the TAR carries out the pre-feasibility study, which includes, among other aspects, personal inspection of the site and appraisal of the water source or sources available. Whether the community already has a water system also has to be determined. The evaluation team learned that a high percentage of the communities visited had a water system that was either already functioning or could be improved or enlarged. It should be noted that this situation contradicts the purpose of the grants, which clearly indicate that the communities to be benefited are those that now have no piped potable water system nor sanitation services.

In the particular case of Paraje El Rancho, Los Cipreses, Momostenango, Department of Totonicapan, two systems, in addition to the one constructed by ADP, exist. The first one was constructed by CARITAS and the second one probably by the MSP; the latter is currently being operated by Instituto de Fomento Municipal (INFCM). Both previous systems are functioning, and the team was informed that some houses have connections to three or four systems.

4.2.3 Preliminary Studies

The TAR is the one in charge of the preliminary (pre-feasibility) study, which includes technical, financial, socioeconomic and legal aspects. At this stage, a sample for a chemical-sanitary analysis of the water sources is taken if the TAR considers it necessary.

Only those projects for which water can be conducted by gravity to the community are considered feasible. Projects supplied through pumping or through wells are not considered.

These requirements have made it necessary to construct conduction pipes that are larger, and more expensive, than necessary, which is why other organizations involved in providing water services did not consider such projects to be economically feasible for their programs.

As part of the preliminary study, the TAR selects the possible place for the conduction line and the location of the distribution tank. It is up to the local water committee to get the necessary permissions for acquiring the right of way and the right of property.

4.2.4 DESIGN

Once the preliminary study is finished, the project has been accepted by the respective ADP selection committee, and the initial agreement with the community has been reached, the TAR proceeds with the design of the system, during which he can seek the advice and supervision of an engineer.

The main tasks for the design are the following:

- a. Topographical survey
- b. Topographical estimates
- c. Drawing of the respective plans
- d. Hydraulic design
- e. Drawing of the hydraulic plans
- f. Elaboration of the budget

Once the design is finished, it goes to the evaluation committee of ADP. The design norms of LNEPAR were initially used for the designs. These have now been revised and expanded by ADP.

With respect to daily water supply per capita, as well as maximum consumption factors, daily as well as hourly, the practice followed is to vary them in direct proportion to the flow of the available water source. If the flow is abundant, the supply can surpass 100 liters per day per inhabitant, which is a flow much greater than that used normally for rural water systems with house connections. The maximum consumption values would also be above normal for this type of system.

It should be noted that this practice leads to the design of systems with a greater capacity than necessary since the diameter of the pipe for the conduction and distribution lines is greater than that really necessary. Similarly, the volume of the distribution tank which is equivalent to a percentage of the daily average use, is greater than necessary.

Another risk when using greater diameters than necessary is a decrease in the flow from the source or the supply from the main line, which makes the pipe work as a channel, logically interrupting the water service.

Possibly because of economic reasons, the number of valves in the distribution system has been reduced and, given the topography of the rural zones of the country, the lines that service the lowest points use the biggest part of the flow, thereby reducing the flow at the higher points.

In some of the projects visited it was noted that, in order to obtain a larger coverage, overly high static heads were used, thus causing

repeated failures in the pipes and, accordingly, interruption of service. In extreme cases, galvanized iron pipe is used for the places where the static head is too high, but breakage of pipes was still observed. The use of zoning might produce better results because use of metallic pipe could be avoided, and having less of a flow would reduce the diameter necessary, thus lowering the construction costs.

The plans drawn up for the different projects are very complete and include all components of the system. The typical plans used are the same as those used by UNEPAR; their effectiveness has been proven through many years of use.

Some observations are warranted regarding the typical designs being used:

- a. Distribution Tanks: The tanks have only one chamber, which makes cleaning them difficult. Using tanks with two chambers would be more convenient.
- b. If the practice of using only one chamber is continued, instead of a simple bypass for cleaning the tank, the construction of a box to break the pressure and avoid very high static heads in the distribution system should be contemplated.
- c. When the topography of the land allows it, manual air valves, which fulfill the same purpose but do not require any type of operation, should be substituted for break pressure tanks.

During the site visits, many deficiencies in the potable water systems were noticed, many of them attributable to inadequate designs given the conditions of the site.

4.2.5 Construction and Environmental Impacts

Construction is directed by a TAR and the supervising engineer, in cooperation with local workers specialized in the construction of water systems. The TAR is in charge of the construction work. The engineer supervises the work an average of twice a month.

Sometimes the construction work is delayed because of difficulties in finding contractors to transport materials to the site. Normally, the community provides the local materials such as stone, gravel, sand and wood. The remaining materials necessary for the water system are furnished by ACP.

The largest percentage of pipe used in the construction of water systems is rigid polyvinyl chloride (PVC), except in areas with critical pressure, where galvanized iron pipe is used. According to system specifications, the house connections should also be of galvanized iron. Nevertheless, the evaluation team observed that in many of the projects house

connections had been laid with PVC pipe. The team was told that the galvanized iron pipe had not been received, even though a long time had elapsed since the installation of the house connections.

According to the details of the plans, when a change is made from galvanized iron pipe to PVC, a small concrete base is supposed to be cast to make the system more rigid and to avoid breakage of the plastic pipe. Nevertheless, this has not been done in many communities and frequent breakage occurs. Just in the Aldea El Guayabo, Municipio of Olopá, Chiquimulá, 17 cases of breakage in house connections were reported in the few months of operation. In Oreganal cement bases for strengthening the connections were in use, but they had not been installed in all the houses. In many of the projects where the lines pass through rivers and streams, PVC pipe has been used in those sections, but reports have been received of the PVC pipe breaking, thus interrupting service.

The distribution tanks are constructed with gravity concrete walls and reinforced concrete stone for the roof. The construction of the tanks inspected by the team was of very high quality.

The standard details of the valve boxes allow for the construction of walls made out of stone, brick or concrete. In all cases, the bottom is made with concrete slab, which does not allow for the passage of water dripping from the valve or for rain water to seep into the ground. Therefore, it is suggested that the foundation slab be eliminated.

Hydrostatic tests are never made to verify the correct installation of the pipe, as would be desirable. Also, the components of the system are never disinfected before the system is handed over to the users.

As mentioned above, ADP uses standard construction plans and details used by other institutions, for which it has the respective construction specifications. For some components, such as catchment of water sources, it is difficult to use a standard design. Therefore, the person responsible for directing the construction should have some knowledge of hydrology to ensure that water is captured, not lost.

In the particular case of the Cuyaguay spring, which services the village of Buxup, Jacaltenango, Huehuetenango, the catchment works correctly during the rainy season but not during the summer or dry season, when the water is so low that it does not reach the pipe that would take it to a box where the flow of the Chejbal stream, which corresponds to a system that used to service the community, gets in. Besides, the overflow of this box is located 0.10 meter (4 inches) below the pipes that take the water from the first stream and in front of the discharge of the second one, which makes for a considerable loss of water. Even though, according to the inhabitants, the spring does not become completely exhausted during the dry season, the inadequate catchment impairs its correct functioning and the system is fed only by the old spring, which is not sufficient to meet the demand of the

community. The evaluation team was told that, because of this inefficiency, the members of the water committee have been severely criticized by the people.

With respect to the construction of latrines, ADP maintains an agreement with the MSP, supplying them with construction materials in exchange for the components of the latrines. In some cases the latrines are constructed on the site and the people provide unskilled labor and materials and dig their own pits and make enclosures.

In general, the installation of latrines is satisfactory. For some latrines the enclosures are deficient in that simple pieces of cardboard or plastic material are used. The team also noted that there is a tendency to dig the pits for the conventional latrines extremely deep (5 meters instead of the usual 2.5 meters), which, because of the work it represents, can lessen acceptance by the people in the community as well as effective decomposition.

In most of the water projects visited the team observed that the house connection provides the people access to potable water but also generates environmental problems, such as the gathering or stagnant or polluted water, which causes the proliferation of mosquitoes and the presence of domestic animals (dogs, pigs, chickens, etc.) near the houses.

4.2.6 Operation and Maintenance

The usual practice is that some of the members of the community who helped to construct the water system, and are therefore familiar with it, take charge of the operation and maintenance of the system, acting as "fontaneros" or water minders. The users of the system pay a monthly fee and those funds are managed by the water committee or a maintenance committee, which is formed as soon as the water system begins functioning. Two water minders are usually selected by the community and are paid for their work, at the minimum wage, from the monthly fees.

The team noted that, in some cases, the water minders do not have any tools with which to do their work. In addition, it is logical to assume that their knowledge of the operation of the system is very limited, which makes one think that the water systems ought to be very simple. Otherwise, the failures and interruptions of the service would be more frequent and the system could only be repaired when an engineer or a TAR visited the community.

The many cases of systems not functioning at the time of the team's visit, even newly finished water systems, are evidence that the operation and maintenance of the systems will have to receive special attention on the part of ADP.

The operation and maintenance of the latrines are a reflection of the level of education of the users. Therefore, sanitary education is essential.

4.2.7 Community Participation

The evaluation team observed that the communities benefited by the projects participate actively and spontaneously in their implementation. The success of this type of project depends, in large part, on getting maximum participation from the community in all phases of planning and implementation, including contributing their labor or needed materials. Failures and interruptions of the service lead to the loss of this important community support because the community stops believing in the water committee and, even worse, in the institution that is in charge of the work.

4.2.8 Conclusions

- a. The selection of communities to be benefited is not in accordance with the purpose of the AIC-ADP agreements, which indicate that the goal is to improve the environmental sanitation of those communities that do not have potable water systems nor sanitary services.
- b. The collection of samples from springs for sanitary-chemical analysis to determine the suitability or unsuitability of their use, as well as the amount of treatment necessary, has not been a mandatory practice.
- c. Apparently, bacteriological analysis of the water being provided to the users is not being carried out regularly either. Proof of this is that none of the systems visited has facilities for disinfection through chlorine or its derivatives.
- d. Even in communities where wells drilled by hand already exist, this alternative for supplying the community has not been considered by ADP.
- e. No uniform criteria exist for the use of certain parameters for design, for example, the daily water supply per inhabitant and the maximum daily and hourly consumption factors, which vary in accordance with the availability of the water source.
- f. The low number of valves in the systems prevents hydraulic balance and does not allow for the cleaning of the dead ends or low points of the distribution system.
- g. The static and dynamic heads used in the systems have caused frequent failures of the pipes.
- h. Plastic pipe has been used in some components of the system where galvanized iron pipe has been specified, this may be due to inadequate supervision or the unsatisfactory supply of materials.

- i. The systems are not put through any test to guarantee that the pipe and other components are well installed.
- j. In many cases, the excavation of the ditch for latrines is over 5.0 meters deep, which can cause low acceptance on the part of the community because of the work involved.
- k. Even though the construction of the water system fulfills the needs of the community by providing access to good quality water, other problems arise, such as polluted, stagnant water from public laundries, which makes mosquitoes proliferate and attracts domestic animals to the houses.
- l. The design criteria used in some of the systems visited make operation and maintenance difficult, thereby causing frequent failures and interruptions in the service.

4.2.9 Recommendations

- a. The purpose of both AID-ADP agreements should be followed, i.e., only those communities that do not have a water system should be considered. The possibility could be studied of improving or enlarging existing systems in some communities, but not constructing new systems.
- b. Taking samples for chemical-sanitary analysis should be done by the time the first sanitary inspection takes place in order to identify those springs that are not good for human use.
- c. The AID-ADP agreements also state that potable water has to be furnished; accordingly, a program should be set up to take water samples for bacteriological analysis, which is the only way to determine if the water is good for human consumption. If contamination of faecal origin is found, disinfection with chlorine or its derivatives should be included in the system design.
- d. The possibility of establishing a water supply program through hand-drilled wells in those places where the underground water characteristics allow it should be studied.
- e. In order to avoid overcapacity and unnecessarily high-cost systems, provisions for daily requirements per inhabitant should not exceed those recommended by UNEPAR, using the maximum values for hot climates and the minimum values for cold climates. A similar criterion is recommended for maximum daily and hourly consumption factors.

- f. The valves that are important to the correct functioning of the system and that allow for the cleaning of the dead ends of the distribution system should be installed.
- g. The possibility of dividing systems into zones in order to avoid high static heads should be studied. It is advisable to follow the values set up by UNEPAR.
- h. In order to avoid unnecessary failures, the provisional installation of PVC where galvanized iron pipe has been specified should be avoided. The supervisor should insist on this.
- i. The practice of submitting the pipe to hydrostatic tests in order to verify its correct installation should be followed.
- j. The codes normally establish a depth of 2.50 meters for latrines, because after this depth bacteriological activity practically disappears. Such a depth should be the required one in order to avoid unnecessary work for the people in the community.
- k. Among the responsibilities of the TAR and TSR, teaching the community how to dispose of polluted water to avoid its stagnation should be included. The use of small cesspools with loose stones on the surface could be instituted without major expense to the community.
- l. Emphasis should be placed on designing simple water systems for rural areas to facilitate their operation and maintenance. The designers should take into account the limited understanding of the community members who take on the job of maintaining the system.

4.3 Managerial and Financial Aspects

4.3.1 Introduction

The managerial-financial evaluation of ADP was carried out as follows: first, the team reviewed information relative to the project through reports and literature on ACP activities; then we developed a questionnaire with which to gather specific information on administrative and financial items; later we interviewed the executive director and the principal executives of the organization. We then proceeded with an analysis of the information obtained, developing hypotheses summarizing what was found and, finally, testing them in the organization to verify or reject our propositions.

4.3.2 Organization

The organization of ADP follows the rules of a nonprofit institution and reflects well-defined objectives. A general assembly is composed of members, who in turn elect a seven-member board of directors, who are in the majority associates/employees of ACP. The organization of ADP consists of an executive director, three executives who report directly to him -- the technical director, the administrative director and a technical-administrative consultant. Under the technical director there are two project engineers and under each of the engineers, six TARs (see Chart 10).

Also under the technical director is a person in charge of the Education Department, who has under him three TSRs and a draftsman. There are also two assistant engineers. Working under the administrative director are three accounting assistants, two secretaries, an administrative assistant and a messenger-watchman. In all there are 31 staff members.

This organization was implemented in November 1985 as a result of an administrative-accounting study conducted by Price Waterhouse. The main change from the previous organization is that of the administrative-accounting department. Previously the chief of the department was an accountant; in the current organization the chief has been raised to the same level as the technical director and has been given more responsibilities than those held by the previous accountant.

The atmosphere in the ADP is informal, pleasant and cooperative. The atmosphere is democratic in nature, which creates very good working conditions for the employees.

4.3.2.1 Planning and Control

No written plans for the organization exist, although a set of objectives are included in the by-laws of the association's constitution. In 1983 a three-year plan was established for 1983 through 1985, but another one has not been developed.

As a control procedure, narrative financial and operational reports are written, but only when an organization that finances ADP's projects requires them.

In 1986 the assistant director instituted a procedure for follow-up and evaluation of projects. Project evaluations are programmed in three phases: (1) document review phase; (2) field research phase; and (3) office phase. To date, the first phase has been completed and the field research phase is under way.

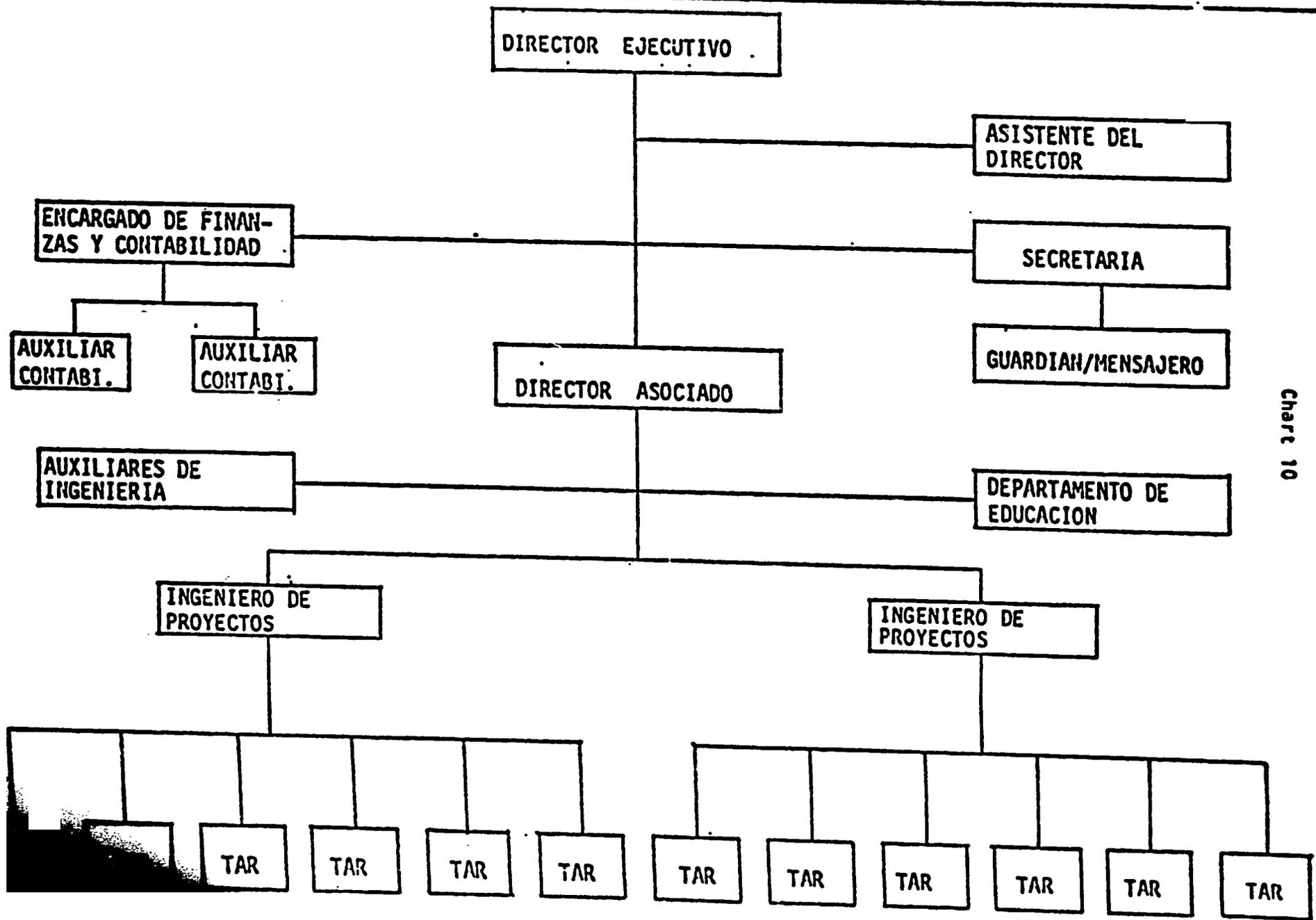
4.3.2.2 Budgeting and Execution

AID-Guatemala-Project-52C-0293

The original amount budgeted for agreement 0293 was US\$500,000, granted originally at the exchange rate of \$1.00 = Q1.00. At the

ORGANIGRAMA DE LA ASOCIACION
PRO AGUA DEL PUEBLO

ORGANIGRAMA INSTITUCIONAL



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Chart 10

end of 1984, 1985 and 1986 there were fluctuations in the dollar/quetzal exchange rate that were very favorable to ADP because AID, when granting the funds, converted them to the rate prevailing in the local market. Thus, the budgeted \$500,000 became Q1,166,408.40. As indicated in Chart 11, as of April 1986, a total of Q951,246.54 had been spent. (Two amendments were made, one for the 1985 budget and the other for the 1986 budget.) This indicates that the allocation was almost totally spent by April 1986, leaving a small amount, which the team believes, was used during the months of May, June and July for projects in C298 that were about to be finished or was applied to the new agreement, 0335.

The number of projects completely finished with these funds was 32 (3 of which are pending inauguration), compared with the 39 originally stipulated in the AID grant agreement. The number of beneficiaries agreed to was 17,500, but the actual number of people benefited was 33,899.

With respect to the use of funds from AID and other institutions planned for project C298, the exchange rate increased gradually until it reached 2.9 quetzales to one dollar. Therefore, once all donors had contributed, the US\$1,858,060 that was budgeted for 1984-1985 became Q3,165,033.63. It should be noted that this information is as of June 1986 (see Chart 12).

AID-Guatemala-Project-220-0335

The total amount originally budgeted under agreement 0335 for three years, 1985 through 1987, was \$1,000,000 distributed as follows:

Year	U.S.A. Dollars
1985	104,249.00
1986	606,931.00
1987	288,820.00

But in May 1986, these figures were adjusted, through an amendment, as follows:

Year	U.S.A. Dollars	Quetzales
1985	215,937.00	717,075.00
1986	405,303.00	1,187,539.00
1987	378,710.00	

No disbursement of these funds was made until January 1986. Nevertheless, of the amount budgeted for 1985, Q483,927.24 out of the Q717,075.00 has been spent, especially for acquiring capital assets (purchase of new vehicles) and starting new projects (see Chart 13).

ASOCIACION PRO AGUA DEL PUEBLO
AID GUATEMALA ONG - 520 - 0290

PERIODO ESPECIFICADO: 01-02-1984 al 31-12-86
PERIODO ACUMULADO: 01-02-1984 al 30-04-86
ESTE PERIODO: 01-03-1986 al 30-04-86

<u>ADMINISTRACION ADP</u>	<u>TOTAL</u>	<u>PRESUPUESTO</u>			<u>GASTADO</u>	
		<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>ACUMULADO ANTERIOR</u>	<u>ESTE PERIODO</u>
A.1 Personal Técnico	191,287.68	75,645.00	95,290.68	20,352.00	181,514.00	3,975.00
A.2 Personal Administrativo	96,227.80	29,214.00	54,890.88	12,115.00	96,106.96	
B Gastos de Inversión	605,409.96	88,382.00	355,372.96	161,655.00	542,720.87	
C Activos Fijos	163,713.00	16,790.00	17,303.00	129,540.00	28,024.63	35.73
D Gastos Generales	87,719.80	31,992.00	45,021.08	9,906.00	84,726.50	1,212.77
	1,144,358.40	242,023.00	568,767.40	333,568.00	933,973.04	5,223.56
<u>ADMINISTRADO AID</u>						
E. <u>Activos Fijos</u>						
8 Motos Honda 185-5		7,592.00			7,592.00	
3 Altimetros		3,227.00			3,227.00	
1 Jeep CJ-7		11,231.00			11,231.00	
	22,050.00	22,050.00			22,050.00	
	1,166,408.40	264,073.00	568,767.40	333,568.00	956,023.04	5,223.56

El infrascrito por la presente certifica: (1) Que el informe anterior presenta su más exacta estimación de los fondos necesarios bolsos a ser incurridos durante el periodo descrito: (2) Que se hará el desembolso o abono requerido a la donación o convenio, en zarse de acuerdo con los terminos de la donación o convenio: (3) Que se hará el reembolso o abono requerido a la donación o conv que los fondos no sean requeridos y que cualquier interés devengado sobre los fondos suministrados de acuerdo a la presente serán A.I.D.

