WATER AND SANITATION FOR HEALTH PROJECT

Operated by
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MID-TERM EVALUATION OF THE CARE WATER SUPPLY AND SANITATION PROJECT IN BELIZE

WASH FIELD REPORT NO. 206

MAY 1987

Prepared for
the USAID Mission to Belize
WASH Activity No. 333

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by

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May 1987

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GLOSSARY OF ACRONYMS

GOB	Government of Belize
HECOPAB	Health Education and Community Participation Bureau (under MOH)
IPTBH	Improved Productivity Through Better Health Project
MACH	Maternal and Child Health Program
MOH	Ministry of Health
MNR	Ministry of Natural Resources
O&M	Operations and maintenance
PHI	Public Health Inspector
PVO	Private Voluntary Organization
REAP	Relevant Education for Agricultural Production
RWS	Rudimentary Water System
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
VLWS	Village-Level Water and Sanitation Project
VWSC	Village Water and Sanitation Committee
WASA	Water and Sewerage Authority (under the Ministry of Natural Resources)
WASH	Water and Sanitation for Health Project (funded by AID)
WS&S	Water Supply and Sanitation

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The mid-term evaluation of the USAID- and CARE-funded Village-Level Water and Sanitation (VLWS) Project in Belize was prepared by the WASH team of Mr. J. Ellis Turner and Dr. Shirley Buzzard. They wish to express their appreciation for the excellent cooperation received from Sam Dowding, USAID Project Officer for the VLWS Project; for the support from Mrs. Eleanor Hall, Permanent Secretary, Ministry of Natural Resources; and for the valuable assistance from CARE, particularly from Frank Brechin, Country Director; and Estilito Loria, VLWS Project Director.

EXECUTIVE SUMMARY

This report constitutes the mid-term evaluation of the USAID- and CARE-funded Village-Level Water and Sanitation (VLWS) Project in Belize.

The program is financed in the following amounts: $700,000 from USAID; $340,000 from CARE; and $260,000 of in-kind contributions from the Government of Belize including $45,000 from the Ministry of Health. The VLWS Project was initiated in July 1984, and an agreement was signed between USAID and CARE on August 30, 1984. The project is scheduled for completion in December 1987.

The VLWS Project is designed to provide water supply and sanitation (latrines) to 16 villages in the Orange Walk and Corozal districts. The project will install approximately 100 new wells with India Mark II handpumps and two rudimentary water systems (RWS)--distribution systems that use either electrical or diesel-driven pumps. The project will also install up to 1,600 latrines and is intended to serve an estimated 8,500 beneficiaries.

To evaluate project performance, the WASH evaluation team visited 9 of the 16 communities in the VLWS Project and also interviewed USAID, CARE, and Government of Belize personnel. The evaluation was conducted from March 27 through April 10, 1987.

The findings and recommendations are contained in Chapters 5 and 6, respectively, of this report. Recommendations are addressed specifically to USAID, to the Government of Belize, and to CARE. The team's principal findings and recommendations, however, especially those related to project sustainability, are summarized in the paragraphs that follow.

On the basis of the observations made and information gathered, the WASH team believes that the VLWS project has developed a good health education program for both adults and school children. Project personnel are using the system of health education modules to work closely with the communities to increase the impact of the water supply and sanitation infrastructure. Furthermore, the facilities being constructed are sound but implementation of the project is slow. Despite the many positive aspects of the project, the team is concerned that the project is addressing inadequately those issues that will lead to long-term sustainability of the project. For example:

1. No counterpart personnel are assigned to the work with the VLWS Project (other than the national coordinator who is also responsible for two other major projects). As a result, the possibilities for developing governmental capabilities to implement similar projects are limited.

2. Operations and maintenance (O&M) training at the community level is poorly planned and sporadic. Although there has been a positive development of project ownership at the community level (and less reliance on Government), the skills to carry out O&M activities are not being developed.

3. The level of community participation in the self-help portion of the project (digging latrine pits and constructing shelters, providing local materials, and installing pipe) has been high. The community has had little involvement, however, in planning and evaluating the project or in those areas which will lead to the development of the community's long-term organizational and management capabilities.

4. The concept of fee collection for O&M and expansions has not been adequately addressed. Few communities are prepared to collect and manage operating funds to ensure continued operation of their projects.

5. The Ministry of Natural Resources (through the Water and Sewerage Authority) is inadequately equipped (in terms of personnel, equipment, and spare parts) to assume responsibility for the projected handpump maintenance load in Orange Walk and Corozal. Therefore, when villages request assistance from the Government, there are and will continue to be long delays (up to six weeks) in responding to these requests. The private sector could play an important role in supporting handpump maintenance.

6. Governmental capabilities to install wells that are long lasting and in a timely fashion are deficient. Further, better equipment and long-term training of well-drilling crews are needed.

The WASH team recommends that USAID, CARE, and the Government of Belize take the following actions to address the critically important area of project sustainability:

1. Additional staff from both CARE and the Ministry of Natural Resources (MNR) are needed to speed implementation of the project and to develop project capabilities within the Government of Belize. CARE also should focus on the need to develop the long-term organizational and management capabilities of communities. CARE should improve its own staff capabilities in this area.

2. CARE should develop (along the lines of its health education program) training modules that can be used in this project and others for O&M training and for management training of the Village Water and Sanitation Committees. The training should be field oriented (for maintenance) and cover such areas as conflict resolution, setting and collecting fees, record-keeping, and so forth.