Nombre: Carlos Enrique Gómez Duarte
Cargo: Director Ejecutivo.
Fecha: Guatemala, 30 de Mayo de 1986

Firma: _____

Sello: _____

Chart 12

1984-1985 CONTRIBUTIONS
(Project No. 520-0298)

AGENCY		PLANNED	EXECUTED
(FIA)	Fundacion Interamericana	143,676.00	215,043.75
(FBP)	Fundacion Bienestar Publico	9,822.00	10,000.00
	OXFAM (Inglaterra)	5,512.00	5,479.00
(PACT)	Agencias Privadas Colaborando Juntas	33,637.00	223,312.00
(CRN)	Comite Nacional de Recons- truccion	321,072.00	806,094.15
(COM)	Comunidades	470,974.00	497,422.50
(ADP)	Agua del Pueblo	11,340.00	19,383.00
	Otros	362,027.00	417,216.53
(AID)	Agencia para el Desarrollo Internacional	500,000.00	971,062.78
	TOTAL	1,858,060.00 =====	3,165,033.63 =====

AID GUATEMALA ONG 520-0335
PERIODO ACUMULADO: 01-01-86 al 31-05-86
ESIC PERIODO: 01-05-86 al 31-05-86

ADMINISTRACION AOP	TOTAL	PRESUPUESTO		ACUMULADO AMERICANO	GASTADO ESIC PERIODO	ACUMULADO A LA FECHA	JUNIO	ADELANTO JULIO	TOTAL
		1985	1986						
Personal Técnico	132,355		132,355	14,540.92	9,371.46	23,920.38	22,137.57	20,545.98	42,683.55
Personal Administrativo	62,902		62,902	7,607.77	6,410.80	14,090.65	12,608.20	3,272.22	15,960.42
Auditoria Externa	4,000		4,000						
Activos Fijos	308,996	308,996		129,283.48		129,283.48			
Gastos de Inversión	1,254,101	325,576	928,605	265,192.25	38,692.87	303,885.12	110,000.00	40,000.00	150,000.00
Consultoría	2,503	2,503		1,140.00		1,140.00			
Gastos Generales	59,597		59,597	6,704.42	4,015.19	11,599.61	10,625.34	7,266.93	17,892.27
TOTAL	1,904,614	717,075	1,187,539	424,636.84	59,290.40	483,927.24	155,451.11	71,085.13	226,536.24

Chart 13 - 41 -

El infrascrito por la presente CERTIFICA: (1) Que el Informe anterior representa su más exacta estimación de los fondos necesarios para los desembolsos a ser incurridos durante el periodo descrito; (2) Que se hará el desembolso o abono requerido a la donación o convenio, en caso de rechazarse de acuerdo con los términos de la donación o convenio; (3) Que se hará el reembolso o abono requerido a la Donación o convenio, en caso de que los fondos no sean gastados y que cualquier interés sobre los fondos suministrados de acuerdo con la presente serán reembolsados a AID.

NOMBRE: CARLOS ENRIQUE GOMEZ DUARTE
 CARGO:
 FECHA: 1 DE AGOSTO DE 1986

FIRMA: 

SELLO

Approximately 10 projects have been started and several more are about to begin. The goal for 1986 is a total of seventeen projects. The same amount is planned for 1987 but, at this pace, the goal of 62 projects in three years will not be fulfilled. The possibility exists of obtaining an extension in order to comply with the commitment, but only if the rest of the planned donations are obtained to finance that number of projects.

Of the total funds expected from AID and other institutions for project C335, \$5,169,546, \$1,214,976.58, was received during the first half of 1986 (see Chart 14). A cause of concern is the fact that the rest of the grant funds will have to be forthcoming or new grants developed if ADP is to comply with the original budget and thereby complete the 60 planned projects, even if an extension of time is obtained.

4.3.3 Management and Finance

4.3.3.1 Accounting

Adequate accounting nomenclature for the type of projects managed by the institution is being used. The staff uses an accounting manual written by the previously mentioned consulting firm. Nevertheless, to date, because the nomenclature has not been completely entered into the computer, accounting and financial reports cannot be rapidly produced when decisions have to be taken. (For example, the costs assigned to each donating institution for a specific project cannot be easily determined since they have to be calculated by hand.)

The accounting of the institution is behind schedule because it is done by hand; in August the staff had only gotten to the month of May of this year. The accounting information entered into the computer is up to April 1986. It is expected that they will continue manual and computer operations for six more months, until they can depend completely on the computer.

Two joint signatures are necessary to approve checks; that of the executive director and that of the associate director, but both people are not always available in the institution.

The institution uses Price Waterhouse as external auditors. They perform two audits a year. The results of these audits are at the disposal of the donating institutions.

4.3.3.2 Materials handling

Purchases: The procedure for purchases is included in the Handbook for Administrative Procedures designed by Price Waterhouse. This handbook covers policies, controls and forms to be used. The team noted that procedures are being carried out adequately.

Warehouse: Usually, materials and supplies for the projects are not kept in storage because whatever is purchased is sent

Chart 14

Contributions - First Semester, 1986
(Agreement No. 520-0335)

Agency	Executed 1985-1987	Planned	
		First Semester, 1986 Quetzales	Dollars
PACT	70,218.00	44,451.68	15,652.00
CRS	313,390.00	423,136.00*	
CRN	459,075.00		
FIA	50,120.00		
Comunidades	896,685.00	136,572.94	
Otros	2,400,058.00	151,632.42	53,384.29
AID	<u>1,000,000.00</u>	<u>459,183.59</u>	<u>166,605.16</u>
TOTAL	<u>5,189,546.00</u> =====	<u>1,214,976.58</u> =====	

* All funds were agreed in Quetzales.

directly to the specific project. Once the materials are sent, responsibility for storage is given to the committee in the respective community. Nevertheless, a small warehouse does exist and some small accessories, such as elbow joints, couplings, faucets, nipples and materials left over from various projects, are stored there. These materials are well identified.

4.3.3.3 Personnel

A job manual exists for the main executives of the institution. This is one of five manuals prepared by Price Waterhouse. The manual has procedures for personnel recruitment and selection, personnel administration, forms for interviews, evaluations and other procedures and regulations for personnel. The procedures in this staff manual have not yet been completely implemented.

The education and experience of staff personnel are quite satisfactory. In the executive positions there are professionals with master's degrees and some of the engineers have had postgraduate studies in sanitary engineering.

At the administrative level, there are "bachilleres" with some university studies relevant to their jobs. At the technical level there are rural technicians, who have also received an internal course that qualifies them as TARs. This innovative program was developed by ADP in the late 1970s and the first training course was given by ADP in 1981.

The salary level at the organization is more competitive with private enterprise than with the government sector, and the TARs' salaries are nearly as high as those of engineers in the government. The institution is paying compensation (severance pay) to its employees every year. This means that in July, August and September each employee is going to receive his severance pay. This procedure keeps the labor liabilities low.

The installation and working areas are not adequate for the staff. They have two personal computers, one IBM and one Hewlett Packard.

4.3.4 Reports to AID

Reports are submitted to AID every two months. These had been submitted up to May 1986. Narrative reports are also prepared by the executive director. The last of these reports received was that for December 1985, covering activities carried out during the year.

4.3.5 W&S System Construction Costs

Based on statistical information obtained from the report, "Summary of Works," on 29 projects carried out under agreement 0293, the average cost per system or project was as follows:

Total average cost per project	C104,437.00
Total average cost per beneficiary	113.00
Total average cost per connection	619.00

Of this average total cost, 7 percent comes from down payments by the community; 21 percent from loans made to the revolving fund; 23 percent from contributions of labor; 24 percent from in-kind contributions and 27 percent from ADP, including USAID funds.

The cost of each septic-tank-type latrine is established through mutual agreement with MSP's Environmental Sanitation Division; it comes to Q9.60 per latrine. Of the Q9.60, ADP contributes the equivalent of 200 pounds of cement, which costs approximately Q7.12. The rest is contributed by the Environmental Sanitation Division.

4.3.6 Collection and Use of Fees

The fees paid by the community for the water service are divided as follows: (a) down payment to finance the project; (b) contributions to the revolving fund; and (c) payment for the maintenance of the installation once the project is functioning.

Down payment: The community, through its water committee, makes only one down payment, which varies between 3 and 5 percent of the total cost of the project. This payment has to be completed before the project is inaugurated.

Revolving Fund: Payment to the revolving fund, which is estimated at approximately 22 percent, is the repayment by the community, through the committee, of the loan given them. It has to be paid within five years, with an annual interest rate of 5 percent.

A handbook for the administration of the revolving fund was written by Price Waterhouse. This handbook was prepared as part of the studies made in 1985, but the procedures have not yet been fully implemented.

Normally it is intended that the annual fee to be paid will be similar to the down payment fee, i.e., both are calculated according to the capacity of the community to pay. Costs not recovered from the community are allocated between donations from ADP and other donor institutions.

Recovery of the Revolving Fund: As of this writing the recovery of the revolving fund has been Q117,614.05; looking at the payment dates, it appears that ADP has been from 80 to 90 percent effective in recovering funds. With respect to the success of the projects in which AID has participated, ADP has been just as successful, as can be seen from Chart 15.

Maintenance Payment: Payment for the maintenance of the system is the direct responsibility of the local water committee and ADP does not interfere in this. Part of the monthly or yearly fee is used to pay the water minders, who are selected by the community and trained on the job. From what the team observed on the site visits, many systems were not functioning, most of them because of faults in the design, but lack of adequate maintenance could also have much to do with continuing operations.

Chart 15

Revolving Fund

Year	Projects	Expiration Date of First Payment	Loan Funds Provided by AID	Annual Fee	Recoveries
3	Asuacatan	Jun. 1985	4,413.80	1,471.27	1,471.19
5	Ixpaco	Sep. 1985	4,319.75	8,63.95	1,211.85
5	Ticanlu	Sep. 1985	4,77.74	95.55	95.55
1	Guapinol		500.00	500.00	500.00
5	Llano Grande	Nov. 1985	3,500.08	700.02	700.08
5	Temala	Jun. 1986	7,531.08	1,506.22	1,506.22
5	Guaytan	Jul. 1986	41,972.38	8,394.48	2,404.22
5	La Economica	Dic. 1986	6,790.45	1,358.09	739.37
5	Pueblo Nuevo	Dic. 1986	10,714.00	2,142.80	6,514.00
5	El Oresanal	Mar. 1987	17,940.00	3,588.00	
5	La Estancia de San Martin	Mar. 1987	11,428.00	2,285.60	
5	De Los Planes	May. 1987	4,676.44	935.29	
5	El Guayabo	May. 1987	5,580.00	1,170.00	
5	El Rancho	Jun. 1987	50,630.55	10,126.11	
5	Infiernito	Sep. 1986			
5	El Espino	Dic. 1985			
2	Florida	Abr. 1986			
2	Exial	Abr. 1986			
2	Sala	Abr. 1986			
2	Chininsuitz	Abr. 1986			
5	Chanito	May. 1986			
5	La Union	Dic. 1986			
5	Buxup	Oct. 1986			
5	Inchehux	Feb. 1987			
5	San Yuyo				
5	Ojobna	Mar. 1987			
5	Barrio San Juan	Mar. 1987			
5	Xajunam	Jul. 1987	72,280.00	14,456.00	
5	Chumanzana	Abr. 1987			
5	Patzalam	1987*	1,277.00	255.40	
5	La Casita	1987*	14,300.00	2,860.00	
5	Combinado El Pinalito	1987*	33,766.00	6,753.20	
5	Xatinap	1987*			
			292,367.27	59,462.18	15,142.48
			=====	=====	=====

* Projects under implementation

4.3.7 Capacity to Meet Project Goals

ADP, as noted, has an organizational structure between that of government and private agencies. It functions without applying modern administrative techniques, although it now has rules and procedures developed by Price Waterhouse at the end of 1985. But procedures manuals or studies are not enough; the staff has first to believe in them and then apply them in order to improve the administration. If improvements are made in this area, more and better water supply systems can be developed.

Another important issue concerns how the board of directors of the association is organized. One should not be a director and an employee at the same time, but currently four of the seven board members are. This can be a dangerous situation when it comes to administration of funds. A board of directors composed of responsible people from the outside is necessary to see that the objectives of the organization are being met.

Supervision of construction and the functioning and the control of the projects are also deficient. The main cause being relates to the problem just mentioned: the board of directors does not exert enough pressure, because it is primarily made up of employees.

Another very necessary improvement is the use of the computer for generating information for the accounting and financial control of the projects. The organization should be computerized as soon as possible.

If the problems in the above four areas can be resolved, the functioning of ADP will improve. This in turn would result not only in improved projects but also in the capability to handle more new projects.

4.3.8 Conclusions

- a. ADP is directed by a board of directors that consists of seven members, four of whom are employees of ACF. This makes them directors/employees of the association. This situation definitely affects the administration of ADP and is a potential danger when it comes to fiscal policies and use of funds.
- b. The studies recently made by Price Waterhouse are very good guides and, if they are implemented completely, will enable ADP to function efficiently.
- c. In general, the working atmosphere among the employees is very cordial, especially because of the democratic style that prevails.
- d. Agency personnel have had good academic educations and experience, but a general training plan for the agency staff does not exist.

- e. The personnel selection and contracting procedures have not been implemented yet, even though these procedures were included in the study carried out by Price Waterhouse.
- f. Written work plans for the organization in general are nonexistent, much less for departments or divisions.
- g. A systematic plan for financial follow-up of projects does not exist; information exists but it has not been collected and processed for use in the evaluation, especially with respect to financial aspects of the projects.
- h. Some accounting data have been entered into the computer, but much remains to be computerized. Because much information is still maintained by hand, much data are not readily available.
- i. The revolving fund is not getting enough support to recover sufficient money to at least maintain it. The communities make payments on their own, but no one from ADP follows up on it.
- j. Materials are not purchased in large quantities. If this were done, ADP could take advantage of discounts or protect itself against price increases.
- k. The uses of funds are appropriately codified in the accounting system for obtaining figures or reports and for controlling the projects, but because the information has not yet been entered into the computer, timely information for taking decisions cannot be obtained.
- l. Similarly, financial information is dispersed in different places and because it has not yet been entered into the computer, information that would be very valuable for the evaluation and control of projects cannot be provided.
- m. A project evaluation plan does exist. The evaluation of this project is in its second phase, i.e., field research. (The first phase is document review.). The second phase has to be finished and the third phase, the "cabinets" (offices) has to be undertaken. The latter will be very helpful in improving the execution of future projects.
- n. The organization's accounting system, both the manual and computerized systems are very far behind; as of this writing the accounting being done manually is up to May and the computerized accounting is up to April 1986.

- e. Difficulties exist in getting checks signed because they have to have two signatures, that of the executive director and that of the technical director.
- f. The managing of the budget for project 0298 was quite efficient; 32 of the 39 projects planned were carried out with US\$500,000 and a total of 33,899 people were benefited instead of the planned 17,500.
- g. Project 0335 is one year behind schedule; it should have been started in 1985, but did not start until the beginning of 1986. Seventeen projects are expected to be completed in 1987 and 17 more in 1988. In order to achieve the goal of the agreement, which is to complete 62 projects in three years, an extension for the agreement of at least one year would have to be obtained.
- h. Other donors' grants to project 0298 with AID have been received as planned, which has resulted in a larger amount than budgeted because of the advantageous exchange rate from dollars to quetzales.
- i. Only Q1,200,000 out of the \$5,000,000 planned have been received as grants from other institutions to supplement USAID funds for project 0335. Considerable funds still have to be obtained to reach the funding level for the required 62 projects planned.
- j. With respect to recovering loan funds, the revolving fund has worked well. To date over Q100,000 have been recovered, but the fund has not been used for new projects because ADP has had enough funds from donations to carry out projects. This fund has been used more as a reserve to meet cash flow needs when the donations do not come in on time.
- k. Nevertheless, revolving fund loans have been between 80 and 90 percent recovered. According to statistics, the average cost per project is Q104,437, per beneficiary Q113.00 and per connection Q619.00. The cost per latrine is Q9.60, of which Q7.12 is paid by ADP and the rest by the Environmental Sanitation Division.

4.3.9 RECOMMENDATIONS

- a. The board of directors should be made up of people from outside the organization and administration of ACP so that they can be in charge and responsible for the association's administration and for the use of funds.

- b. The further implementation of the organizational and personnel procedures by Price Waterhouse is very important. They are necessary tools for the functioning of the organization.
- c. The computer program should be implemented fully so that ADP can know in detail, for example, the amount of disbursements and compare what was budgeted and what was actually spent.
- d. Once an adequate accounting system that is in accordance with the handbook has been implemented on the computer, an effort should be made to process all information on time and to produce reports on the dates they are due. Usually, accounting reports for the month just completed should be submitted during the first few days of the new month.
- e. A third person should be empowered to sign checks, which could be the administrative director. In this way payments would be expedited when one of the two principal signers is not in the central office.
- f. A warehouse with plenty of space should be available so ADP can save money by purchasing greater amounts of materials for the projects, particularly given recent inflation.
- g. Three-year and five-year plans for the organization should exist. In these plans the objectives and strategies of the institution as a whole should be established. This is fundamental if the agency is to know where it is going, what its needs are and what plans and strategies are needed to realize its objectives.
- h. It is also necessary to make a yearly follow-up of such plans and make necessary corrections or amendments to continue with the original objectives.
- i. More analysis and evaluation of the accounting and financial information, which is currently dispersed, should be done so that this information can be used in the evaluation, correction and control of the financial development of the projects.
- j. More attention should be placed on the evaluation of the projects implemented this year. This will lead to conclusions and recommendations useful for future projects.
- k. Steps should be taken to increase the donations for project C335 in order to reach the goal of 62 projects in three years, and the final date of the projects should be extended to 1988 in order to reach the established goal.

- l. Because of the increase in prices for construction materials, up-to-date costs should be maintained on the projects to provide more realistic cost estimating data.
- m. Reports should be made for each project, including projected versus actual costs, variations and why this is so, thus keeping the executive, technical and administrative directors informed for future planning.
- n. ADP has an administration that can manage water projects because that is their major field; nevertheless, it should be stronger than it is in the administrative area because it now has guidelines and handbooks. But, since ADP has not yet implemented them, the organization cannot be considered modern and orderly.
- o. With respect to the management and application of funds from donations, it is urgent that such data be entered into the computer so that more efficient control can be maintained and donors can obtain reports promptly.

4.4 Training and Health Education

4.4.1 Introduction

ADP water and environmental sanitation projects include, within the objectives, training courses for CDAs; preparation of a sanitary education program for each community, to include the participation of community inhabitants, schools and other organizations; training courses for at least two villagers who will operate and maintain the water systems and courses on water and soil conservation for the communities. This section describes ADP training and education activities and provides recommendations for improved activities.

4.4.2 Training Courses

4.4.2.1 The TAR

ADP considers the TAR to be the link between rural workers and the engineer. Most of the time, engineers are overqualified and are not willing to work in rural areas. After many years of effort designing a curriculum for the TAR, the first group of 16 TARs received training in 1981 and in 1982 the second group completed the course. The training course for the TAR lasts six months (903 hours) and covers management and methodology, pre-feasibility studies, community organization, basic research, design, construction of latrines, topography, distribution networks, hand-operated wells and pumps, operation and maintenance, reforestation and soil conservation, water sources and training for local water committees.

Of all the TARs graduated from the training courses, 12 are currently working at ADP, all of them men. To obtain information for this evaluation, the team met with eight TARs and discussed activities related to water and sanitation projects, e.g., the pre-feasibility study and project implementation and follow-up. The pre-feasibility study is made in response to a community request for water services. The TAR makes a technical visit to the community to inspect the water source area, establish water quantity, make flow measurements, etc. Also, the TAR makes contacts with the villagers and explains that the project includes not only potable water installation, but also community organization, latrinization and reforestation. In that same visit the TAR meets with the water committee to present preliminary results, specifically on project feasibility. If the project is considered feasible, the TAR processes the information and designs the project and prepares a budget.

The pre-feasibility study takes an average of two weeks; one week is spent in field visits and the other on preparing the report, including the project design and budget. When this study is concluded, the TAR submits the report to a commission composed of ADP's executive director, the technical director (engineer), the administrative director and another TAR. If the commission approves the project, the TAR visits the community to inform the villagers of the and to obtain their signed agreement. Thus, the project is ready for the implementation phase.

The TAR is in charge of all implementation activities and project accounting. During the implementation phase, the TAR is mainly responsible for the following: legal matters, CDA training, general survey, community map, community education, topography, transportation of materials, digging, local materials handling, latrinization, construction, reforestation, soil conservation and water sources. The first planning activity is carried out by the TAR in collaboration with the CDA. They use a series of sketches to represent the activities to be undertaken, the persons in charge of such activities, and the duration of activities. All other activities are carried out with community participation, for example, to draw the community map, the TAR trains and supervises the CDA; topographic measures are done by the TAR in cooperation with community inhabitants.

Each phase of the project includes an educational component, which is implemented by the TAR. This component is discussed in Section 4.4.4.

To date, no follow-up or evaluation activities for completed projects have been carried out by ADP. However, as noted earlier, ADP has initiated a follow-up phase, during which information will be collected through document research, observations, and interviews of CDA members, rural workers and project beneficiaries regarding project operation, problems, project utilization, beneficiaries' satisfaction and administration. Two projects have been evaluated using this methodology.

4.4.2.2 Operation and Maintenance Personnel

The TAR trains the operations and maintenance personnel ("fontaneros") for the projects. A maintenance manual, which is explained by the TAR, is given to the project water minders.

4.4.2.3 Community Health Workers

ADP assists the MSP by providing training courses on water and environmental sanitation and showing educational materials to health personnel, especially to infirmary assistants. ADP educational materials are in great demand from government agencies (health and education) and other NGOs; however, because of a lack of specific funds for this purpose, ADP is unable to reproduce and distribute materials to other agencies. No training for TCSs, including rural health promoters (PRSs), was mentioned. Educational activities for the community are carried out by the TARs and TSRs.

4.4.2.4 Water Committees

As indicated above, CDAs are trained to plan latrinization campaigns and to draw the community map. They also do the general survey, manage funds and keep the accounts of the projects. According to personnel from ADP's education department, the last training course for CDAs was given in a very general way and ADP is making efforts to strengthen it, since the CDAs are paying departmental authorities to fill out accounting books for the project for them.

4.4.3 Community Health Education

ADP target groups for health education are the CDAs, schools, and community beneficiaries, especially women.

4.4.3.1 Water Committees

Because latrine installation is a prerequisite activity for all water projects, the CDA receives education on the importance and benefits of latrines so that the campaign can be seen as an important development activity rather than an obligation to the community. Subjects such as hygiene, water and latrine use, and nutrition, however, are not always discussed. The incorporation of themes like diarrhea and dehydration prevention into ADP education plans is being considered, since diarrhea is a water-related disease. Other educational content to be incorporated is the utilization of waste water.

4.4.3.2 Community Leaders

ADP is carrying out health education efforts and is coordinating activities with school teachers. First, ADP informs the teachers of potable water and latrinization projects and their utilization and then ADP provides educational materials to the teacher for the school children.

4.4.3.3 Beneficiaries (Women)

ADP does not seem very successful in reaching women with its health education. ADP personnel face problems in obtaining women's participation, especially of indigenous women from the highlands, in educational groups. A common observation in the highlands region is that no women participate in CDAs. Only in the lowlands did some "ladinos" participate. Subjects such as hygiene, water and latrine use, and nutrition are supposed to be taught.

4.4.4 Educational Materials and Methods

All members of ADP's education department were interviewed: three TSRs (one of whom has been working for ADP for three years) and 2 draftsmen. According to the information provided, ADP's educational methodology must include a simple, popular ("based on traditions and customs") and dynamic or participatory learning process. In order to respond to this last requirement, ADP's educational materials contain blank spaces to be filled in by the user.

Educational material undergoes a continuous evaluation process. The most important educational activity for the different project stages seems to be the training for CDAs. ADP's educational methodology is ruled by what is known as the "temple for educational materials," which is graphically represented a pyramid with 11 steps. The base and the steps close to it are educational resources that better serve the population (quantity of people and educational quality), which include direct experience, simulated experience, drama, presentations, visits and excursions, expositions, television, movies, slides, radio cassettes, visual and oral symbols, in ascending order. The education department designs materials for students' participation and application.

The amount of educational materials developed by ADP is large. Chart 16 shows a list of available educational materials. These include songs, games (the lottery of health, "chingolingo," "Luiza") and materials for school children. ADP has also developed theater with participation from the community.

The TARs are responsible for the distribution of educational materials in the field, with support from education department personnel. The main tasks for these personnel is the production of materials. At present, ADP does not have a manual that details health subjects to be covered and available resources. The TARs interviewed think that it is better like that, because they can provide more initiative and imagination. The education department members stated that the TARs are technically, but not pedagogically trained, except for those who are also TSRs.

4.4.5 Conclusions

2. The TARs are mainly responsible for all ADP water and sanitation projects, from pre-feasibility studies to project

Chart 16

LIST OF ADP EDUCATIONAL MATERIALS

Cloth

- Cadena epidemiologica
- Higiene personal
- Letrinizacion
- Requisitos de ADP para proyectos
- Presupuesto y como se gastara el dinero
- Manta programatica de letrinizacion
- Frases, dibujos y mensajes de motivacion
- Pongale la llave al chorro y pongale la tapadera a la letrina

In Wood

- La ruleta (para evaluar temas)
- "Chingolingo" (para evaluar temas)
- La Luisa (para evaluar temas)
- Rompecabezas
- Maqueta LASF (letrina abonera seca familiar)

In Cardboard

- Loteria educativa
- Ejercicios de cooperacion

In Mimeograph

Exercises:

- Por que camino se llega al chorro
- Unir los puntos
- Sabe usted seguir instrucciones?
- Los 10 mandamientos del lider
- Las partes basicas de la letrina tradicional
- Coloree la letrina
- Para que sirve?
- Cual es la ubicacion correcta de la letrina?
- Que hace falta?
- Identifique la fila de la salud
- El templo de los materiales educativos
- Canciones educativas

Others:

- Teatro popular
- Uso de dinamicas, rompehielos, ejercicios
- Peliculas, cassettes, audiovisuales

completion. They are also responsible for the training and health education component of each project.

- b. The TARs should receive regular technical supervision, but they did not mention this in the interviews. The most important technical inspection that projects receive is that of the commission made up of ADP directors and one TAR, which reviews the results of the pre-feasibility studies.
- c. During the first stage of all projects, CDA training is an important component of the ADP methodology, as well as community participation in such activities as croquis development, initiation of the general survey and construction of the project. CDA training in project accounting does not seem very effective. The relationship of ADP with health personnel is at the infirmiry assistant level and involves, primarily, showing educational materials developed by ADP. In the field, the ADP relationship is with the TSRs, who carry out some educational activities. There seems to be little involvement with voluntary health personnel, PRSs, and community midwives.
- d. The TARs also carry out educational activities with school teachers and students in order to reach community households.
- e. The weakest point of ADP's educational component is in obtaining the participation of community women, who are the main beneficiaries of water and sanitation projects, at the household level.
- f. ADP has developed numerous educational materials; these are based on a participatory learning process, employ innovative and interesting ideas, and use different kinds of materials and methods (cardboard, cloth, wood, songs, etc.). The educational materials undergo continuous field evaluation and revision.

4.4.6 Recommendations

- a. The TARs should receive more technical support and supervision from the institution's engineers; during project visits the TAR should be accompanied by an engineer.
- b. The TARs should receive continuous education by participating in refresher and specialization courses; they must be prepared to handle specific problems in rural areas.
- c. Educational activities should be strengthened through the use of voluntary health personnel, PRSs, midwives and traditional health personnel (healers, messagers); these persons are usually leaders in the community.

- c. Training activities for CDAs should be strengthened in such areas as project administration and accounting, so that they can keep their own records and maintain control of the projects.
- e. Educational activities for community women should be developed further by including female personnel from the ACP staff (TARs or social workers) or by collaborating with female personnel from other institutions. If this component is not developed, expected health impacts will be limited.
- f. Members of ADP's education department should receive continuous education on developing and validating educational materials so they can update educational materials.

4.5 Beneficiaries

4.5.1 Introduction

The evaluation of sociocultural and economic effects, including hygiene and health aspects, of households with potable water services and latrines from ADP, was carried out through ethnographic study in selected communities. This methodology consists of conducting a series of interviews with selected families using informal interview guides covering each area of interest. (See Annex 5.) Beside female members of some households, members of the water committees (CDAs) were also interviewed.

4.5.2 Community Selection

Since the time available to develop this investigation was short, the evaluation team decided to select approximately a 25 percent sample of the projects carried out by ACP under AIC agreements. These projects were to be accessible by four-wheel drive vehicles, be at different implementation stages--initial, intermediate and completed--and to have different sociocultural and geographic characteristics. (See Chart 6.)

The following communities were selected for this phase of the evaluation:

- e. Paraje El Rancho, Los Cipreses, Momostenango, Totonicapán. is located on the road to Momostenango. The indigenous population speaks Quiche and Spanish. Houses are dispersed; some are thatch/adobe, some wooden shacks and others of concrete. The population raises corn and beans. Some engage in textile weaving or walking commerce; the majority of women are sheep herders. The total population of the community is 1,992 inhabitants. A few houses in the central zone have two or more connections from different piped water sources, and there are public standpipes in some parts of the village.

- b. Aldea Patzalam, Aguacatan, Huehuetenango is located in a desiccated terrain; its indigenous, bilingual population speaks Agucateco and Spanish; the women understand little Spanish. Men raise corn and beans and some are day laborers during the garlic harvest in Aguacatan. Women remain at home, taking care of the children. Houses are constructed of adobe and usually have two rooms, one of which is for the kitchen. The inhabitants were very pleased to have potable water service. Drinking water is stored in uncovered jugs. They also have pipes where they wash dishes and clothes. Some families have constructed a bathing area in the house. Some are using composting latrines, which they selected because of the high cost of fertilizer. Besides ADP, other agencies including Canadian and Dutch groups are working in the community.
- c. Canton Aguacatan, Aguacatan, Huehuetenango is 2 kilometers from the city of Aguacatan. It can be reached from a dirt road that is 2.2 kilometers from Huehuetenango. The inhabitants are bilingual; they speak Agucateco and Spanish. They raise corn, beans and garlic, which represent their major income source. Houses are concentrated in one place and all of the people have latrines. The potable water service uses the same water flow as Aldea Patzalam. As indicated by water committee members, there is water, but the service is sometimes interrupted.
- d. Aldea Buxup, Municipio de Jacaltenango, Huehuetenango is located on desiccated volcanic terrain. Its indigenous population is bilingual, speaking Jacalteco and Spanish; most indigenous women are monolingual. Houses are concentrated in one area and are of adobe and thatch. All households have latrines and some have even two or three latrines. The population raises sugar cane, corn, beans and amate. Peanut production was recently introduced by DIGESA. The water flow drained and the population was forced to look for water in other villages, using plastic urns. Many beneficiaries refused to pay the water fee because of this problem.
- e. Temala (Aldea Xicaxul), Santa Maria Chiquimula, Totonicapan and San Antonio Ilostenango, El Quiche. The project covered 14 communities with a combined population of 3,770 in isolated hilly areas, which is partly in El Quiche and partly in Totonicapan. All of the population speaks Mayan; some of the men are bilingual, but only a small percentage of women speak Spanish. Most of the families raise agricultural products for their own use and to sell in the market. They make household utensils of clay, wood products, and craft goods to sell. The team arrived so late that they were unable to visit any homes, but they could observe the extensive water system, which includes 129,659 meters of pipe with 625 house connections.

- f. Aldea La Casita, Nueva Santa Rosa, Santa Rosa access to this village is through a dirt road. The weather is hot. The total population is ladina and raise tomatos, corn, beans and coffee. Women work in the home. Houses are dispersed; some are made of cement block or adobe with cement or earthen floors. The school teacher has helped to organize the water committee and is a member of such. The water system has not been completed and the community is using water directly from the source.
- g. San Antonio Oreganal, Teculután, Zacapa is also located on desiccated terrain. The majority of the population, both men and women, work at the adjoining farms as day laborers. They raise corn and other vegetables around the houses, but the terrain is poor. Houses are constructed with thatch and bamboo, because of the hot weather and the poorness of the people. The CDA vice-president organized the committee, but since he did not know how to write or read, he met with all the other members and encouraged them to implement the project. Other NGOs, e.g., World Vision, were working with a paid promoter in this area. The promoter is an active member of the water committee. This village has uninterrupted potable water service and the people were very pleased with the service because they used to walk long distances to get water or to wash clothes.
- h. El Guayabo, Olopá, Chiquimulá is located 37 kilometers away from the road to Esquipulas. It is a desiccated area. The people raise coffee, which is sold in advance to the Olopá merchants. They also raise corn and beans. Women work at home, taking care of their children. The houses are constructed of thatch and have two rooms, one of which is for the kitchen. The people interviewed mentioned that there was always water flowing in their new system; however, the day the team visited the community there was no water and the people did not know why.
- i. Nochan, Quetzaltepeque, Chiquimulá. This small village of 82 houses is just 2 kilometers from El Guayabo, over a narrow road the community has just completed, with the help of Peace Corps volunteers. The families live in small thatched adobe houses, work their communal lands, and hire themselves out as day laborers for two-week periods at Q1.00 plus meals to earn some cash. The chairman of the community development committee said that the next thing the community wanted, now that they have a road, is piped water.
- j. Xejunan, Sacpulup, Chichicastenango, El Guiche, including Pajaliboy y Chimina. Sacpulup is one of three hilly communities that has planned its water system from the only

source available, near Tacpan, under the name of "All Together, All Equal." The total population speaks Guiche. Some are Catholics and some Protestants, but the majority of the population maintain their traditional Mayan customs. All of them raise corn, beans, apples, peaches, prunes and passion fruit, which they sell. The total population is 3,240 inhabitants. There are 556 house connections and four public standpipes. Each one of the three communities had its water system inauguration party that included a marimba; a radio station broadcasting the ceremony, which includes the participation of the traditional fraternities, local political leaders and messages from absent supporters, including the wife of the president of the Republic. Community women actively participated in the inauguration ceremony, preparing and serving the party and being part of the inauguration program. One woman and one man carried the flag and were accompanied by a "godmother" ("madrina"), making a small presentation, while two girls danced and recited a poem. The school teacher directed the ceremony, which lasts several hours, after which the spout in the public standpipe is opened. After the opening of the water system, a lunch followed. There was no one at the houses when the team visited, but each one had a patio faucet and a latrine.

The women's happiness and men's pride were obvious. Representatives from other communities, including the water minders, who explained their role, participated in the ceremony. The water minders consider their work to be very honorable and voluntary, even though they are not official members of the water committee. They receive minimum wage for fixing house connections and are paid by the committee for major repairs.

The inauguration ceremony is an official recognition of community and committee efforts to obtain water. It is also part of CARE's diffusion program since they receive requests for new projects after the ceremony is concluded. The cost of radio broadcasting is 250.00 for the committee, which is covered by the fee of Q1.00 paid by each member in the community.

4.5.3 Who Are the Beneficiaries?

The beneficiaries of these projects are the community inhabitants, especially women, who are responsible for obtaining water, often walking long distances to get it. Children under five years of age are also benefited because they often get sick from bad water and/or lack of personal hygiene practices. As a general rule mothers in homes with household connections have more time to do other work or to engage in some economic activity to obtain extra income. The women interviewed were grateful to ADP for the help provided by introducing water to their households. Committee members and

community members said that their wives now had more time to dedicate to their children, house, etc., and that they did not have to walk long distances to get water, wash or bathe.

4.5.4 Use of Water and Sanitation Facilities

4.5.4.1 Household Practices

Families interviewed in the communities use jugs to store the water. Usually, the jug is uncovered in the kitchen, but in some houses it was covered.

Dish washing in the communities is done in the public laundries, if they exist, or around the standpipes. Sometimes, when the tableware is to be used immediately, it is washed inside the house if the floor is earthen. Other families wash dishes in a plastic receptacle under the pipe. In most cases the dishes--pots, frying pans or urns--are near the kitchen.

Clothes are washed in the public laundries or on a piece of stone that serves as washing place. The dirty water runs to the corn, coffee or tomato crops around the house through hand-made ground channels. Animals can drink the water, but the people usually construct animal watering places. In most cases, mud and puddles surround the standpipes.

4.5.4.2 Changes in Behavior and Social Organization

Before the installation of water services for community households women were forced to walk long distances, sometimes with their children, to obtain water. Women are in charge of the house, since men work outside. The time they used to spend looking for water is now spent in the house, in such activities as fixing clothes, or doing errands. In the indigenous communities of Buxup and Patzalam, the women said that the additional time was spent on weaving (without mentioning if the fabrics were for sale or not). In Oreganal, community members mentioned that when men were working in the "fincas," women had more time for taking care of their children and resting.

4.5.5 Project Benefits

4.5.5.1 Health Aspects

4.5.5.1.1 Quality, Quantity and Access to Water

Some women and CDA members interviewed said that water was clearer and cleaner than before. They also indicated that water was always available and some opened their pipes to prove it; however, when water did not flow, they did not know why the supply diminished. In the community of Buxup, the inhabitants did not want to continue paying for the service because there was no water during the dry season, which is the time when they need it the most. Only in the community of La Casita did the

inhabitants not drink water from the pipe; they do not trust it because "the filter has not yet been installed." In this community a slow sand filter was being installed, but some households were getting water supply through a by-pass.

4.5.5.1.2 Excreta Disposal

All sites visited had latrines in some houses. There were several houses without piped water, but with latrines. In Buxup two houses visited had three latrines each. Patzalam inhabitants, as indicated by the TAR, decided to construct composting latrines, which cost approximately Q70 or Q80, due to the high cost of fertilizer. The team members visited two composting latrines in the community, one in use and the other one almost completed. When asked if they knew the benefits of latrines, the people said "yes," but that they did not remember what they were.

4.5.5.1.3 Hygiene Practices

Due to the short time spent in each community, the team was not able to observe hygiene practices in regard to hand washing or excreta disposal, with the exception of hand washing places proudly installed under the pipe in Xolcaja and in Patzalam.

4.5.5.2 Perceived Decline in Water-Related Diseases

When mothers were interviewed, they said that they did not notice a change in the incidence as a result of a system having been installed, but they did note a relation between disease and the seasons during the year. More children get sick during the rainy season.

4.5.6 Community-Support Practices

4.5.6.1 Water Committees

Committees for the introduction of potable water (CDA) were organized to carry out all legal matters and construction of the system. In the community of La Casita there was a committee in charge of community development, which assumed the responsibilities of potable water introduction committee and changed its name accordingly. These committees started operations approximately two years ago. According to ADP regulations, the committee is to have seven or nine members, of which one is the president, who signs the checks, and one is the treasurer, who collects the fees from the community. All other CDA members provide support to the president and treasurer. Usually, the CDAs meet every two weeks on Sunday, since this is the only holiday all members have.

Only in La Casita a woman is a member of the committee; she is also the school teacher. In the other villages, no women participate in the committees. The TAR in Buxup said that the committee should not have women as members. When committee members were asked about this, they said that women did not have time to spend in meetings as they were in charge of

taking care of the children and the house. In Oreganal, Teculután, Zacapa, the CCA vice-president took the initiative in introducing potable water, but since he was unable to read or write, he formed a committee of literate persons. In Mochan, the president of the community development committee checked with local authorities to find out how the villagers could get help in getting water to their homes, especially since the men had to work as day laborers and did not want their wives to have to bring the water from the river while they were working. When he found that for fewer than 100 homes the government program would only help with public standpipes, he contacted ADP to see if the village could apply. The day the team arrived, the villagers expressed their delight that their project had been approved for a feasibility study.

4.5.6.2 Maintenance

Potable water construction and maintenance are carried out by one or more water minders in each community, who are trained by the TARs. The water minders are selected by the community and work along with the masons in charge of the tank construction. In order to cover the services of these persons, the community makes a monthly contribution of Q0.33 to Q1.00 per person; the remaining money is used to pay for spare parts. When a malfunction occurs, a commission composed of CDA members determines the cause and decides if the repairs need the effort of the community or just the water minder. The evaluation team visited the CDAs in various communities. In the community the CDA was planning to visit the source, which is located 8 hours away from El Guayabo and a one-day trip from El Cipres.

4.5.6.3 Convenience and Reaction to Fees

The community, as well as CDA members, agree to pay a monthly fee to liquidate the cost of the project. Some people in the communities have refused to pay this fee because they have had problems in their households caused by the lack of water. In Oreganal, some families did not have the money to pay for the fee and the nuns of a school in Teculután loaned them the money. Widows as well as old persons who do not have the money to pay their fees are assisted by the CDAs in the form of donations. In Xajunan, Save the Children has paid the CDA the fees of 40 widows in the three areas affected by the "violence."

4.5.7 Conclusions

- a. The level of health knowledge among the persons interviewed in the communities (water sources, use of water and latrines) is low.
- b. Most of the families continue with the same hygienic practices, even after water introduction. They do not wash their hands before eating, do not use soap for dish washing, etc. It appears that they do bathe their children frequently, and some families have even installed bathing areas in their houses.

- c. The receptacles used for storing water are usually uncovered and are not very convenient for that purpose. Kitchen utensils are scattered and are dirty.
- d. Some families have installed water pipes to irrigate their gardens. Some mothers have mentioned that their children use the latrines, but there was evidence that they were defecating anywhere.

In the villages of Buxup, Oreçanal and El Guayabo, dirty water is channeled to the crops, but in the majority of houses the water is allowed to stand.

- e. In Patzalam, composting latrines have been widely accepted due to the high cost of fertilizer.
- f. The majority of persons interviewed did not know the benefits of latrines; however, some women mentioned they like them, since they provided a private place.
- g. Most women have not developed new activities for their spare time, rather they spend more time in their traditional work. Some spent the time for weaving or doing other activities in the house.

4.5.8 Recommendations

- a. In-depth baseline studies should be carried out by an anthropologist to evaluate the changes a community has experienced since the introduction of potable water. Based on the results of the survey, the anthropologist should develop a health education plan that takes into account the knowledge and activities of the population.
- b. The TAR should visit the households continuously to provide health information. To obtain the participation of women in community activities and water projects, it is recommended that women health personnel carry out this activity.
- c. The TARs should work in close collaboration with community leaders to reach the population with health messages. Also they should work with school teachers so that they can reach the parents through school children.
- d. Since mothers are conscious of the time available to do other things, such activities should be implemented as handicrafts and cooking with the assistance of social workers, TSRs or TARs. These social workers should be periodically supervised by a professional in social sciences.

- e. In conducting the evaluation of sociocultural aspects of water use in the communities, the anthropologist should carry out a more in-depth analysis than the engineer. The anthropologist may accompany the ACP team on the first visit, but should make additional visits to the community to prepare a detailed study that includes community daily water use and hygienic practices.
- f. Several communities should be selected for in-depth baseline studies before initiation of water supply and sanitation projects. This should include follow-up activities until the final evaluation takes place.

5. FINDINGS FOR CARE

5.1 Implementación del

5.1.1 Project Development

In order to implement project CPG 520-0336 "Women, Water and Health," which called for interventions in 60 villages serving approximately 54,000 rural inhabitants, CARE signed a counterpart agreement in June 1985 with DESCOM (Desarrollo de la Comunidad), a government agency working since 1964 on the development of rural areas of Guatemala. Project implementation was to be under the joint auspices of CARE and DESCOM at the rate of 20 systems per year starting in July 1985. Active community participation was to be sought in the installation of improved water supply systems and house connections as well as improved excreta disposal through use of family latrines. Health extension workshops were also to be developed and coordinated by the Institute of Nutrition for Central America and Panama (INCAP).

Project interventions in the 62 villages were to include the following components:

- a. Improved water supply and house connections;
- b. Improved waste disposal systems through use of family latrines;
- c. Improved family health by reaching village women through health extension workshops.
- d. Establishment of maintenance tariff systems through functioning community water committees.

Unfortunately the selection and promotion of communities to be aided were hindered by many delays and changes. According to the Second Trimester 1986 Report from CARE, no water systems had been completed, no latrines had been installed, no workshops with village women had been held and no "targeted site has yet established a tariff system."

5.1.2 Technical

CARE-Guatemala does not have engineers in its organization, which makes it necessary to accept what the host agency (DESCOM) can provide. The size of the investments in the project makes one think that in the future some type of advisory services should be obtained so that projects can be reviewed and approved by professionals, and the host agency can be urged to supervise the work being carried out more effectively.

5.1.3 System Operation and Maintenance

The only knowledge of the system the people from the local community have is what they acquired from their participation as laborers

during its construction. In most cases, this knowledge is, at the most, how to lay pipe and place accessories. It is not sufficient for assuming responsibility for operating and maintaining a system so that it functions correctly.

To ensure that these important functions are carried out properly, it may be necessary to organize a group that continuously reviews the functioning of the systems, carries out major repairs, and trains the local workers.

5.1.4 Training and Health Education

To date, CARE has made no effort to implement the training and health education components of the project. This component includes providing workshops for community women, which were to be developed by INCAP and/or the Ministry of Education, with support from CARE. These workshops were to include "training materials for technical assistance, team performance and curriculum development."

5.1.5 Administration and Finance

CARE, an international organization that has existed for a long time, has a very strong structural administration. It has extensive international experience and is supported by a very good staff in carrying out its objectives. The water project under the agreement with AID has suffered considerable delays, but these have been due mainly to the host agency, which has not fulfilled its part and thus delayed CARE-Guatemala. Nevertheless, there has also been considerable negligence on the part of CARE in the development, implementation and supervision of the projects. To date, very little has been done compared with what is included in the agreement with AID. Financially, CARE is very well organized; it follows the standards and norms of CARE International that are appropriate for potable water projects. CARE has up-to-date information and, what is more, uses it continuously to maintain financial control of the projects, thereby guaranteeing the appropriate use and application of funds.

5.1.6 Implementation Constraints

The host institution, DESCOM, has been integrated into the newly established Ministry of Urban and Rural Development of the Republic of Guatemala. As a result CARE suffered delays in program development, because it will be necessary to sign a new agreement with the Ministry (see Section 5.2.1). In the June 1966 Statement of Activities for Water, Women and Health, CARE noted that "DESCOM has been seen to be weak in terms of handling the technical aspects of project implementation. Poor pre-implementation studies, poor technical design and poor field supervision have resulted in a number of water installation problems which, while on the whole manageable if we apply expertise from another source to solve them, nevertheless indicate that DESCOM cannot be relied upon to perform an effective technical role in this project in the future." As noted above, many of the implementation problems were attributed to DESCOM.

Unfortunately CARE has not yet applied "expertise from another source" to undertake the implementation of other components of the contract nor to design a strategy. In fact the report says that if "all site interventions along the line of new CARE programming principles for water and sanitation" discussed in the recent workshop "more money will be needed, or our targets reduced."

5.2 Technical Aspects

5.2.1 Introduction

According to the terms established in CARE Water Project Grant No. 520-0336, dated March 27, 1985, the purpose of the grant is to support a program for the construction and use of potable water systems in the rural area of the Guatemalan highlands.

At the beginning of the program CARE entered into an agreement with DESCOM, but on June 1, 1986, that office was absorbed by the new Ministry of Urban and Rural Development by Agreement No. 105-86 of the Government of Guatemala. CARE will have to enter into a new agreement with the Ministry, which was scheduled for the end of August or in September 1986. Because the work evaluated in this report was done under the DESCOM/CARE agreement, that is the one that is referred to in this evaluation.

Taking into consideration the low operating cost, as well as simplicity, preference has been given to water systems able to work by gravity. In none of the systems constructed was disinfection through the use of chlorine or its derivatives taken into account. The average cost per capita of the water systems constructed is around Q142.00.

Costs are frequently reviewed; in the budgets an average cost for the different materials issued. To date priority has been given to installing latrines in each house that has a potable water connector.

No experience has been had with hydraulic seal latrines even though house connections have been placed in the water systems and this would facilitate their use and acceptance. The cost per capita of the conventional latrine program is around Q10.00. Composting latrine costs range from Q20.00 to Q25.00 per capita.

It should be noted that none of the projects have in the agreement with AID been completed.

5.2.2 Community Selection

No orderly program for the implementation of water systems or health services exists or is being carried out. In practice the order in which projects are started corresponds to the order in which requests are presented to the local DESCOM centers.

The first factor taken into account in selecting communities to receive a system is that a water system does not already exist. Other factors include the ease with which materials can be transported, the required length of the conduction line, the suitability of a gravity system, and the cost per inhabitant.

Among the projects visited by the evaluation team it was noted that in La Estancia, Cantel, Cuetzaltenango, there was a very limited system that served a few public laundries. In Agua Zarca, Santa Ana Huista, Huehuetenango, a system constructed by CARE approximately 13 years ago was serving the village of La Laguna. In the new project, which has not been finished yet, the new system has been made independent and some of the components of the old one, such as part of the conduction lines and a 25-cubic-meter distribution tank, will be used. Next to this tank a new 30-cubic-meter tank has been constructed and both will work in parallel.

5.2.3 Preliminary Studies

The technical personnel of DESCOM have been in charge of making the preliminary study, in general, because CARE does not have the necessary technical personnel. The practice of making chemical-sanitary or bacteriological analyses of the source water to be used has not been followed.

Only those projects that have a source that can be conducted to the site by gravity have been considered feasible. In another program, CARE/LNEPAR have carried out programs that serve more than one community from the same source.

The local water committee is in charge of all legal aspects of the project, such as obtaining rights over the water source, rights over the well, etc.

5.2.4 Design

At the time of this evaluation the engineers and technicians of the old DESCOM who were in charge of the execution of the projects were no longer in their jobs, team members talked to the implementation sub-director general of the Ministry of Urban and Rural Development, with whom the plans and typical details of the projects were reviewed.

Some of the plans for the original project were very deficient. There was no record, for example, of the design and other basic information to justify the diameters used, volume of the distribution tanks, etc.

The team also reviewed correspondence from the field representative of CARE, who noted a series of errors in the plans.

It is anticipated that the new technical group being made up of well-known, prestigious and experienced professionals will carry out the design work of the projects in a satisfactory manner.

5.2.5 Construction of Environmental Impact

The actual state of some of the components of the construction of water supplies makes one believe that, in the past, supervision of the work has been extremely deficient. As an example, it was noted that in the roof of the distribution tank in the Village Xolcaja, Municipio of Nahuatla, Department of Solola, the casting did not cover the reinforcement iron, which left the rods hanging in the air. The cover of the man-hole allows rain water to enter because the plans were not followed and the vent pipe used was of PVC, which does not offer any security because of its fragileness.

The tank is not yet finished because committee members have been waiting for cement for over three months. As a result the water coming from the source passes directly into the distribution system where, obviously, the static head is very high.

In this project, as well as in others visited, the team observed that lines passing through rivers were made of PVC; standpipes for house connections were not galvanized iron pipe; ditches for latrines were too deep; water was polluted; etc.

5.2.6 Operation and Maintenance

The usual procedure of having some community members who have worked on the construction of the water system and are familiar with it take charge of the operation and maintenance as pipemen will be followed for this project. Their respective salaries will come out of the monthly fee that community members pay. These funds are managed by the maintenance committee, which is formed once the water system starts working.

It is logical to think that the pipemen's knowledge of the operation of the system is extremely limited, which makes one believe that the water systems should be of a very simple design. Otherwise, there would be failures and interruptions in the system that could only be resolved when technicians visit the community.

5.2.7 Community Participation

The evaluation team observed that the communities benefited by the project participate actively and spontaneously in the implementation of the project.

The success of this type of project depends largely upon obtaining maximum cooperation from the community in the form of their labor or supplies of local materials.

Failures or interruptions of the service lead to a loss of this important community support because the community stops believing in the local committee and, even worse, in the institution that is in charge of the work.

5.2.8 Conclusions

Because of the similarity between the area where CARE projects are being carried out and the area where ADP is working, and because the problems found in both places were practically the same, the conclusions regarding the technical aspects of the ADP project are repeated here (see Section 4.2.3). In this way some of the failures of the ADP can be avoided and the CARE project thereby improved.

- a. The selection of communities to be benefited is not in accordance with the purpose of the AIC-ADF agreements, which indicate that the goal is to improve the environmental sanitation of those communities that do not have potable water systems nor sanitary services.
- b. The collection of samples from springs for sanitary-chemical analysis to determine the suitability or unsuitability of their use, as well as the amount of treatment necessary, has not been a mandatory practice.
- c. Apparently, bacteriological analysis of the water being provided to the users is not being carried out regularly either. Proof of this is that none of the systems visited has facilities for disinfection through chlorine or its derivatives.
- d. Even in communities where wells drilled by hand already exist, this alternative for supplying the community has not been considered by ADP.
- e. No uniform criteria exist for the use of certain parameters for design, for example, the daily water supply per inhabitant and the maximum daily and hourly consumption factors, which vary in accordance with the availability of the water source.
- f. The low number of valves in the systems prevents hydraulic balance and does not allow for the cleaning of the dead ends or low points of the distribution system.
- g. The static and dynamic heads used in the systems have caused frequent failures of the pipes.
- h. Plastic pipe has been used in some components of the system where galvanized iron pipe has been specified, this may be due to inadequate supervision or the unsatisfactory supply of materials.
- i. The systems are not put through any test to guarantee that the pipe and other components are well installed.

- j. In many cases, the excavation of the ditch for latrines is over 5.0 meters deep, which can cause low acceptance on the part of the community because of the work involved.
- k. Even though the construction of the water system fulfills the needs of the community by providing access to good quality water, other problems arise, such as polluted, stagnant water from public laundries, which makes mosquitoes proliferate and attracts domestic animals to the houses.
- l. The design criteria used in some of the systems visited make operation and maintenance difficult, thereby causing frequent failures and interruptions in the service.

5.2.9 Recommendations

The recommendations regarding the technical aspects of the CARE project are the same of those for ADP and are repeated here.

- a. The purpose of both AID-ADP agreements should be followed, i.e., only those communities that do not have a water system should be considered. The possibility could be studied of improving or enlarging existing systems in some communities, but not constructing new systems.
- b. Taking samples for chemical-sanitary analysis should be done by the time the first sanitary inspection takes place in order to identify those springs that are not good for human use.
- c. The AID-ADP agreements also state that potable water has to be furnished; accordingly, a program should be set up to take water samples for bacteriological analysis, which is the only way to determine if the water is good for human consumption. If contamination of faecal origin is found, disinfection with chlorine or its derivatives should be included in the system design.
- d. The possibility of establishing a water supply program through hand-drilled wells in those places where the underground water characteristics allow it should be studied.
- e. In order to avoid overcapacity and unnecessarily high-cost systems, provisions for daily requirements per inhabitant should not exceed those recommended by UNIFAR, using the maximum values for hot climates and the minimum values for cold climates. A similar criterion is recommended for maximum daily and hourly consumption factors.

- f. The valves that are important to the correct functioning of the system and that allow for the cleaning of the dead ends of the distribution system should be installed.
- g. The possibility of dividing systems into zones in order to avoid high static heads should be studied. It is advisable to follow the values set up by UNEPAR.
- h. In order to avoid unnecessary failures, the provisional installation of PVC where galvanized iron pipe has been specified should be avoided. The supervisor should insist on this.
- i. The practice of submitting the pipe to hydrostatic tests in order to verify its correct installation should be followed.
- j. The codes normally establish a depth of 2.50 meters for latrines, because after this depth bacteriological activity practically disappears. Such a depth should be the required one in order to avoid unnecessary work for the people in the community.
- k. Among the responsibilities of the TAR and TSR, teaching the community how to dispose of polluted water to avoid its stagnation should be included. The use of small cesspools with loose stones on the surface could be instituted without major expense to the community.
- l. Emphasis should be placed on designing simple water systems for rural areas to facilitate their operation and maintenance. The designers should take into account the limited understanding of the community members who take on the job of maintaining the system.

5.3 Managerial and Financial Aspects

5.3.1 Introduction

The administrative-financial evaluation at CARE was carried out as follows. First, all the information pertinent to the project, such as reports and literature on the activities carried out, was reviewed. Then a questionnaire was made up that enabled the team to obtain specific information on the administrative and financial side of the organization. Next the team interviewed the project director and other executives of the organization. After analyzing the information gathered, the team formulated hypotheses regarding what was found and then tested the hypotheses in the organization to verify or refute them.

As noted above, even though the CARE/AID agreement was signed and work was supposed to begin in July 1985, no work was started until 1986. At

this writing (August 1986), no project had been completely finished. Nine are still under construction and seven more are planned for this year.

5.3.2 Organization

CARE, an international private, voluntary organization, which was founded in 1945, has been operating in Guatemala since 1956 and has been involved in potable water projects since 1968. It has been operating not only in Guatemala but worldwide and continues to carry out projects to help underdeveloped countries.

CARE's organization in Guatemala is headed by a mission director, who has under him a project coordinator, a controller, a communications coordinator and a person in charge of computing. Also under the director are five project directors, one of whom is the director of environmental sanitation, whose projects include two potable water projects.

The Environmental Sanitation Unit is made up of project director, who directly supervises an associate director, who in turn, supervises two field supervisors. Of these two supervisors, one started working the first week of August 1986 and the other position is still vacant. The two field supervisors split their time evenly between the AID/MINDES project and the Canada/UNEPAR project. The project director told us that for the rest of the year the personnel would be working 70 percent for AID/MINDES and 30 percent for Canada/UNEPAR. (See Charts 17, 18 and 19.)

In the development of projects with AID, CARE works with a host or counterpart government agency, which for this project was DESCOM; as noted, in January 1986, under the new government, became part of the Ministry of Urban and Rural Development.

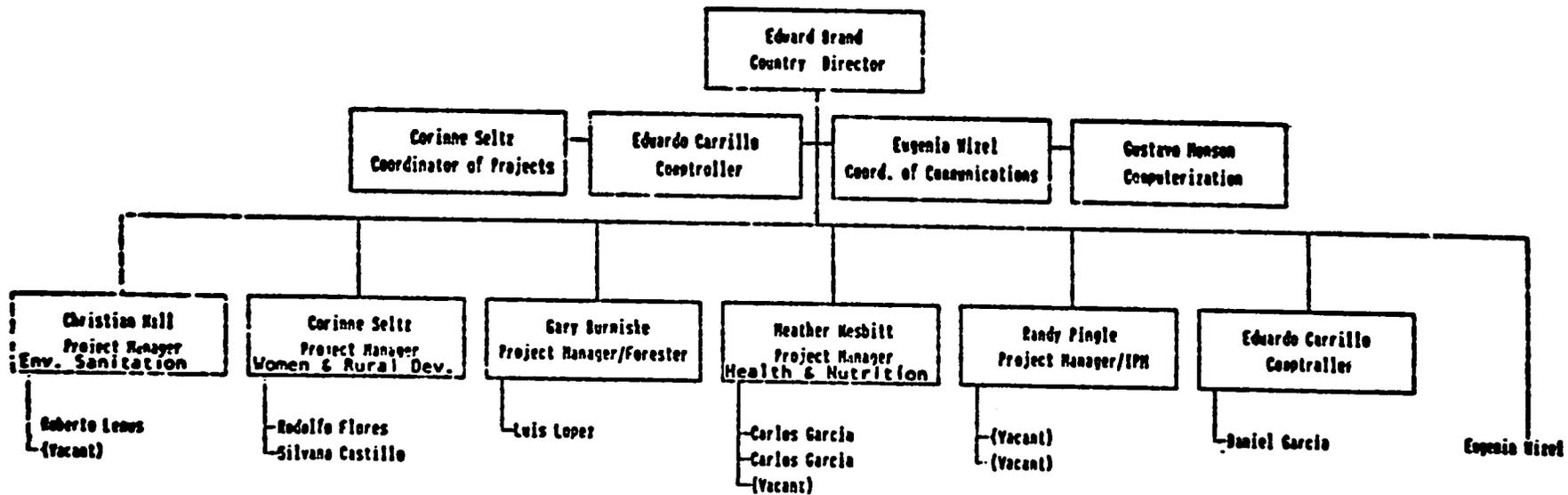
According to the original agreement between CARE and DESCOM, the two institutions were responsible for the selection and implementation of the projects. The assistant to the project director and the CARE field supervisors, besides being the link between the community and the host agency, verify that the work is carried out according to the plans. The technical part of the construction is supervised directly by engineers from the counterpart agency and carried out by members of the community where the project is being executed.

5.3.2.1 Planning and Control

Globally, in CARE there are triennial written plans which are updated every year. The specific objectives are defined by each of the five project directors.

With respect to the control of the projects, all expenses are entered into the computer; the data base is used to generate information for any project, as required.

CARE/Guatemala
Organization Chart

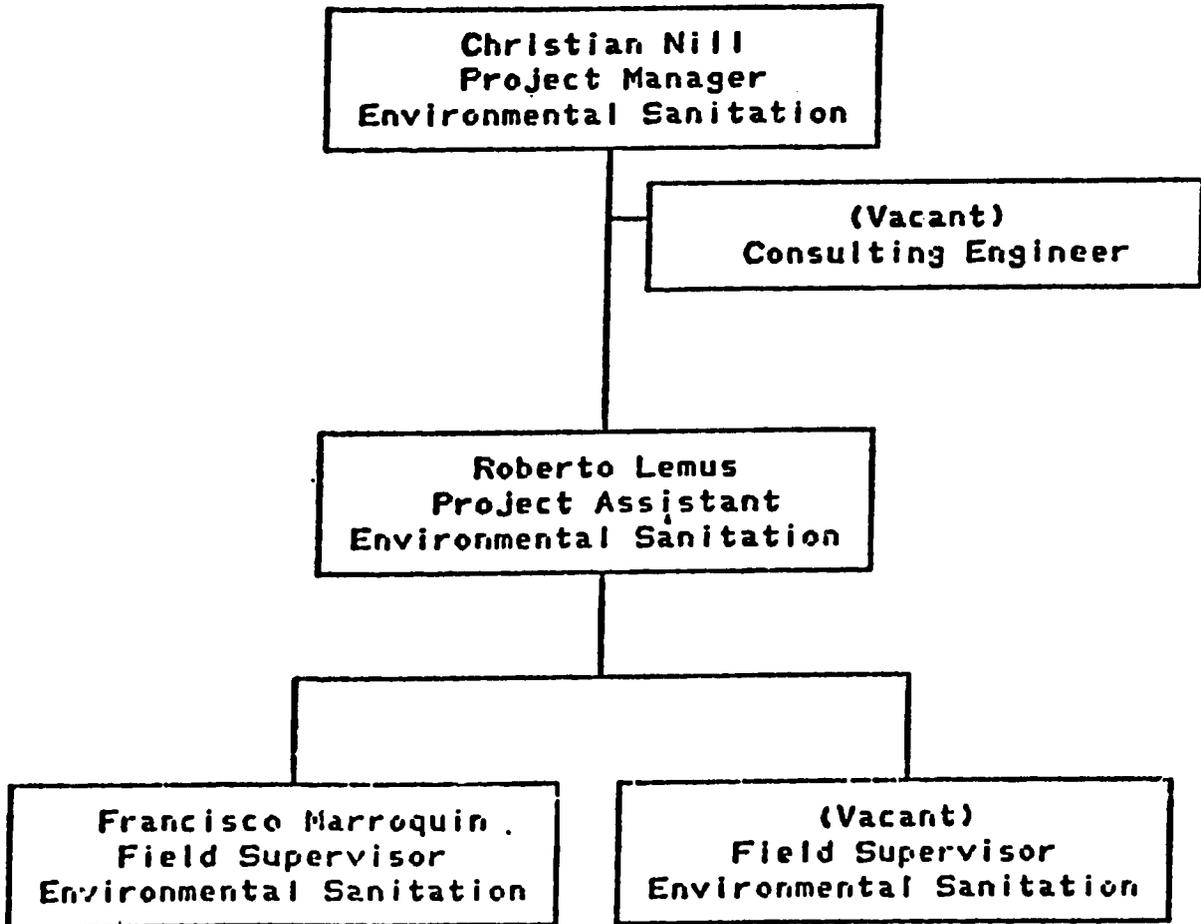


August 1984

Chart 17

Chart 18

**CARE/Guatemala
Organization Chart**



August 1986

KEY PROJECT PERSONNEL

"WATER, WOMEN AND HEALTH" PROGRAM
OPG # 520-0336

(As of July, 1986)

	<u>NAME</u>	<u>AGENCY</u>	<u>% ON PROJECT</u>
1.	Lic. Miguel von Hoegen, Vice-Minister	M.O.Des.	< 5%
2.	Ing. Carlos Prera, Director, Sección de Infraestructura	"	25%
3.	Ing. Alfredo Paiz Vidal Jefe, Ingeniería	"	100%
4.	Ing. Omar Marroquin Jefe Regional, Altiplano	"	50%
5.	Lic. Rodolfo de León M., Director, Sección de Promoción Comunal y Educación	"	< 5%
6.	Christian A. Nill, Project Manager	CARE	50%
7.	Roberto Lemus, Assoc. Project Manager	CARE	70%

Expenses incurred in projects with AID are reported in detail to AID, and lists of materials used are sent to AID. These lists are reviewed and approved by AID and then CARE is reimbursed. This means that reimbursement is made against vouchers. To date, no reimbursement has been made but that was because of the delay in the approval of the 1985-1986 budget, which was not initially satisfactory to AID.

5.3.2.2 Budgeting and Execution

According to budget execution for project 520-0336, only \$244,579.25 (as of the report of May 26-June 30, shown in Chart 20) has been spent on the five almost-completed projects. This was caused by the delay at the initiation of the project. Of this amount no reimbursement has been made. To date, the 1986, 1987 and 1988 modified budget, shown in Chart 21, has not been approved.

5.3.3 Administration and Finance

5.3.3.1 Accounting

In general, the accounting systems are adequate and in accordance with accepted accounting standards and with accounting guidelines established at the organization's headquarters in New York, based on many years of experience in other types of projects carried out by CARE around the world.

5.3.3.2 Materials Handling

Purchases: The procedure for purchasing is normal and adequate and is that used by the rest of CARE's organization.

Warehouse: There is a warehouse for materials in Zone 12 in Guatemala City; materials are delivered directly to the specific project. The team noted extreme delays in delivery of basic materials to project sites. In Xolcája, for instance, the local committee has gone ahead on its own after waiting several months. Once the materials are delivered to the community, responsibility for them falls on the members of the local committee.

5.3.3.3 Personnel

With respect to the academic preparation of CARE's personnel, neither the project assistant nor the field supervisor is a professional; both are technical personnel. The associate director has had ample experience in the projects because he used to be a field supervisor.

Even though MINDES is responsible for carrying out the design and construction of the project through engineers from that ministry, CARE does not have a sanitary engineer on its staff who can supervise the project from beginning to end and, thus, avoid some of the technical problems the team observed during field visits to the projects.

C A R E
WATER WORKS & HEALTH OPG
PROJECT No. 525-0335

PERIOD COVERED: May 26 - June 30, 1966

NAME	TOTAL BUDGET	BUDGET THIS YEAR	THIS PERIOD		CUMULATIVE THIS YEAR		TO DATE		BALANCE THIS YEAR	TOTAL BALANCE
			LOCAL CURRENCY	DOLLAR	LOCAL CURRENCY	DOLLAR	LOCAL CURRENCY	DOLLAR		
1. PERSONNEL	115,663	19,175	3,864.73	1,320.06	15,103.13	5,311.19	13,103.13	5,311.19	13,863.21	110,351.21
2. MATERIAL & EQUIPMENT	742,826	94,175	254,709.73	90,967.76	633,576.17	216,294.14	633,576.17	216,294.14	(122,19.14)	526,531.26
3. TRAINING COSTS	47,850	—	—	—	—	—	—	—	—	47,850.00
SUB-TOTAL	906,289	113,350	258,573.95	92,247.84	646,694.79	221,605.33	648,694.24	221,605.33	(106,255.33)	604,623.63
4. OVERHEAD (10.34%)	93,711	11,721	26,736.56	9,348.97	67,275.56	22,914.51	67,075.56	22,914.51	(11,193.91)	90,796.99
TOTAL	1,000,000	125,071	285,310.51	101,596.81	713,970.35	244,519.84	715,769.80	244,519.84	(119,448.24)	755,450.66

Chart 20

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** EXCHANGE RATE: \$1.00 = Q

"The undersigned hereby certifies that the above represents funds expended during the period described in accordance with the Grant Agreement, and that the information on the disbursement report is correct and such original invoices and supporting documentation as USAID may require will be furnished on request."

Edward E. Brand
 Director

Chart 21

FINANCIAL PLAN/OPG PROPOSAL

<u>Summary Funds Requested AID/OPG</u>	<u>FY 86</u> \$	<u>FY 87</u> \$	<u>FY 88</u> \$	<u>TOTAL</u> \$
1. Materials and Equipment	125,614	328,000	286,274	739,888
2. Personnel and Operations	24,614	49,988	46,500	121,102
3. Training Costs	---	25,000	20,300	45,300
4. Overhead 10.34 per cent	15,534	41,669	36,508	93,710
TOTALS	165,762	444,657	389,582	1,000,000

Summary of CARE Managed Input Sources

CARE generated

1. CARE/USA				
2. Host Government	8,772	30,000	30,000	68,772
3. Other Donor Agencies				
4. Private and UN Agencies				
5. Others				
Sub-Totals	8,772	30,000	30,000	68,772
AID/OPG	165,762	444,657	389,582	1,000,000
TOTAL CARE Managed Inputs	174,534	474,657	419,582	1,068,772

Other Inputs Managed but not
Generated by CARE

1. Non CARE Managed Inputs

With respect to personnel policies, CARE has definite job descriptions, internal regulations, salary scales and personnel evaluations as well as other personnel standards and procedures.

In general CARE has a good working atmosphere and adequate facilities. It has four personal computers, two IBM and two COMPAQ computers.

5.3.4 Reports to AID

Three progress reports, and are prepared on a four-month period are sent to AID; these include financial and summary information on the projects. The last report submitted covered the period March-June 1986. The annual budget was supposed to have been submitted in 1985, but it was not approved by AID until August 1986, after several corrections.

5.3.5 WWS System Construction Cost

Unfortunately, since none of the projects under the AID/CARE agreement has been completed, no information exists with which to determine the cost of the projects. Nevertheless, estimates can be made based on information from a similar project carried out by CARE with UNEPAR for CARE-Canada. The following information is based on 34 projects finished between July 1985 and June 1986; the costs were converted from dollars to quetzales at the rate of Q3 = \$1:

Average Total Cost per Project	Q74,346.00
Average Total Cost per Beneficiary	142.00
Average Total Cost per Connection	728.88

The cost per composting latrine was between Q20.00 and Q25.00, out of which CARE supplied the metal sheets, two hinges and cement, which amounts to approximately 25 percent of the cost. The communities provided the labor and dug the pits. However, no latrines have been introduced under the USAID grants.

For the projects with USAID, it has been proposed that four types of latrines offered--to the communities--septic tank, dry latrines, improved ventilated (VIP) latrines, and hydraulic seal latrines--from which the community can choose the type that best fits their needs.

5.3.6 Collection and Use of Fees

No fees are paid by the communities for the water system. Their contribution consists of labor and other contributions-in-kind for the construction of the project.

Users, however, have to pay a fee to the committee to cover expenses for maintenance and operation of the system and another fee for future expansion of the system.

When this report was written, the rate for the projects that were almost completed was not yet estimated. In one of the projects visited by the team, both the CDA and the people were somewhat annoyed because they did not know how much they were going to have to pay for the use of water.

5.3.7 Capacity to Meet Project Goals

CARE definitely has the administrative capacity to execute the Water, Women and health project. It has a good administrative infrastructure, and above all, it has entered into the computer most of the information required for effective execution and control of the projects. Even though the delays have been due mainly to problems of the host or counterpart government agency, DESCCM, and now MINDES, there has also been negligence on the part of CARE in implementing the missing components, which are more the responsibility of CARE than the host agency.

The fact that usage rates have not been established and the users do not know how much they will have to pay is primarily the responsibility of CARE. Hopefully with the coming on board of the field supervisor and when the other vacant position is filled, better control will be maintained over the construction and implementation of the projects. This would make the projects go faster and ensure that they function well.

The fact that all members of CARE's Environmental Sanitation Unit are now devoting more than 50 percent of their time to the projects will also help.

Having a consulting engineer or an engineering consulting office to analyze, supervise and control the purely technical aspects of the project would also be very useful. Linking the potable water project to other on-going or completed CARE projects in the field and/or with CARE field offices would also increase effectiveness.

5.3.8 Conclusions

- a. CARE has a solid and well-organized organizational structure for the execution of potable water supply and sanitation projects. Nevertheless, it should improve supervision and follow-up, in compliance with project agreements.
- b. The technical engineering component, which calls for the adequate technical supervision of the projects before, during and after their execution, is nonexistent. Besides, the personnel working on the potable water project do not dedicate 100 percent of their time and this also affects the projects. The delays in the projects with AID are in great part due DESCCM's not carrying out its part, and to the fact that DESCCM was absorbed by the new Ministry of Urban and Rural Development; even though the ministry has the best intentions towards the project, it is still organizing its activities

within the revised agreement with CARE, which has not yet been signed. CARE, on the other hand, has not implemented its part of the original agreement in any of the 16 targeted project sites.

- c. With respect to planning, CARE, as a whole, works with triennial plans, which are updated every year. Control of the projects is well implemented because all the data are in the computer; a series of computerized reports are produced from the data base.
- d. Regarding the administration of USAID funds, expenditures are justified because in detailed reports that are furnished to AID on materials purchased. The reimbursement of funds is done against vouchers presented to AIC.
- e. Data on all expenses incurred in each project are sent to New York via telex, including detailed information on what was spent. The accounting is adequate to the type of projects managed by CARE and everything is in accordance with handbooks and standardized procedures used by CARE worldwide.
- f. The purchasing procedures and warehouse are adequate, but delivery is not.
- g. The user tariff or payment system was not well defined at the time this report was written; in some of the projects visited the users did not know how much they would have to pay. In only one site visited had agreements been signed between the users and CARE.
- h. The total average cost per finished project is estimated, as noted above, at C74,346.00; per beneficiary C142.00; per connection C728.88. The cost per composting latrine is between C20.00 and C25.00.

5.3.9 Recommendations:

- a. The personnel working on the CARE/USAID environmental sanitation project should devote more time to project supervision and control.
- b. The CARE director, in intensive cooperation with staff from other program areas, should carefully analyze what CARE can do to get strategies defined and immediately operative to implement the missing components, so well defined in the project paper "Water, Women and Health," in the 16 targeted sites.

- c. The vacant position for a field supervisor should be filled by a woman professional, if available, as soon as possible, and a civil-sanitary engineer should be contracted to supervise all technical aspects of the project; additional temporary personnel should be hired if CARE's personnel are not available.
- d. CARE, as implementing agency, should delay no longer in fulfilling its responsibilities for the other three components of the USAID agreement, as well as within the technical sector.
- e. More pressure should be put on MINDES so that their part as counterpart agency in the development and implementation of the projects is clearly and quickly defined.
- f. More emphasis should be given to the reports required by AIC. For example, the 1986 budget should have been submitted in 1985, but was not approved for submission until August 1986.
- g. More attention and care should be given to relationships with the communities, e.g., keeping them better informed about the projects, having them sign agreements, and explaining to them the commitments required.
- h. Each project should be carefully designed, constructed and monitored in order to avoid duplication and malfunctioning once it has been installed.
- i. In general, more attention should be given to the administration and operation of the projects so that the starting dates and construction dates are complied with.

5.4 Trainings and Health Education

5.4.1 Introduction

As mentioned above, CARE's water and environmental sanitation project includes the improvement of the health of the indigenous families through the development of educational activities with women. The education program should emphasize latrine use and maintenance and adequate hygienic practices for women. The proposed educational methodology consists of the formation of small women's groups, in which health problems are discussed and solutions offered for implementation. This plan states that CARE will coordinate activities in cooperation with INCAP and/or EEE (Non-Formal Education).

To date, CARE has not yet carried out the planned educational activities. Because of this, this section only includes a general conclusion and its respective recommendation.

5.4.2 Conclusion

CARE has not carried out the activities planned within the educational component, which includes educational meetings with the women of the selected communities. This is not, in the main, the results of the difficulties faced with the government host institution. During the same period CARE has successfully conducted similar programs for the CARE-Canada/UNEPAR project, which includes most of the educational component planned under the USAID agreement.

5.4.3 Recommendation

CARE should immediately develop the educational activities planned as part of the project.

5.5 Beneficiaries

5.5.1 Introduction

In order to examine hygiene and health-related socio-cultural effects in household with potable water and latrines installed by CARE, a small ethnographic study was carried out in selected communities. The methodology used included a series of interviews with selected families, using an informal interview guide for each theme of interest. Also members of the water committees were interviewed and asked for their recommendations.

5.5.2 Community Selection

Since the period for carrying out this evaluation was short, the team decided to select a 25 percent sample of all projects being implemented by CARE. Communities selected were to be located in areas with access roads for 4-wheel drive vehicles and the projects were to be at different stages of implementation: initial, intermediate or inaugurated.

The following communities where CARE is working were visited:

- e. Aldea Xolcaja, Solola, Solola: The total population is 500. The majority of the inhabitants are indigenous. They speak Cackiquel and Spanish. Women understand little Spanish. Some men raise corn, beans and wheat; others manufacture wooden furniture. The majority of women weave in the afternoons. Houses are constructed with tile roofs and adobe walls. They usually have two rooms, of which one is for the kitchen. This village has potable water service with PVC household pipes, even though the project has not been yet completed. Women interviewed mention that there was enough water during the morning but in the afternoons the flow diminished and they did not know the reason why.

- b. **Aldea La Estancia, Cantel, Quetzaltenango:** The village is located in desiccated terrain. The inhabitants raise corn, wheat, beans, plums, and apples. The population is indigenous and speaks Quiche and Spanish; nevertheless, the majority of women speak little Spanish. Men work as farmers or in the glass factory in Cantel. There is a high rate of alcoholism. Houses are constructed of cement block or adobe with tile roofs. They have two rooms, one for the kitchen. The population to be served is estimated at 1,097. The village has potable water service through public standpipes located in different sites in the village and some household connections.
- c. **Municipio of Agua Zarca, Huehuetenango:** This community is on a plain and has hot weather. Access is over a dirt road. Men raise corn, peanuts and livestock. All inhabitants are "ladinos" (not indigenous) and speak Spanish. Houses are constructed of adobe and cement block, with thatch or aluminum sheet roofs, and with two or more rooms, of which one is for the kitchen. The majority of houses have a tank to store water and gutters for rain water catchment. The population to be served is estimated at 847. This community has a potable water service, established by CARE/DESCOM in 1971, with public standpipes and some household connections. For the construction of the new system, it was necessary to disconnect the water flow. Women are now forced to look for water in the wells. Women expressed their dissatisfaction, because they have to walk and waste time looking for dirty water.
- d. **La Selva, Pueblo Nuevo, Guatemala:** This community of approximately 460 people is about 30 minutes outside Guatemala on the side of the volcano. Most of the families used to live and work on the adjoining farm, which now belongs to the military. Men and women work by the day whenever they can get jobs, but few on the farm. Some of the women sell vegetables and flowers in the market in Guatemala, and some as maids in the city. Most of the houses are temporary-looking wooden shacks but some are of concrete block. The women wash their clothes at a public laundry area that has continuously running water piped from the river, which is flooded by the "deshechos" in San Lucas. The water committee was very pleased to have help from CARE; all the community inhabitants have tried to get water for the community without any success. The women were anxiously awaiting for the system's completion. Some families had latrines. A public laundry is to be installed, when the new water pipe site is selected.

5.5.3 Who Are the Beneficiaries?

The project is intended to benefit the total population, with special attention given to women who are in charge of obtaining water and have

to walk long distances to get it. Small children, who are vulnerable to diseases, especially gastrointestinal ones related to poor quality and insufficiency of water and lack of personal hygiene practices, will also be benefited. With the introduction of water, it is expected that women will have more time to dedicate to child care and other household activities or some kind of income-generating activities. The women interviewed were pleased to have help from CARE in the introduction of water to their households.

5.5.4 Use of Water and Sanitation Facilities

5.5.4.1 Household Practices

The families interviewed in the four communities store water in "apastes" (rustic clay receptacles) or plastic jugs. In La Selva there were plastic containers and 50-gallon barrels to catch rain water. In La Estancia, apastes were being used. In Agua Zarca, the old potable water system had been disconnected to initiate construction of the new system and the women were very upset. Now they have to look for water in the only existing well. They do not like this water because it has too much sediment and their children get urinary infections. Some women said they had to get up at 4:00 a.m. to get water before it was gone.

Dishwashing is done in the sink outside the house or in plastic containers inside the house. Only in Agua Zarca was it noted that all houses have cement floors and water is not thrown in the house as noticed in other communities; rather it goes to the crops.

Clothes are washed in the pilas or on pieces of stone that serve this purpose. These stones are located near the public standpipe. In Agua Zarca, all women improvise their laundries; in La Selva, they use the public laundry.

5.5.4.2 Changes in Behavior and Social Organization

Xolcaja is the only community with household potable water; the community had made house connections with PVC themselves. Previously, the women were urged to get water from the public standpipes in the adjoining village or from the rivers, which was a dangerous place for children. Now, all women spend more time on weaving during their spare time or with the children.

In Agua Zarca some houses had water pipes, but when the construction of the new system started, the water flow was cut. This has caused problems. The water in the well is not available at specific hours and the women have to be ready at any time for the water flow to fall. They also have to use hoses to get enough water before it disappears. Some women had set up plastic laundry tubs near the well to do their washing.

The members of the community of La Estancia said that they were expecting changes with water introduction, since they now have problems getting enough water for all community members.

5.5.5 Project Benefits

5.5.5.1 Health Aspects

5.5.5.1.1 Quality, Quantity and Access to Water

Only the villagers in Xolcaja have perceived the benefits of water introduction, since this is the only completed project. The people in this community expressed their satisfaction, as the water has a continuous flow, even though it sometimes diminishes (there is not enough water) and they did not know why.

5.5.5.1.2 Excreta Disposal

The women in Xolcaja participated in a project carried out by COFEDESCO, which provided latrines. They paid Q1.50 per family for transportation charges. In Agua Zarca, the latrines were provided by the military two years ago. In La Estancia, the MSP gave the latrines. The people interviewed in the three communities said that they have not yet received any information on the benefits of latrines; however, they said it was good to have them to avoid proliferation of flies. It is interesting to note that some families in this community built their own pit latrine, as they considered it to be healthier. In La Selva there were a few pit latrines in cement block buildings, one with a room beside it for bathing. Families were obviously looking forward to having water, and CARE might find a receptive audience here to test the water-seal latrine.

5.5.5.1.3 Hygiene Practices

Due to the short period of time for carrying out this evaluation, the team was unable to observe hygienic conditions in detail; nevertheless, the team noticed that the children were clean. Also, it was noted that some dishes were placed around the "pollo" and others were inside plastic receptacles ready for washing. The team observed that family members were using the latrines.

5.5.5.2 Perceived Decline in Water-Related Illness

When women were interviewed on this subject, they answered that they had not noticed a decline in water-related illnesses, such as the gastrointestinal ones. They also mentioned that during the rainy season cases of child illness were more frequently reported. However in Agua Zarca, due to the fact that the previous system is no longer in operation, the women feared that their children would become sick again.

5.5.6 Community Support Practices

5.5.6.1 Water Committees

The COAs were established two or three years ago to handle all matters related to potable water introduction to households. The

number of committee members is seven or eight men. The president of the committee in Agua Zarca indicated that women were to work in the house and did not have enough time to spend in other activities, even when the committee meets on Sundays, when nobody works. The persons interviewed in Xolcaja stated that they never signed an agreement with CARE and that they did not know the amount to be paid, nor the time they have to wait to get the remaining materials to complete the system. In fact, they received a cable from CARE, informing them that the evaluation team was on its way to visit the community, but they thought that the team was bringing cement to the community. The CCA members in La Estancia were well organized. They expressed their satisfaction that the women would not go to the public standpipes, where they wasted time waiting for a turn, since the standpipes were not sufficient for the community population. All inhabitants in Agua Zarca are expecting that the water will not have sediment. The committee in La Selva was working on the last organizational details with the CARE representatives when the evaluation team arrived.

5.5.6.2 Maintenance

In Xolcaja, there are two water minders trained in the operation and maintenance of the project. They are in charge of cleaning the tank every 20 days and of checking for water leaks. In La Selva the water minders were working in cooperation with the mason.

The communities of Agua Zarca, La Estancia and La Selva are planning to organize a maintenance committee after the inauguration of the project. This committee will be in charge of system maintenance.

5.5.6.3 Convenience and Reaction to Fees

User fees are collected by the committee treasurer. The users were given different payment periods. It was decided that widows and the poor were to pay just for the works or were to have free water system installation. None of the committee members was in disagreement with the fee or payment procedure, but members said that they did not know the amount to be paid.

5.5.7 Conclusions

- a. According to the information provided in the interviews, the villagers knowledge of water and environmental sanitation is low.
- b. Most of the families continue to follow the same nonhygienic practices (no hand washing before eating, eventual use of soap for dishes), even with the introduction of potable water to the households.
- c. The receptacles for storing water are always uncovered.

- d. The utensils used for cooking are always scattered around the kitchen and dirty.
- e. Dirty water always runs to the crops around the house.
- f. Small children do not use the latrine to defecate, but rather do it everywhere.
- g. The persons interviewed in the communities did not have any knowledge of the benefits of the latrine.
- h. The women have not implemented new productive activities in their spare time, rather they continue doing the same household activities.

5.5.8 Recommendations

- a. The anthropologist on the project should carry out in-depth studies to identify and evaluate the different sociocultural changes occurring in the villages after the introduction of potable water.
- b. The anthropologist should also develop an educational health plan, based on anthropological results.
- c. Joint efforts with health personnel should be implemented and periodic visits should be made to the households.
- d. Women personnel should be included on the CARE staff to stimulate the participation of community women in the water projects.
- e. Community leaders should be used to reach the population with health messages. Also, community teachers should be used to reach the children and their parents.
- f. New activities should be implemented with women, such as handicrafts, cooking, etc. These activities should be supported by a social worker or a health technician.

6. MONITORING PROJECT IMPACTS

6.1 Introduction

This assignment originally included an evaluation of the projects' impact on the health of selected communities. However, the evaluation team discussed the matter with the funding institution and explained that a different methodology would have to be used to conduct such an evaluation and that the evaluation team could design such an investigation for the future. Accordingly, some alternative recommendations are provided to evaluate the health impacts of the water and environmental sanitation projects that have been implemented or are to be implemented.

6.2 Impact Evaluation of Projects to be Installed

Ideally, for those projects located where no water or sanitation systems have been installed, an evaluation of health impacts could be carried out using quasi-experimental designs that included comparison groups and observations before and after the intervention. The design can be represented as follows:

Comparison Group	0		0
Intervention Group	0	X	0

where 0 = observation and X = intervention (water and sanitation project). The comparison group would be a community with similar characteristics to that of a community with a project under implementation, but that has not had this type of intervention. Baseline information would be collected in both communities, both comparative and experimental. It should be noted that it will be difficult to find comparable communities.

The resulting information could be prospective and include the following:

- a) Morbidity - diseases related to water and sanitation availability and quality; number of cases (diarrhea or skin diseases, for example) in a given period, before and after the intervention.
- b) Mortality - associated with diseases related to availability and quality of water and sanitation, measured before and after the intervention.
- c) Nutritional Status - anthropometric surveys; weight and size of children before and after the intervention.

ADP has recently begun to evaluate its installed projects, giving emphasis to project operations, problems, system use, beneficiaries' satisfaction and management. Unfortunately, those evaluations do not include measuring health impacts, even if baseline data for each community (general surveys carried out by the CDAs) are available.

When ADF was asked why it was not using the baseline data for evaluation purposes, it gave the following reasons:

- a. Baseline data have not been electronically processed yet;
- b. Different types of forms have been used for data collection;
- c. There are not sufficient funds to carry out that type of evaluation;

If these obstacles could be overcome by processing the data in a standard format and obtaining additional funds for evaluation, an evaluation utilizing these data could be considered.

6.3 Impact Evaluation of Installed Projects

In the case of already installed projects, a post-intervention, quasi-experimental design could be used to evaluate health impacts based on a comparison group, as follows:

Comparison Group		0
Intervention Group	X	0

where 0 = observation and X = intervention (water and sanitation project). The comparison group should be communities with characteristics similar to those of the communities in which a water project has been installed, but that do not have similar projects.

The results from this evaluation would be retrospective and could include the following:

- a. Mortality - especially death of children under five years of age during the last year.
- b. Civil Registry Mortality, death certificates from the last year.
- c. Measurement of pre-school or first-grade children, three years after the system has been installed.

One of the limitations of this evaluation is the difficulty of obtaining comparison communities. Even with comparison communities, the results would be limited to identifying the effects that are attributable to water projects; a cause-effect relationship could not be established.

7. GENERAL CONCLUSIONS

In general the evaluation team found that the three programs for water and sanitation systems are responding to urgent needs in the communities, which are actively participating in the planning and implementation despite technical and managerial problems. Even though between 1972 and 1982, due in great part to the efforts of private institutions, the percentage of rural families with household water connections increased from 2 percent to 6 percent and easy access to public fountains from 11 percent to 18 percent, the need for improve water and sanitation in rural Guatemala is still acute. More than 75% of the rural population is without adequate coverage; infectious and intestinal diseases, many water related, are the major causes of rural deaths.

Both agencies have carried out successful piped water projects in Guatemala, ADP since the early 1970s and CARE since the late 1960s. The well-designed programs, as conceived, were seemingly within the capacities of the contracting agencies.

Through interviews with officials of both agencies, field observations and contacts in Guatemala City and in the field, the team reached the following conclusions:

7.1 Objectives

The objectives of the grants are not being met by either ADP or CARE within the time frame originally planned.

7.2 Technical Processes

The technical processes currently in use to design and construct water systems are inadequate in both ADP and CARE.

7.3 Management Practices

Both ADP and CARE have been negligent in their management practices. Some projects have been carried out by both agencies in locations where there were existing piped water systems, not in accordance with the purpose of the agreements, which clearly state that those areas lacking water systems are eligible for project development.

7.4 Educational Component

The educational component, which is designed to increase utilization of the technological components and promote improvements in water use and sanitation practices, has not been fully implemented in either ADP or CARE.

7.5 Impact

The impact of improved water systems on the beneficiaries was dramatically clear in both ADP and CARE communities where the systems were not

working either because of the breakdown of the new system or the shutdown of the existing piped water supply in sites where duplicate systems were being built. Also, the obvious pleasure and innovative uses of water in communities with their first piped system were already evident.

7.6 Environmental Benefits

The positive environmental benefits of latrinization were obvious in those communities where ACP had carried out the program in cooperation with the Ministry of Public Health or a cooperating agency. Even in the communities where CARE had not yet initiated a latrine program or health education, there was awareness, particularly on the part of the women, of a need for improved disposal of human excreta.

7.7 Institutional Capacities

Local institutional capacities are being developed by both ACP and CARE to assist the development of local water committees, which collect community contributions and disburse funds for construction costs and for operation, maintenance, etc., but ACP has carried out this aspect of project development more thoroughly.

8. SPECIFIC RECOMMENDATIONS

8.1 Agua del Pueblo

That no more funds be allocated by USAID to Agua del Pueblo until:

- a. ADP has changed its board of directors to provide autonomous representation by non-staff members with recognized interest in its work and the confidence of the Guatemalan community;
- b. ADP has carefully examined, with its new board of directors, its organizational and managerial structure in relation to achieving most effectively its goals and policies as an institution, and has made adjustments in present grants and requests to reflect the new scale of operations decided on.
- c. ADP also considers establishing an international advisory board, composed of representatives from its primary donors as well as some of the original founders, to work with the agency through the reorganizational processes described above.

That ADP consider again selecting only small gravity-flow system sites to serve populations of around 600 or less and where TARs can be stationed to give close supervision to a small number of projects simultaneously, to provide better preliminary studies/approaches and to coordinate activities with other intervening agencies.

That ADP add one or more women at a professional level to the central ADP staff to participate in the planning and feasibility studies and to carry out water use and health education more effectively at the community level.

8.2 CARE

That no more funds be allocated by USAID Guatemala to this program and no more sites be selected until:

- a. CARE has successfully negotiated its agreement (which was still being revised by CARE in mid-August 1986) with MINCES, the newly reorganizing counterpart agency, or some other unit;
- b. CARE, as executing agency, has begun fulfilling its responsibilities in the other three components of the AID agreement, as well in with the technical component.

That CARE consider adding to the selection criteria for at least a percentage of new projects one of the following requirements:

- a. That health education or training of primary health care workers be under way, so that improved quality and quantity of accessible water is seen to be directly related to users' needs.

- b. That some existing (or introduced) income-generating activity for women be in place so that the opportunity costs of time and effort saved by better water supplies can be locally appreciated.

8.3 USAID-Guatemala

RECOMMENDATIONS on future USAID funding:

- a. That before more funds are allocated to either CARE or ADP a brief evaluation by USAID staff or a consulting team made up of a sanitary engineer and a social scientist be made of all systems under these grants to examine both technical and community aspects to determine whether completed projects are working and designs are appropriate for long-term service, operation and maintenance.
- b. That USAID-Guatemala consider technical assistance to both agencies (and perhaps others in the water and sanitation sector) to improve their use of computers and develop ways of coordinating with each other and overall GOG planning.
- c. That short, periodic training workshops be set up on a departmental or regional basis so that the water managers and selected members of the water committee from both ADP and CARE completed projects can discuss their problems and solutions to same. These workshops could include both technical and organizational problems, including basic accounting. Perhaps other USAID projects and/or other donor groups, i.e., CARE-Canada, could be included in these workshops.
- d. That a support system be set up on a departmental level, perhaps within one of the official governmental water agencies, to assist in major repairs, stock basic supplies, etc. Information on this support system and how to use it could be a part of the workshops.
- e. That present project objectives for both CARE and ADP should be more flexible to allow resources to be used to serve the greater number of beneficiaries with the full range of support services rather than a specific number of water systems and should emphasize the effective and long-term viability of the water systems.

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4. Ministerio de Desarrollo Urbano y Rural (MINDES)

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5. PAHO

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7. INCAP

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8. NGO's

9. Local Officials

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EVALUACION PROYECTOS DE AGUA Y SANEAMIENTO ADP Y CARE
GUIAS DE RECOLECCION DE INFORMACION

1. Guia de Informacion General sobre la Comunidad
2. Guias de Entrevista
 - 2.1 Miembro(s) del Comité de Agua
 - 2.2 Técnico en Acueductos Rurales
 - 2.3 Encargado(s) de Operación y Mantenimiento
 - 2.4 Líderes comunales (not included)
 - 2.5 Beneficiarios (especialmente mujeres con niños menores de cinco años)
3. Guias de Observación
 - 3.1 Sistema de Agua (not included)
 - 3.2 Letrinas

1. GUIA DE INFORMACION GENERAL SOBRE LA COMUNIDAD

Comunidad: _____ Municipio: _____

Departamento: _____ Fecha: _____

1.1 Características geograficas-ecologicas

- Terreno
- Clima, meses lluviosos, y meses secos

1.2 Grupos etnicos y distribucion demografica general

- Grupos etnicos
- No. de habitantes, de familias

1.3 Estructuras fisicas y servicios publicos

- Viviendas, tipo, construccion, localizacion
- Electricidad

1.4 Organizacion economica

- Actividades economicas principales

1.5 Organizacion politica y social

- Organizaciones locales
- Comites pro-mejoramiento, comite de salud, comite de agua
- Iglesias

1.6 Educacion

- Escuelas

1.7 Problemas de salud y recursos

- Principales problemas
- Recursos tradicionales y modernos

1.8 Proyecto de agua y saneamiento

- No. de letrinas
- No. de casas con/sin conexion de agua
- Donde obtienen agua las casas que no tienen conexion

2.1 GUIA DE ENTREVISTA A MIEMBRO(S) DEL COMITE DE AGUA

Comunidad: _____ Municipios: _____
Departamento: _____ Fecha: _____
Informante: _____ Cargo: _____

Informacion General

1. Cuanto tiempo tiene de existir el Comité?
2. Cuantos miembros tiene el Comité? Cuantos hombres/mujeres?
3. Cada cuanto se reúne el Comité?
4. Que es lo que hace actualmente el Comité?

Iniciativa

1. De quien fue la idea de solicitar agua/letrinas? Cuando?
2. Que hizo el Comité para conseguir agua/letrinas?
3. Que hizo la comunidad para conseguir agua/letrinas?

Implementacion

1. Cuanto tiempo tardo la instalacion del agua/letrinas?
2. Esta ya completa la instalacion del agua/letrinas?
(NO) Que hace falta?
3. Como se cubrieron los gastos de la instalacion del agua/letrinas?

Utilizacion

1. La gente usa el sistema de agua/letrinas?
(NO) Por que?
2. Que cosas buenas/malas les ha traído el sistema de agua/letrinas a los habitantes de la comunidad?
3. Ha habido algun problema de rechazo al sistema de agua/letrinas?
(SI) Cual? Por que?

Mantenimiento_x_Endcionamiento

1. Quien se encarga del mantenimiento del sistema de agua?
2. Como esta funcionando el sistema de agua?
3. Alguna vez se ha interrumpido el sistema desde que comenzo a funcionar?
(SI) Cuando? Por que? Como lo resolvieron?

Educacion

1. El Comite ha recibido algun curso sobre el sistema de agua/letrinas?
(SI) Curso(s)/fecha/tema/quien impartio?
2. Las personas en la comunidad han recibido algun curso sobre el agua/letrinas?
3. Las mujeres en la comunidad han recibido algun curso sobre el agua/letrinas?
4. Han tenido algun otro tipo de actividad educativa?
(SI) Cual?
5. Piensa que necesitan informacion sobre algo relacionado al sistema de agua/letrinas?
(SI) Sobre que?

2.3 GUIA DE ENTREVISTA AL ENCARGADO DE MANTENIMIENTO

Comunidad: _____ Municipio: _____

Departamento: _____ Fecha: _____

Informante: _____

1. Como lo seleccionaron a usted para este trabajo?
2. Ademas de usted, hay alguna(s) otra(s) persona(s) encargada(s) de la operacion y mantenimiento del sistema?
3. En que consiste su trabajo?
4. Su trabajo es voluntario o pagado?
(PAGADO) Cuanto gana? Quien paga?
5. Que preparacion le dieron para hacer su trabajo?
6. Tiene usted algun manual de operacion del sistema?
(SI) Podria verlo?
7. Tiene usted algun plan de mantenimiento del sistema?
(SI) Podria verlo?
8. Cual es el horario de operacion del sistema?
9. Desde que comenzo a operar el sistema, ha habido interrupciones en su funcionamiento?
(SI) Cuantas veces? Por que razones? Ha podido resolverlas?
En cuanto tiempo?
10. Mantiene usted algun registro sobre el funcionamiento del sistema?
(SI) Podria verlo?
11. Que cosas buenas/malas le ha traído el sistema de agua a la comunidad?

2.5 GUIA DE ENTREVISTA A BENEFICIARIOS

Comunidad: _____ Municipalidad: _____

Departamento: _____ Fecha: _____

Informante: _____

I. AGUA POTABLE

A. Antes de que hubiera agua potable

1. De donde obtenian el agua para tomar? cocinar? lavar trastos? lavar ropa? el baño?
2. Quien(es) era(n) la(s) persona(s) encargada(s) de traerla?
3. Era el agua limpia o sucia?
4. Habia suficiente agua en invierno y en verano?

B. Proyecto de agua

1. Como supo de la instalacion de agua?
2. Quien tuvo la idea/tomo la decision de instalarla en su casa?
3. Por que pensaron en instalar agua en esta casa?
4. Quien hizo la instalacion?
5. Cuanto pagaron por la instalacion?
6. Cuanto pagan ahora? Cada cuanto tiempo?
7. Lo que pagan es poco, mucho o esta bien?
8. Les dieron informacion sobre como usar el servicio de agua? (SI) A quienes? Que? Quien la dio?

C. Uso del agua

1. Que agua usan para tomar? la guardan? la tapan?
2. Que agua usan para lavar los platos? la ropa?
3. Que agua usan para banarse? Cada cuanto?
4. Se lavan las manos? quienes? como? en que momento?
5. El agua ahora es mas/igual/menos limpia que antes?

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2.5 GUIA DE ENTREVISTA A BENEFICIARIOS

2

6. El agua que tienen ahora es suficiente? en invierno? en verano? (NO) Para que no alcanza?
7. Desde que se instalo el agua, han habido interrupciones en el servicio?
(SI) Cuantas veces? Ultima vez?. Por cuanto tiempo?

D. Beneficios percibidos

1. Que cosas buenas/malas ha tenido la instalacion de agua?
2. Desde que tienen agua en casa, tiene mas tiempo para hacer otras cosas?
(SI) Que hace con ese tiempo?
3. Desde que tienen agua, tiene mas/igual/menos animales?
4. Desde que tienen agua, tiene mas/igual/menos hortalizas?
5. Desde que tienen agua, le han hecho algun cambio a su casa? (SI) Cual?
6. Desde que tienen agua, hay mas/igual/menos enfermedades?

ENTREVISTA PARA FAMILIA QUE NO TENGA SERVICIO DE AGUA

1. Por que no tienen instalacion de agua?
2. De donde obtienen el agua para tomar? cocinar? lavar trastos? lavar ropa? el bano?
3. Quien(es) es/son la(s) persona(s) encargada(s) de ir a traer el agua?

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2.5 GUIA DE ENTREVISTA A BENEFICIARIOS

3

II. LETRINAS

A. Antes de que instalaran la letrina

1. Donde hacian sus necesidades los miembros de la familia?
el hombre? la mujer? los ninos?

B. Instalacion de letrina

1. Como supo de la instalacion de letrinas?
2. Quien tuvo la idea/tomo la decision de instalar una en esta casa?
3. Por que pensaron en instalar letrina?
4. Cuanto pagaron por la letrina?
5. Quien instalo la letrina? Quien dirigio la construccion?
6. Les dieron informacion sobre como usar la letrina?
(SI) A quien? Que? Quien la dio?

C. Uso de la letrina

1. Quienes usan la letrina?
(SI NO TODOS LA USAN) Quien no la usa? Por que?

D. Beneficios percibidos

1. Que cosas buenas/malas tiene tener letrina?

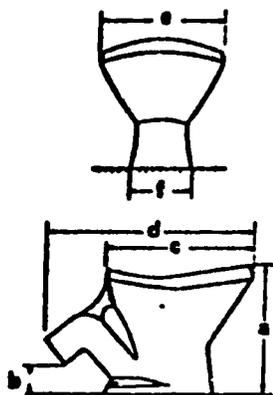
ENTREVISTA PARA FAMILIA QUE NO TENGA LETRINA

1. Por que no tiene letrina en su casa?
2. Donde hacen sus necesidades los miembros de la familia?
el hombre? la mujer? los ninos?

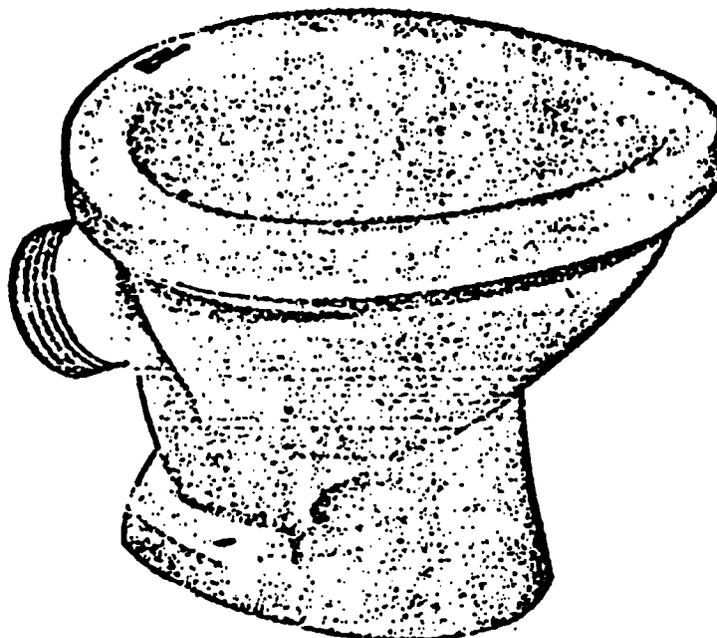
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**Taza
Rural
No. 521**

Dimensiones nominales,
en centímetros y pulgadas



- a - 29.5 cm. (11 5/8 ")
- b - 7.5 cm. (2 7/8 ")
- c - 37.4 cm. (14 3/4 ")
- d - 45.4 cm. (17 7/8 ")
- e - 31.8 cm. (12 1/2 ")
- f - 17.0 cm. (6 11/16 ")

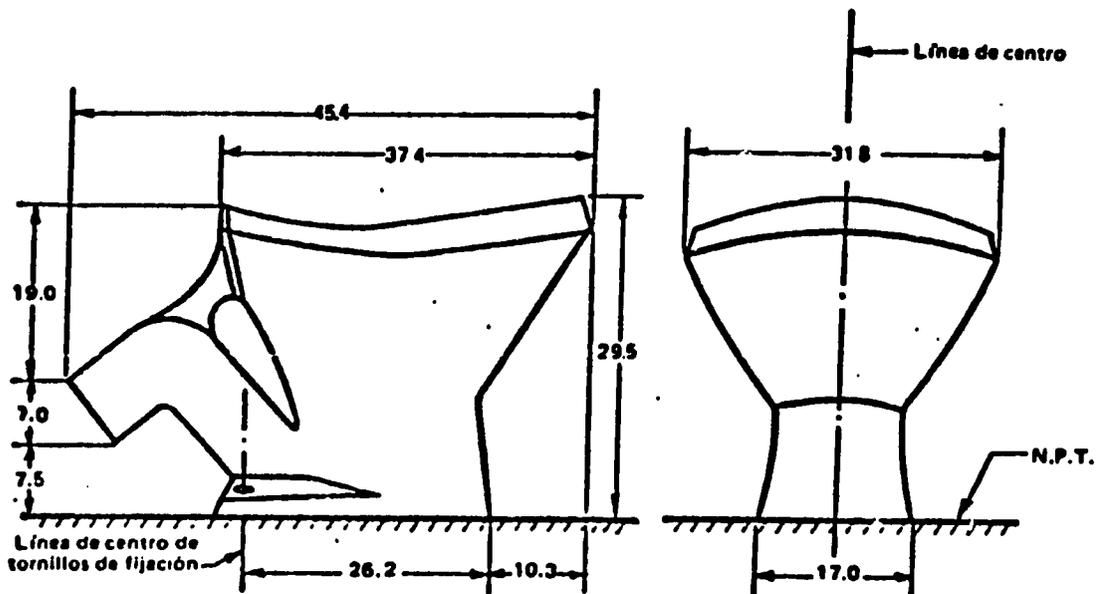


Taza rural con sello de agua. Descarga manual

- Para gama de colores consulte nuestra cartilla de colores.
- Para precios y disponibilidad comuníquese con la Oficina de ventas de la fábrica INCESA STANDARD más cercana.

**Taza
Rural'
No. 521**

Dimensiones nominales, en centímetros

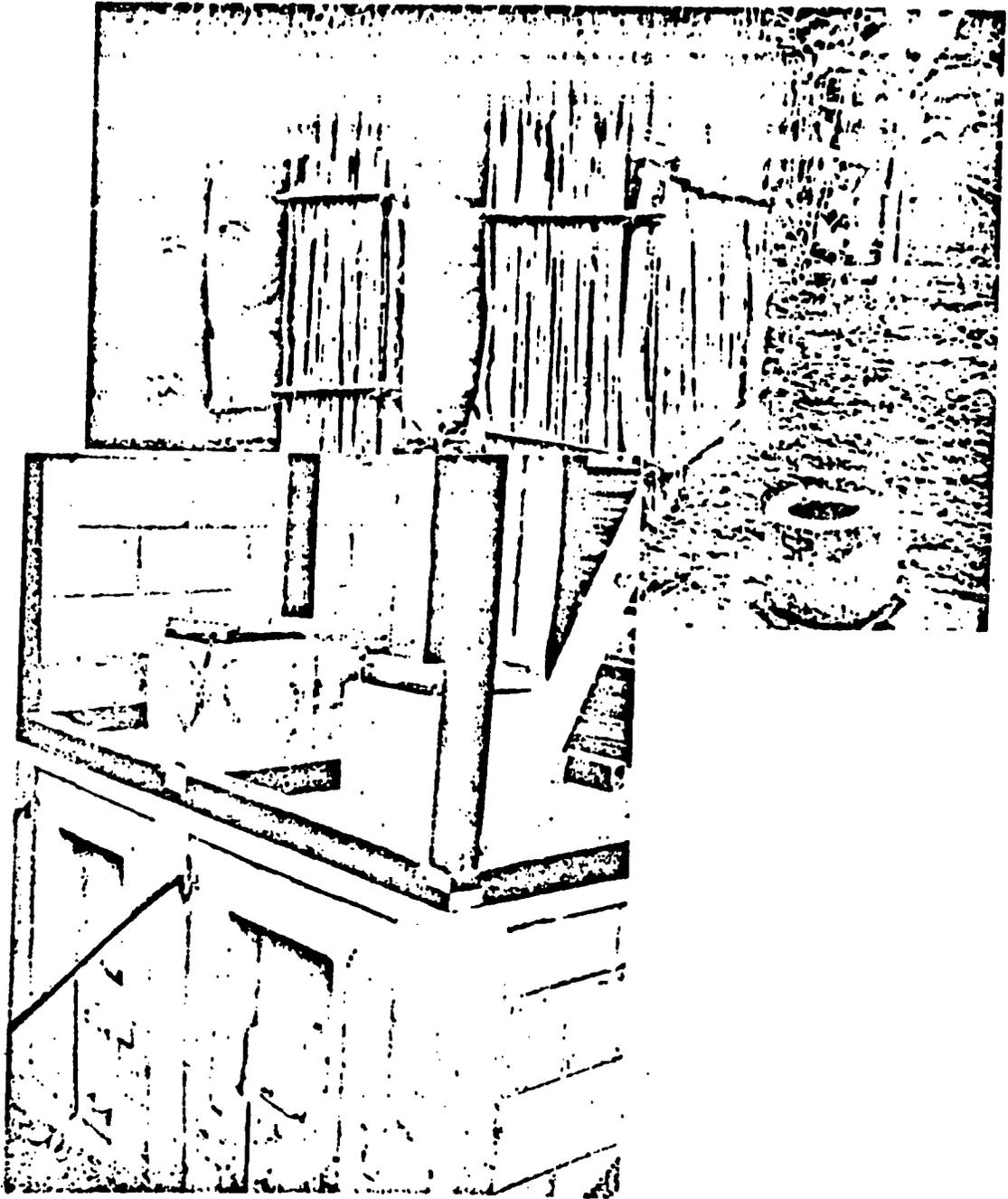


Para la instalación de este inodoro recomendamos consultar el Manual de Instalación y Fontanería.

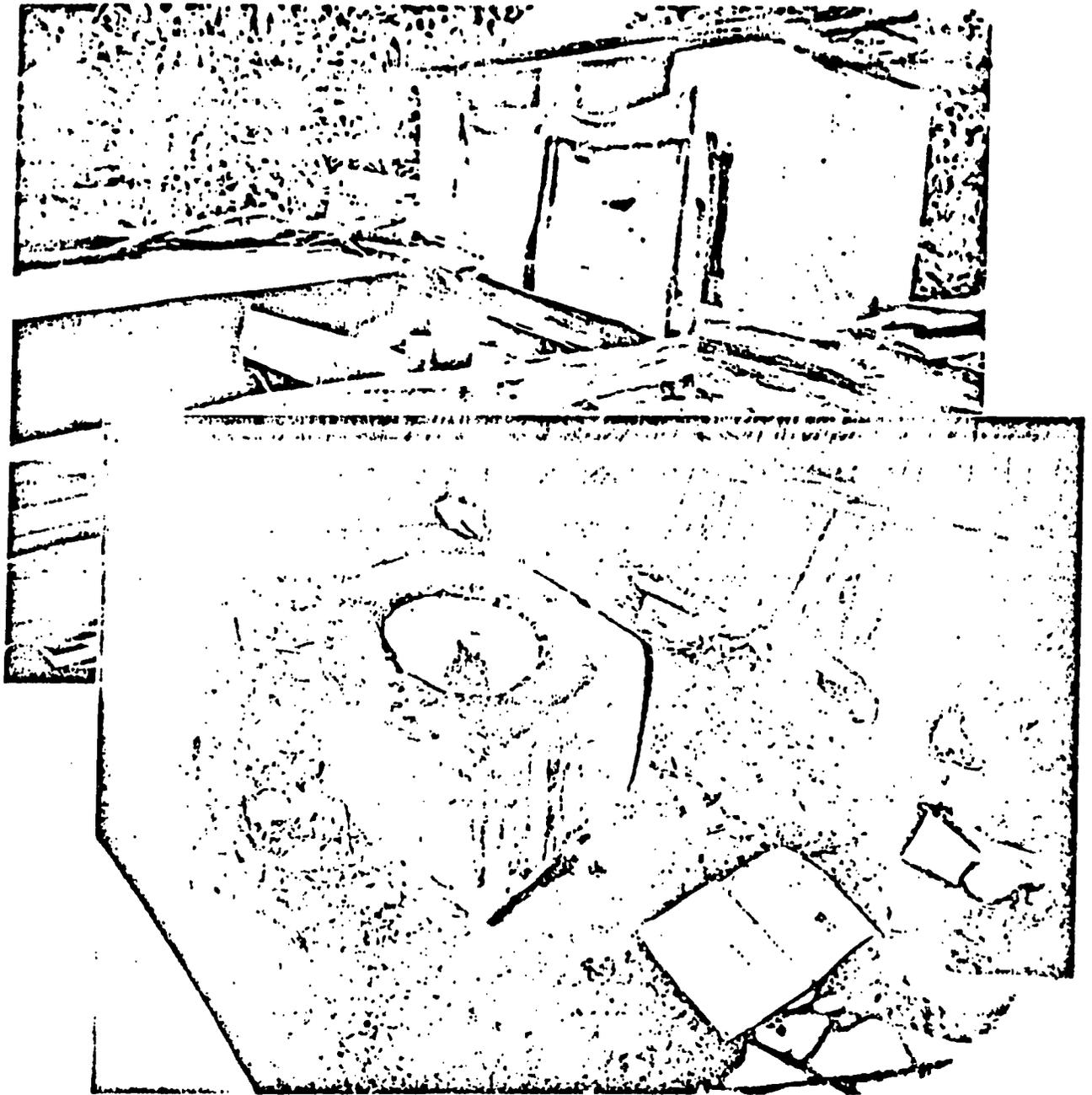
Importante: Las dimensiones de la loza son nominales y pueden variar dentro de los límites de tolerancia que fijan las Normas Federales ANSI A 112. 19.2 de los E.E.U.U.

Las medidas indicadas son las siguientes a la fecha de publicación. En caso de modificaciones se emitirán nuevas hojas de dimensiones. El fabricante no asume ninguna responsabilidad por el uso, en diseño e instalación de hojas obsoletas.

111-

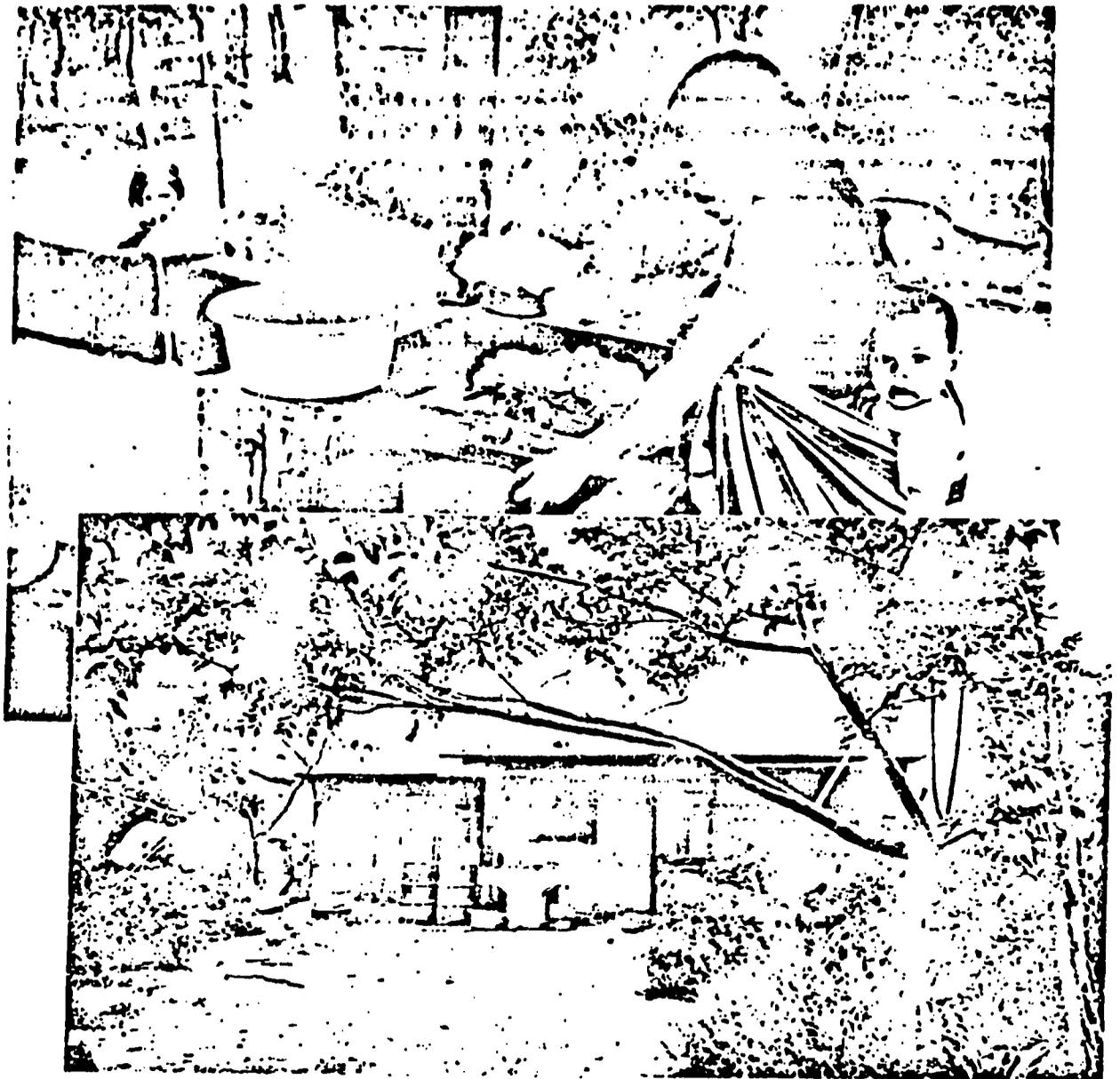


1. Buxup, Jacaltenango, Huehuetenango (ADP). 7/31/86.
Triple pit latrine for various family members.
2. La Casita, Sta. Rosa de Lima, Sta. Rosa (ADP). 8/4/86.
Demonstration composting latrine at water treatment site
(under construction).



1. La Selva, Villa Nueva, Guatemala (CARE). 8/8/86.
Pit latrine and hand-carried water bath house near pig pen.

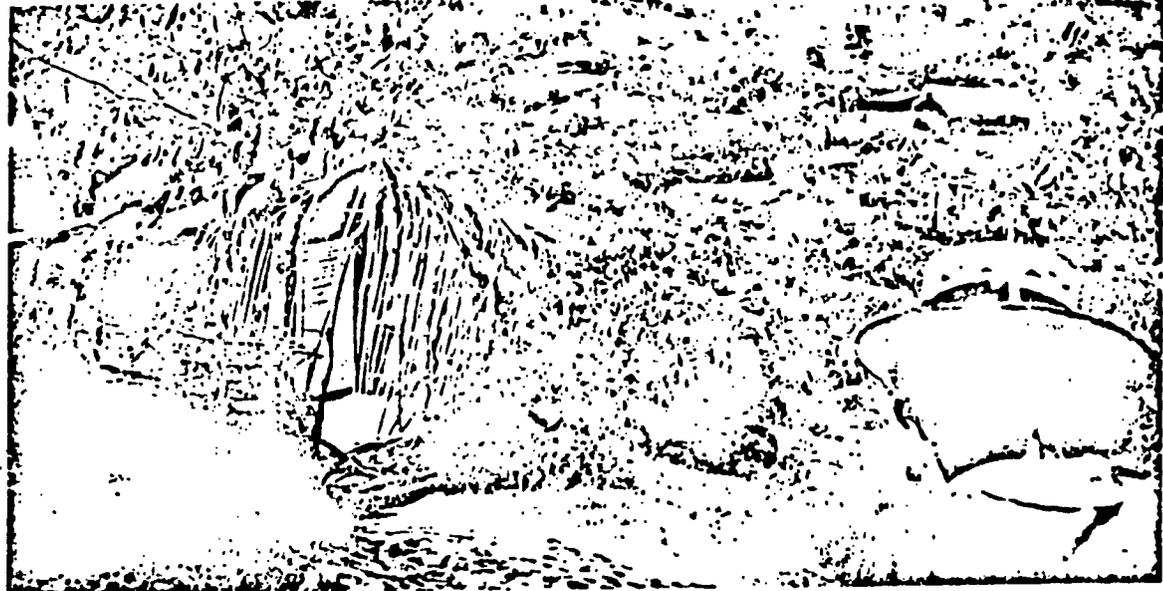
2. El Oreganal, Teculután, Zacapa (ADP) 8/5/86.
Well-used pit latrine with school book.



La Selva, Villa Nueva, Guatemala (CARE). 8/8/86.

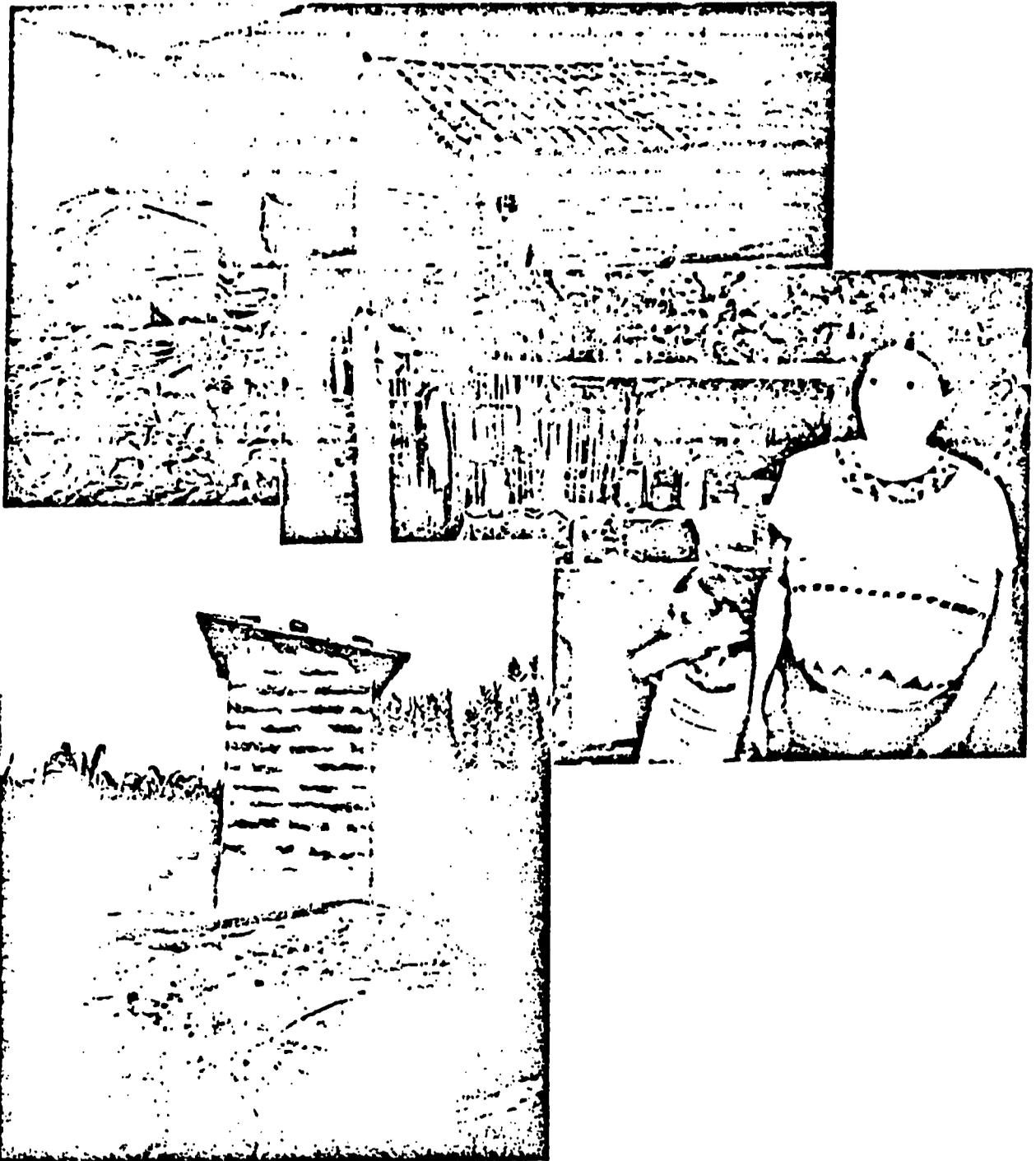
1. Public laundry.

2. House with roof water collection awaiting new connection.



1. La Estancia, Cantel, Quezaltenango (CARE). 7/29/86.
Widow and daughters covering new house connection ditch.

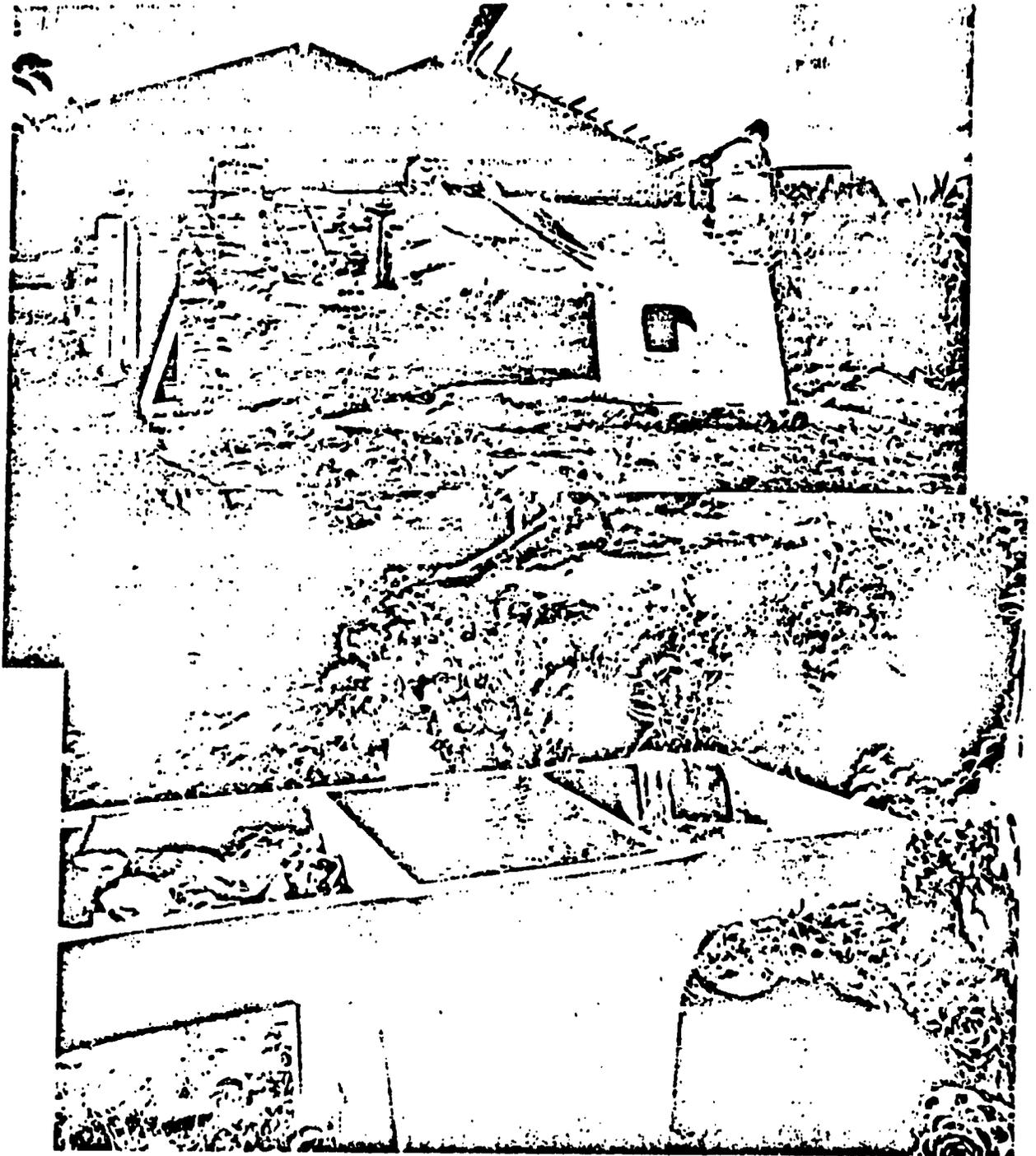
2. El Oreganal, Teculután, Zacapa (ADP). 8/5/86.
House of poor widow not provided a connection.



Patzalam, Aguacatan, Huehuetenango (ADP). 7/30/86.
Mendoza household with pila (washstand) and new composting
latrine.



1. El Guayabo, Olopa, Chiquimula (ADP). 8/6/86.
 2. Xolcaxa, Nahualá, Sololá (CARE). 7/28/86.
- Household standpipe and laundry rock arrangements.



Xolcaja, Nahualá, Sololá (CARE). 7/28/86.
House of Manuela Masap with latrine base awaiting placement
and standpipe with new pila (washstand).



El Oreganal, Teculután, Zacapa (ADP). 8/5/86.
Water Committee Chairman with his hose for hanging in shower
stall, house use, or for the garden; latrine in background.



1. Xolcaxa, Nahualá, Sololá (CARE). 7/28/86.
Water Committee.

2. Nochon, Quezaltepeque, Chiquimula (ADP). 8/6/86.
Water Committee at planning meeting with T.A.R.

3. Canton Aguacatan, Aguacatan, Huehuetenango (ADP). 7/30/86.
Team members with Water Committee.



1. El Guayabo, Olopa, Chiquimula (ADP). 8/6/86.
T.A.R. with Water Committee member.

2. La Casita, Sta. Rosa de Lima, Sta. Rosa (ADP) 8/4/86.
T.A.R. with schoolteacher, who is on the Water Committee.

3. La Estancia, Cantel, Quezaltenango (CARE). 7/29/86.
CARE Regional Representative with Water Committee at the
distribution tank.



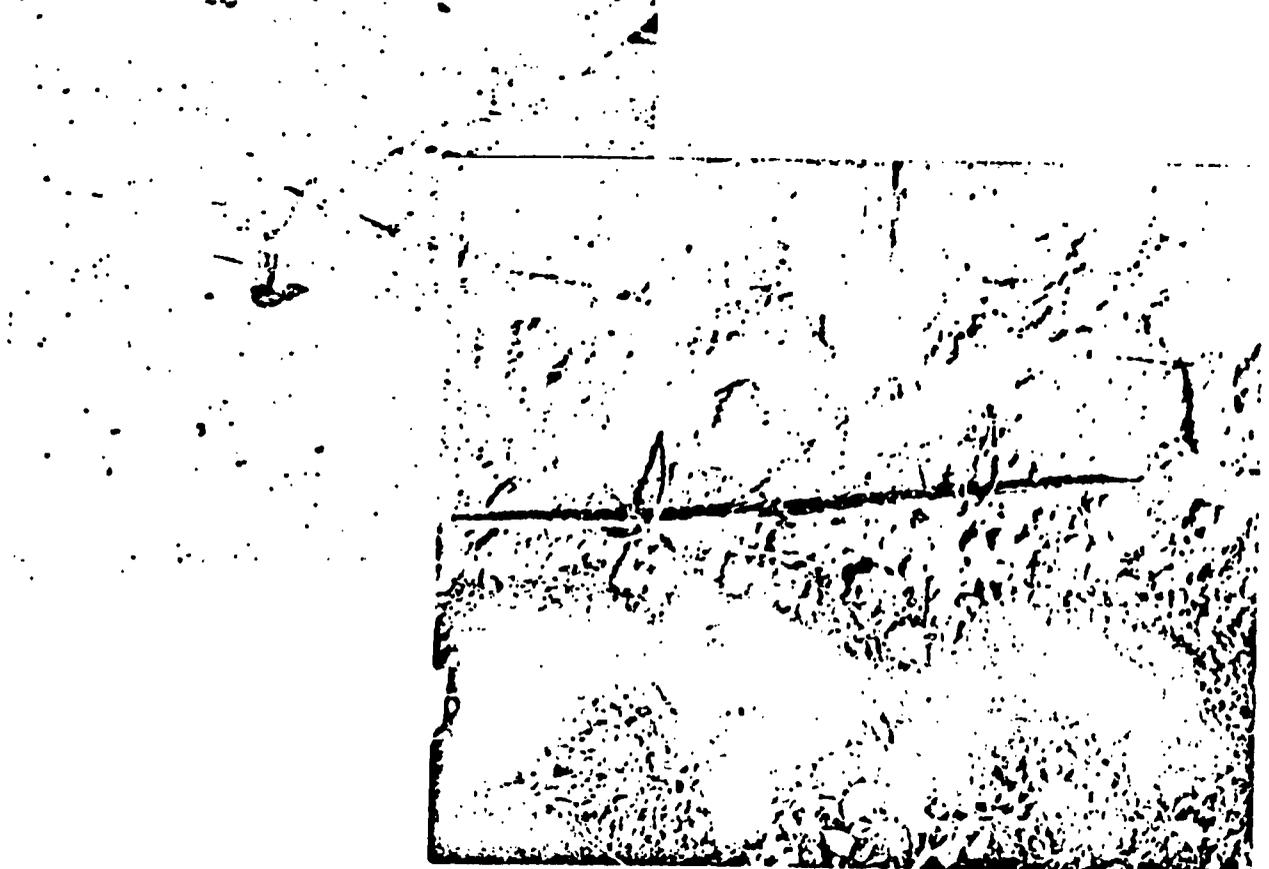
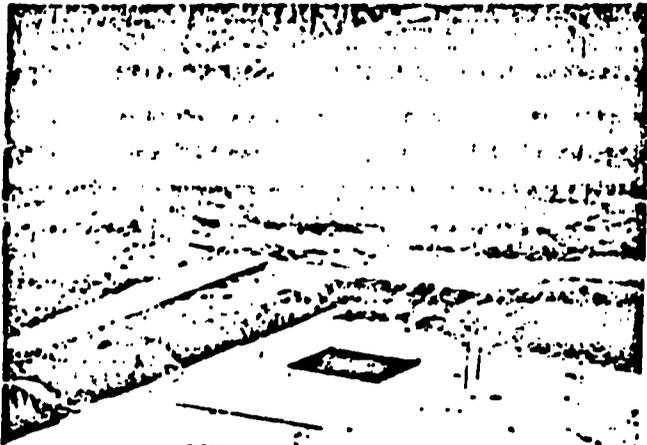
La Estancia, Cantel, Quezaltenango (CARE). 7/29/86.
1. Old public washstand at roadside.
2. Old house connection with standpipe for shower.



El Rancho/Los Cipreses, Momostenango, Totonicapán (ADP). 7/30/86.
Functioning public fountain across the road from household
washstand served by inoperative ADP system.



Agua Zarca, Sta Ana Huista, Huehuetenango (CARE). 7/32/86.
Construction of new system has closed old CARE pipe system
s so community has had to return to traditional water sources.

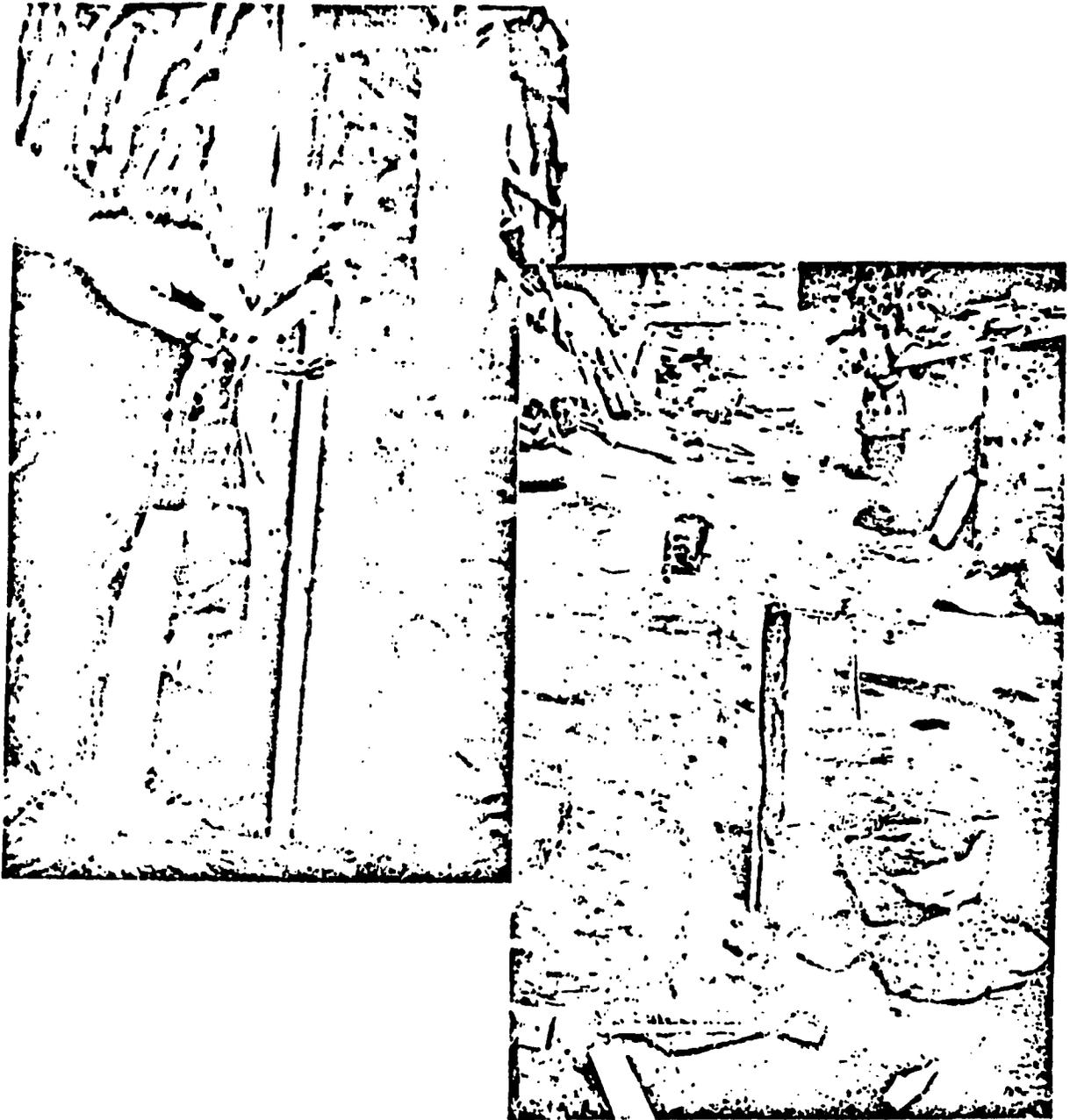


Xolcaxa, Nahualá, Sololá (CARE). 7/28/86.

a. Top of distribution tank. Opening permits rainwater entrance.
Ventilator of PVC.

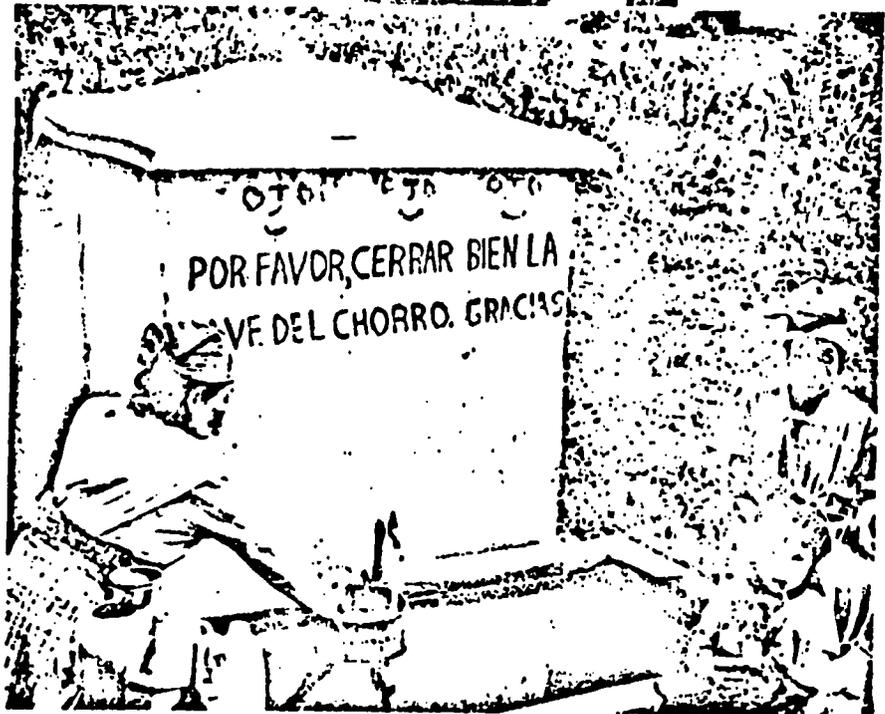
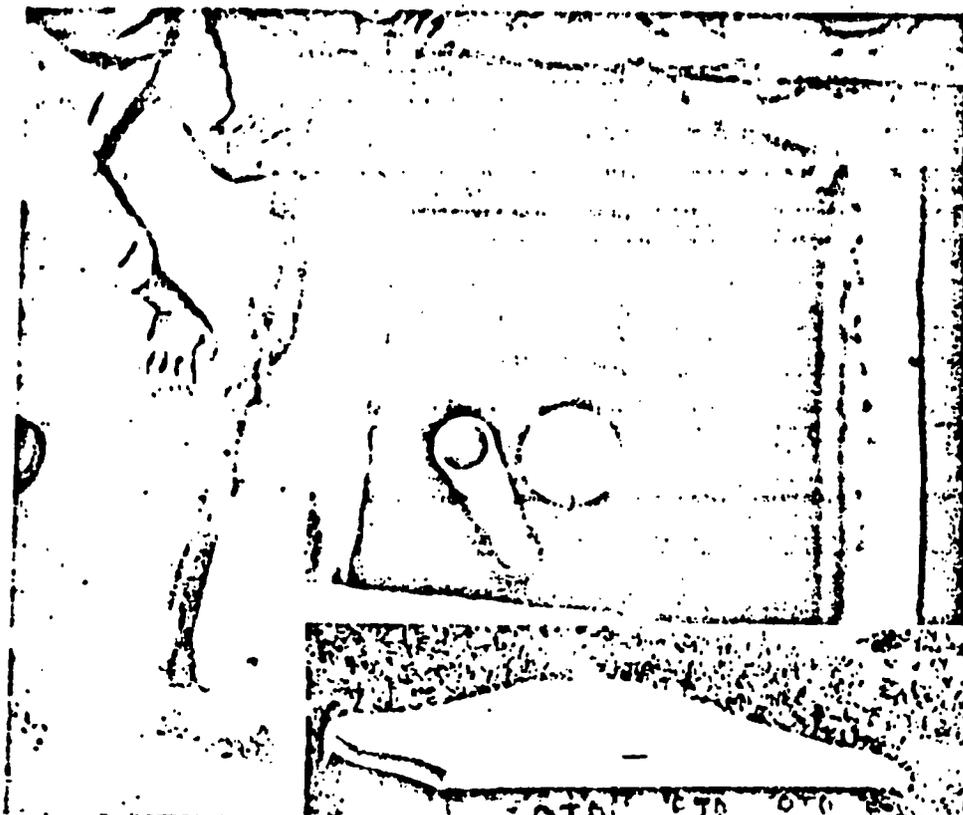
Techo de Tanque de Distribución. El accero permite la entrada
a. de aguas de lluvia. El tubo de ventilacion en PVC.

b. Detail. Note defective construction; reinforcing not covered.
Nótese la fundacion defectuosa. El refuerzo quedó por fuera.



Xolcaxa, Nahualá, Sololá (CARE). 7/28/86.

- a. PVC domestic standpipe with excessive pressure.
Domiciliar con tubería de PVC. Demasiada presión.
- b. PVC domestic standpipe; no drainage or protection from animals.
Domiciliar con tubería de PVC, aguas grises, animales domesticos.

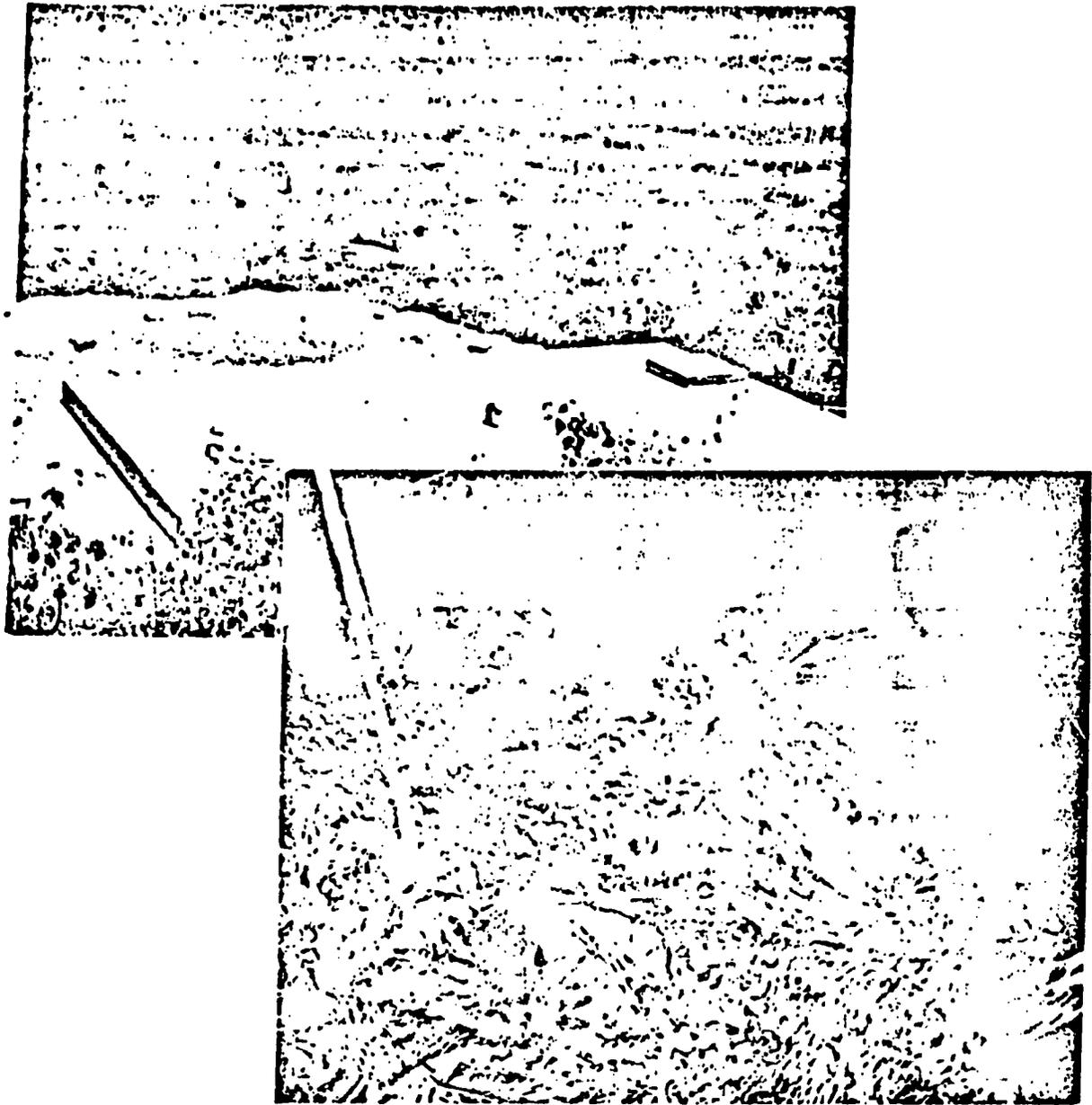


El Rancho, Momostenango, Totonicapán (ADP). 7/30/86.

a. Empty pressure relief box; no water flow.

Caja Rompe presión vacía; no hay aguas.

b. INFOM system, partially duplicating ADP system, still operating



El Oreganal, Teculután, Zacapa (ADP). 8/5/86.

Well-constructed distribution tank.

Tanque de Distribución bien construido.

Buxup, Jacaltenango, Huehuetenango (ADP). 7/31/86.

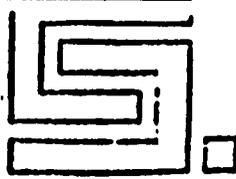
Source junction box. Note input well above overflow, lessening volume of output.

Caja de Reunión de los Nacimientos. Nótese el caudal perdido por el rebalse.



Xolcaja, Nahualá, Sololá (CARE). 7/28/86.
Antonio C.Chosh with children, new standpipe and latrine.

CURRICULA VITAE
(Guatemalan Professionals)



"CURRICULUM VITAE"

Ina. Carlos Solares Buonafina

Fecha de Nacimiento: 22 de Diciembre de 1930

I. "ESTUDIOS UNIVERSITARIOS"

Universidad de San Carlos de Guatemala, Facultad de Ingeniería.

Título obtenido: INGENIERO CIVIL

Fecha de graduación: 7 de Marzo de 1959

II. ESTUDIOS DE POST-GRUADO"

University of Minnesota

Título obtenido: MASTER OF SCIENCE IN CIVIL ENGINEERING

Major Field: Sanitary Engineering.

Minors: Public Health and Hydraulics

Fecha de Graduación: 2nd Summer Session Term 1960

III. ASOCIACIONES PROFESIONALES:

a) Colegio de Ingenieros de Guatemala-Colegiado No. 343

b) Asociación Interamericana de Ingeniería Sanitaria

A.I.D.I.S. (Presidente de AIDIS DE GUATEMALA) 1978-1981;

Vicepresidente por la Región II 1980-1982

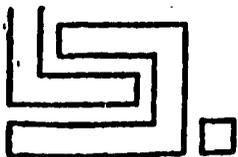
c) American Society of Civil Engineers (A.S.C.E.)

d) American Society of Plumbing Engineers (A.S.P.E.) Full Member

IV. "TRABAJOS PROFESIONALES"

a) Oficina de práctica privada de la Profesión - de Febrero de 1969 a la fecha.

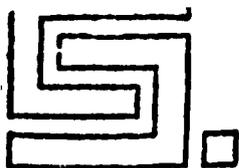
b) Jefe de la División de Ingeniería y Mantenimiento (1/2 tiempo) Instituto Guatemalteco de Seguridad Social, de Mayo 2 de 1963 a Julio 31 de 1977



V. 1

V. CONSULTORIAS PARA ORGANISMOS INTERNACIONALES:

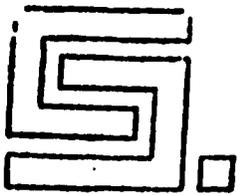
- a) Consultor Temporal de la Organización Panamericana de la Salud, C.M.S. para el Curso sobre Instalaciones Sanitarias en Edificios, en la Facultad de Ciencias Físicas y Matemáticas de la Universidad Autónoma de Nicaragua.
Managua, Nicaragua. de 18 a 29 de Septiembre de 1972.
- b) Consultor Temporal de la Organización Panamericana de la Salud, C.M.S., contrato AFC - 90504 (WU1), Asesoría para UNEPAR, Guatemala. De 8 de Junio a 8 de Agosto 1982.
- c) Consultor Temporal de la Organización Panamericana de la Salud, C.M.S., Proyecto Honduras 2105, Diseño y Tecnología para el Decenio del Agua Potable y el Saneamiento,-----
Tegucigalpa, D.C. de 10 de Octubre a 9 de Noviembre 1982.
- d) Consultor Temporal de la Organización Panamericana de la Salud, C.M.S., en Mantenimiento de Obra Civil (Edificios) é Instalaciones Hidráulicas y Sanitarias en Edificios Hospitalarios. Proyecto El Salvador - 5100. República de El Salvador, del 15 de Mayo al 14 de Agosto de 1983.
- e) Consultor del BID en Diseño de Plantas de Tratamiento de Agua Potable para el Instituto de Fomento Municipal,-----
INFOM, dentro del Convenio sobre Cooperación Técnica no reembolsable del Banco Interamericano de Desarrollo, BID.
BID. - ATH/SF-2043-Gu.
República de Guatemala, del 12 de Septiembre de 1983 al 11 de Febrero de 1984.
- f) Instructor del Curso Corto sobre "Sistemas de Bombeo para Acueductos Rurales", impartido a Ingenieros de UNEPAR, en coordinación con CFS.
Antigua Guatemala, del 18 al 20 de Julio de 1984.



- c) *Jefe de Proyectos del Departamento de Ingeniería Sanitaria (1/2 tiempo) Servicio Especial de Salud Pública (SESP).
Ministerio de Salud Pública y Asistencia Social
de Julio 10 de 1962 a Marzo de 1966.*
- d) *Jefe de la Oficina de Diseño del Departamento de Ingeniería Sanitaria Servicio Cooperativo Interamericano de Salud Pública. (S.C.I.S.P.).
de Febrero de 1962 a Junio de 1962*
- e) *Subjefe de la Oficina de Diseños del Departamento de Ingeniería Sanitaria
Servicio Cooperativo Interamericano de Salud Pública (S.C.I.S.P.)
de Septiembre de 1960 a Enero de 1962.*
- f) *Ingeniero Supervisor del Departamento de Ingeniería Sanitaria Servicio Cooperativo Interamericano de Salud Pública (S.C.I.S.P.)
de Noviembre de 1958 a Junio de 1959.*
- g) *Ingeniero Supervisor de Construcciones del Departamento de Ingeniería Sanitaria, Ministerio de Salud Pública y Asistencia Social.
de Junio de 1958 a Octubre de 1958*
- h) *Jefe de Construcciones del Departamento de Saneamiento Ambiental, Dirección General de Sanidad Pública, Ministerio de Salud Pública y Asistencia Social.
de Septiembre de 1957 a Mayo de 1958.*

"TRABAJO AD-HONOREM"

- a) *Ingeniero Asesor de la Sociedad Protectora del Niño de Mayo de 1971 a la fecha.*
- b) *Ingeniero Asesor de la Asociación de Scouts de Guatemala.*



CARLOS SOLARES BUONAFINA
INGENIERO CIVIL Y SANITARIO . .

DIAGONAL C. 14-79. CARRERA 10 - TELEFONO 601992 --- GUATEMALA. G. A.

V. 2

- g) Consultor Temporal de la Organización Panamericana de la Salud, O.P.S. en el "Estudio Panorámico sobre Disposición de Aguas Negras y Excretas en Guatemala", Falses seleccionados: Argentina, Brasil, Chile, Colombia, Guatemala, México y Perú.
Proyecto AM/ICF/CMS/030/F3/E4-85. 16 de abril a 15 de Mayo de 1985 - Guatemala.
- h) Consultor en Ingeniería Sanitaria para la "evaluación del Proyecto de Agua y Saneamiento Rural en Honduras", preparado para la Misión USAID en aquella República.
Actividad Nº 210 de WASH. Del 3 de Noviembre al 13 de Diciembre de 1985.

CURRICULUM VITAE DE:
RICARDO ADOLFO ALVARADO C.

18 Avenida 11-22, Zona 15
Vista Hermosa - 3
Teléfono 69 25 94

OBJETIVO:

Dirigir y realizar estudios de consultoría administrativa, principalmente en el área de Recursos Humanos.

EXPERIENCIA:

1974 a la fecha **Profesionales Consultores Asociados**
Fundador y Director de la Empresa.

1974 a la fecha **ESEADE - Programa de Maestría en Administración de Empresas**
y Economía de la Universidad Francisco Marroquín - Director.

1973 - 1974 **XEROX de Guatemala**
Gerente de Mercadeo

1968 - 1972 **GINSA**
Gerente de Eficiencia

1968 **Nylon de México, S. A.**
Ingeniero Industrial

ESTUDIOS:

1980 - 1982 **Escuela Superior de Economía y Administración de Empresas**
Universidad Francisco Marroquín
Magister Artium en Economía.

1971 - 1972 **Universidad de California en Los Angeles, U.S.A.**
Estudios de Post-Grado en Economía y Administración
de Empresas.

1965 - 1968 **Instituto Tecnológico de Monterrey-México**
Ingeniero Mecánico Industrial.

1961 - 1965 **Universidad de San Carlos de Guatemala**
Ingeniero Civil

DATOS PERSONALES:

NACIONALIDAD: **Guatemalteco**

FECHA DE NACIMIENTO: **30 de marzo de 1943** - **Edad 43 años**

ESTADO CIVIL: **Casado con dos niños**

IDIOMAS: **Castellano e Inglés**

DESCLOSE DE EXPERIENCIA

EXPERIENCIA LABORAL:

1974 a la fecha

PROFESIONALES CONSULTORES ASOCIADOS - P.C.A.

- Fundador de la Empresa Consultora en Administración "Profesionales Consultores Asociados" P.C.A.
- Profesionales Consultores Asociados P.C.A., Fundador y Director de 1974 desde su fundación a la fecha ha fungido como Director de la misma, dirigiendo y realizando estudios de consultoría en las áreas de Personal, Relaciones Industriales, Ingeniería Industrial, Economía y Mercadeo.

Ha participado en más de 50 proyectos elaborados en la Empresa P.C.A desde su formación a la fecha. Dichos proyectos comprenden todo tipo de Industrias y Compañías Comerciales: Vidrio, Cemento, Petroleras, de Automóviles, Tabaco, Medicinas, Distribuidoras, Electricidad, de Servicio, etc.

La mayor experiencia ha sido en trabajos de Evaluación de Puestos y Salarios, Selección de Personal, Encuestas Salariales, Estudios de Factibilidad Económica, Auditoría Administrativa y Estudios de Productividad y Eficiencia.

- Ha actuado como Consultor en el área de Personal y Relaciones Industriales en las Empresas: TEXACO, TABACALERA CENTROAMERICANA, EL TEJAR, CAVISA, FISHER & CIA.S.A., QUINDECA, INDETA y otras.
- Consultor para The International Science & Technology Institute, Inc. (ISTI) y la Agencia Internacional de Desarrollo (A.I.D.) en una encuesta a 102 empresas, para la Pequeña y Mediana Empresa, analizando sus oportunidades y problemas para su funcionamiento.

1974 a la fecha

UNIVERSIDAD FRANCISCO MARROQUIN - ESEADE -

- Director de la Escuela Superior de Economía y Administración de Empresas de la Universidad Francisco Marroquín (ESEADE) desde 1974 a la fecha.

Su función principal ha consistido en dirigir el Programa de MAGISTER ARTIUM en Administración de Empresas y Economía, contando aproximadamente con 200 alumnos y 25 profesores.

Sus actividades comprenden la selección de Catedráticos, Dirección del programa en cuanto a la selección de cursos a impartirse, atención y asesoría a alumnos en la elección de cursos, coordinación de cursos dentro del Pensum.

Miembro del Consejo Directivo del Centro de Procesamiento de Datos de la Universidad Francisco Marroquín, de 1975 a 1980.

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1973 - 1974

XEROX DE GUATEMALA.

- Gerente de Mercadeo en Xerox de Guatemala.
Responsable de cumplir la cuota anual de ventas a través de la Dirección de seis vendedores.

- Proporcionar servicio de Asesoría Técnica a todas las máquinas fotocopadoras instaladas a través de la dirección de cinco asesoras.

1968 - 1972

GINSA

- Gerente del Departamento de Eficiencia de la Gran Industria de Neumáticos Centroamericana - GINSA. Dicho Departamento estaba dentro de la División de Relaciones Industriales, por lo que durante esos 4 años, adquirió experiencia en todas las actividades relacionadas con personal, Relaciones Industriales y Estudios de Productividad.
Las responsabilidades del puesto eran:
Evaluación de Puestos y Salarios, Estudios de Tiempos y Movimientos, Selección de Personal, Estudios de Organización, Evaluación de Proyectos, Análisis de Costo/Beneficio, Control de Salarios, Impartir Cursos de Entrenamiento y Capacitación, Estudios de Procesos, Elaboración de Sistemas de Trabajo a Destajo, Sistemas de Incentivos, Mejora de Métodos, Diseño de Trabajos, Estudios de Reducción de Costos, Control de Inventarios, Manejo de Materiales, Evaluación por Mérito, Elaboración de Normas y Procedimientos Administrativos.

1968

NYLON DE MEXICO, S. A. MONTERREY-MEXICO

- Ingeniero Industrial en la Revisión y Actualización del Manual de Descripciones y Evaluaciones de Puestos y Salarios, en Nylon de México, S. A.

DOCENCIA :

- Catedrático en la Universidad de San Carlos de Guatemala, de Evaluación de Proyectos e Ingeniería Industrial, 1968 - 1970.
- Catedrático en la Universidad Rafael Landívar, de Ingeniería Industrial - 1971.
- Catedrático en la Escuela Superior de Economía y Administración de Empresas de la Universidad Francisco Marroquín, de "Microeconomía", 1975 a la fecha.
- Instructor del curso "Evaluación de Puestos y Salarios" en la Asociación de Gerentes de Guatemala desde 1982 a la fecha (se imparte una vez por año)
- Instructor de cursos FOREM de la Asociación de Gerentes de Guatemala.

ASOCIACIONES A LAS QUE PERTENECE:

- Administrative Managerial Society
- American Association of Industrial Management
- Cámara de Industria de Guatemala
- Asociación de Gerentes de Guatemala
- Club Rotario de la Asunción - Guatemala.

CURRICULUM VITAE

NOMBRE: ELENA HURTADO
DIRECCION: 8 CALLE 18-91 ZONA 15
 VISTA HERMOSA I
 GUATEMALA, GUATEMALA
FECHA DE NACIMIENTO: 9 DE JUNIO DE 1953
ESTADO CIVIL: CASADA
NACIONALIDAD: GUATEMALTECA

OBJETIVO PROFESIONAL

Participar en el diseño, implementación y evaluación de programas de salud en países en vías de desarrollo, con especial interés en el área de antropología aplicada a la nutrición, salud materno-infantil y educación en salud.

EDUCACION

INSTITUCION	FECHAS ASISTENCIA	TITULO	ANO OTORGADO
University of Kansas Lawrence, Kansas EEUU	1970- 1971	-	
Universidad del Valle, Guatemala, Guatemala	1971- 1972	-	
Newcomb College Tulane University New Orleans, Louisiana EEUU	1972- 1974	B.S. Psicología/ Antropología Cum Laude	1974
School of Public Health University of California Los Angeles, California EEUU	1974- 1976	M.P.H.	1976

BECAS, HONORES

Brandt Dixon Scholarship, Newcomb College,
Tulane University, 1972-1974

Scholarship Research Corporation,
New York, 1976-1978

Grant, Battelle PDP Fellows Program,
Seattle, Washington 1978-1980

Grant, Ford-Rockefeller Foundation
1979-1981

Grant, United Nations University
Tokio, Japan 1984-1985

EXPERIENCIA PROFESIONAL

INSTITUCION	CARGO	FECHAS
Division de Planificacion Alimentaria Nutricional INCAP, Guatemala	Investigadora	Junio 1984- Presente
Division de Formacion de Recursos Humanos Ministerio de Salud Publica Guatemala	Asesora del Programa de Investigacion del Adiestramiento de Promotores Rurales de Salud (PRINAPS)	Enero 1981- Dic. 1983
Division de Desarrollo Humano, INCAP Guatemala	Asociada en Investigacion	Abril 1979- Dic. 1980
APROFAM AGROSALUD Academia de Ciencias Guatemala	Consultora	Julio 1978- Marzo 1979
Institute for Social Science Research University of California Los Angeles, California EEUU	Asistente de Investigacion	Sept. 1976- Junio 1978
Division de Desarrollo Humano, INCAP Guatemala	Asistente de Investigacion	Sept. 1974- Mayo 1976

EXPERIENCIA DOCENTE

INSTITUCION	ASIGNATURA	FECHAS
Escuela de Salud Publica INCAP	Antropologia Social	1982- 1984
Escuela de Nutricion INCAP	Factores Sociales y Culturales en Ali- mentacion y Nutricion	1985- Presente
INCIENSA Tres Rios, Costa Rica	Metodologia Antropo- logica en Estudios de Salud y Nutricion	Abril, 1984

PUBLICACIONES

- Hurtado, E. Estudio de las características y practicas de las comadronas tradicionales en una comunidad indigena de Guatemala.
En Villatoro, E. M. (Ed.) Etnomedicina en Guatemala Universidad de San Carlos de Guatemala, Centro de Estudios Folkloricos, Coleccion Monografias, vol. 1, 1984.
- Delgado, H. L. et al. Health and nutrition conditions in the Central American countries. An overview and feasible strategies for the near future. Mobius, Vol. 5 (3), July, 1965: 116-127.
- Delgado, H. L. et al. Lactation in rural Guatemala: nutritional effects on the mother and the infant. Food and Nutrition Bulletin, Vol. 7 (1), March, 1965: 15-25.
- Scrimshaw, S. C. M. & E. Hurtado Field Guide for the study of health-seeking behavior at the household level. Food and Nutrition Bulletin, Vol. 6 (2), June, 1984: 27-45.

TRABAJOS NO PUBLICADOS

- Hurtado, E. & A. Esquivel Health-seeking behavior of families in a Guatemalan Indian community.
Documento INCAP, 1984.

- Hurtado, E. & A. Esquivel Health-seeking behavior of families in a Guatemalan Ladino community.
Documento INCAP, 1984.
- Hurtado, E. & B. Hernandez Estudio de caso de un Centro de Salud de la Ciudad de Guatemala.
Documento INCAP, 1985.
- Hurtado, E. Barreras hacia la vacunacion en el area rural de Guatemala. Documento INCAP, Marzo, 1985..
- Hurtado, E. & M. Fischer Produccion y pre-ensayo de material educativo para el Departamento de Obstetricia del Hospital Roosevelt. Documento INCAP, Agosto, 1986.
- Sanchez, G. & E. Hurtado Health-seeking behavior of families in a Nicaraguan community.
Documento INCAP, 1985.
- Sanchez, G. & E. Hurtado Health-seeking behavior of families in two communities in Costa Rica.
Documento INCAP, 1984.
- Vielman, L. & E. Hurtado Estudio de conocimientos, actitudes y practicas de salud y nutricion en Guanagazapa, Escuintla. Documento INCAP, 1985.
- Villatoro, E. & E. Hurtado Estudio de conocimientos, actitudes y practicas de salud y nutricion en la Aldea Rio Hondo, Malacatancito, Huehuetenango.
Documento INCAP, 1985.

CURRICULUM VITAE

NOMBRE: LIZA MARIA VIELMAN TEJEDA

EDAD: 30 años

IDIOMAS: Hablo y escribo el inglés, leo kekchí

DIRECCION ACTUAL: Av. Hincapié 21 -77, Zona 13

ESTUDIOS

- 1984 Licenciada en Antropología, título obtenido en la Universidad del Valle de Guatemala. La tesis fue la elaboración de una película en videocassette (VHS) titulada "Los Murales de Bonampak".
- 1985 (15-26 de abril) Curso de antropología aplicado a la salud y nutrición en INCIENSA (Instituto costarricense de investigación y enseñanza en nutrición y salud), Costa Rica.

TRABAJOS REALIZADOS

- 1979 Entrevistadora del Proyecto Cambio Cultural y Fertilidad Diferencial en Guatemala. Esta encuesta se llevó a cabo en doce comunidades del área rural y en tres estrato socioeconómicos de la capital.
- 1980 (Junio, diciembre) Trabajo de campo con los kekchíes de la aldea Plan Grande, Livingston, Izabal para investigar sobre la curación mágico religiosa de la "picadura" causada por la serpiente Barba Amarilla.
- 1981 (enero, febrero) Jefe de grupo y entrevistadora en el Proyecto de Comunicación Masiva aplicada a la Salud Infantil (PROCOMSI). Esta encuesta fue auspiciada por la Universidad de Stanford, California y el Ministerio de Salud Pública de Honduras y llevada a cabo en el municipio de Sábana Grande, Francisco Morazán y en los municipios de Yuscarán y Danlí, El Paraíso de la República de Honduras.

- 1981 (junio-agosto) Trabajo de campo dirigido por el Dr. Carl Kendall en las aldeas de El Ocotal y El Zarzal, Yuscarán El Paraíso, Honduras para realizar una evaluación sobre el trabajo que hacen las Guardianas de Salud.
- 1982 (junio, julio) Jefe de campo en el municipio de San Luis, El Petén, para recopilar mitología mopán y kekchí. Esto se hizo como parte del curso de trabajo de campo que llevan a cabo los estudiantes de la Facultad de Ciencias Sociales de la Universidad del Valle de Guatemala
- 1982-84 Auxiliar en la Facultad de Ciencias Sociales, Universidad del Valle de Guatemala
- 1985 (marzo-mayo) Investigación etnográfica en el municipio de Guanagazapa, Escuintla para investigar sobre las enfermedades diarreicas, materno infantil, crecimiento y desarrollo así como el uso de los recursos de salud. Este estudio fue dirigido por la Lic. Elena Hurtado y auspiciado por INCAP (Instituto de Nutrición de Centroamérica y Panamá). El informe final se presentó al Ministerio de Salud Pública y Asistencia Social de Guatemala.
- 1985 (julio al presente año, 1986) Asesor del Programa de Estudios Antropológicos que lleva a cabo el Ministerio de Salud Pública y Asistencia Social de El Salvador a través de INCAP.

CONFERENCIAS

- 1985 (13 de febrero) Conferencia y presentación de la película "Los Murales de Bonampak, en el Museo Ixchel, Guatemala
- 1985 (20 de marzo) Conferencia y presentación de la película "Los Murales de Bonampak, en la Asociación de Médicos y Escritores, Guatemala
- 1986 (15 de febrero) "Hábitos de alimentación y consumo durante la lactancia materna y el primer año de vida en Guatemala. Primera Jornada Materno Infantil realizada en Antigua, Guatemala.

- 1986 (15 de marzo) "Hábitos de alimentación y consumo durante la lactancia materna y el primer año de vida en Guatemala. Segunda Jornada Materno Infantil realizada en Zacapa, Guatemala.
- 1986 (16 de mayo) "Principios y Conceptos de Antropología Aplicados a la comunidad". Conferencia dictada para el IV Congreso Nacional de Enfermería El Salvador.



Xolcaja, Nahualā, Sololá (CARE). 7/28/86.
Housewife watches as Water Committee member demonstrates
her new connection and displays her well-washed son.