3. CARE should review and use the technical assistance information that has already been provided by WASH and addresses principal areas of concern. This information is contained in the "Framework and Guidelines for CARE Water Supply and Sanitation Projects," WASH Technical Report No. 40, and "Report on Technical Assistance to the Village-Level Water and Sanitation Project," WASH Field Report No. 193.

4. The Ministry of Natural Resources should provide additional funds to support the handpump maintenance crews to increase their effectiveness and reduce the downtime of broken handpumps.

   To reduce its workload, the Government should encourage the development of the private sector to provide spare parts and repairs for the India Mark II handpump. The Government of Belize should seek USAID and CARE assistance in this effort.

5. To increase well-drilling effectiveness, USAID should provide a long-term (1-1/2 to 2 years) advisor to train MNR drilling crews. If possible, new light-weight drilling equipment should be provided to replace the aging existing equipment. The team believes, however, that equipment replacement is secondary to the training of the MNR in managing and carrying out well-drilling operations.

Chapter 1

INTRODUCTION

1.1 Purpose of the Evaluation

This report constitutes a mid-term evaluation of the Village-Level Water and Sanitation (VLWS) Project, which is jointly funded by USAID, CARE, and the Government of Belize (GOB), and implemented by CARE and GOB. The purpose of the evaluation is to measure the general progress of the program, to identify strengths and weaknesses in project implementation, to assess the long-term prospects for project sustainability, and to make recommendations to strengthen the program.

1.2 Role of the Water and Sanitation for Health Project

In October 1986, the USAID Mission in Belize requested the assistance of the Water and Sanitation for Health (WASH) Project to conduct the mid-term evaluation of the VLWS Project. A proposed scope of work was forwarded to WASH, the request for assistance was approved by the AID Office of Health, and Activity Implementation Plan No. 333 was issued. The evaluation was scheduled for late March 1987.

Following approval of the Mission request, WASH selected a two-person evaluation team: J. Ellis Turner, a sanitary engineer and WASH's Associate Director for Engineering and Technology; and Dr. Shirley Buzzard, an anthropologist and specialist in community development. The WASH team carried out the project evaluation in Belize from March 27 through April 10, 1987.

1.3 Scope of Work

In addition to the general purpose of the evaluation (described above), USAID requested that the WASH team include the following specific points in its evaluation:

- Review project documentation at USAID/Belize and CARE/Belize.
- Interview project personnel at AID, CARE, and the Government of Belize.
- Visit project villages in the Orange Walk and Corozal districts to discuss project goals and implementation with villagers, village councilors, and members of the Water and Sanitation Committee and to examine the work completed.

- Review the progress of and the problems encountered in all aspects of project implementation, including well and latrine construction, health education, and community development.

- Review in depth the content, methods, and implementation of the health education/community development component and assess its impact on the well/latrine components as well as on the success of the project.

- Assess the viability of the three-tier maintenance system in view of the economic and social conditions in villages, the villagers' willingness to participate, and its overall structural feasibility.

- Assess whether effective CARE/GOB community interaction and coordination has been established to sustain efficient project implementation and continuation of the project after its termination.

- Identify lessons learned from the project to date.

- Make recommendations (to USAID, CARE, and the GOB) to improve project performance.

1.4 Village-Level Water and Sanitation Project

1.4.1 Purpose and Objectives

The VLWS Project, which is jointly funded by USAID and CARE, is a three-year effort focusing on approximately 1,600 households (approximately 8,500 persons) in the districts of Corozal and Orange Walk in northern Belize.

The original water supply component of the project included the installation of up to 160 India Mark II handpumps (one per ten families by WHO/PAHO standards) on either new or rehabilitated wells. After completion of the village surveys and the provision to add the construction of two rudimentary water systems (RWS) to the project (in January 1986), the target for handpump installation was reduced to approximately 100.

The sanitation component of the project includes the construction of up to 1,600 latrines (one per family). The project places strong emphasis on health education for all age groups and includes both formal school-based programs and informal community-based education.

1.4.2 Budget

Budgets for the VLWS Project are shown in Table 1 on the following page. Note that the table shows the sources of funding for the project, not the project responsibilities, which are discussed in Chapter 3 of this report.

Table 1

SUMMARY OF VLWS PROJECT FUNDING[1]

	Category	USAID	CARE	Government of Belize
I.	Personnel/ Administration	$112,540	$320,170	--
II.	Materials and Equipment	471,140	--	--
III.	Operations	18,205	19,830	--
IV.	Surveys and Evaluations	11,428	--	--
V.	In-kind Contributions	--	--	$260,000
VI.	Contingency and Overhead	86,687	--	--
	TOTAL	$700,000	$340,000	$260,000

Total Project Funds = $1,300,000

[1] All costs are in U.S. dollars.

1.4.3 Time Frame

The VLWS Project, which was initiated in July 1984, is scheduled for completion in December 1987. CARE, however, is currently requesting that USAID extend the end of the project date by six months.

1.5 Water Supply and Sanitation Sector in Belize

Currently, three major projects are under way in Belize to increase water supply and sanitation coverage in rural areas. In the northern districts of Orange Walk and Corozal, the VLWS Project is serving 16 villages. In the three central districts, Cayo, Belize Rural, and Stann Creek, the USAID-funded Improved Productivity Through Better Health (IPTBH) Project is investing $3,308,000 (U.S.) to improve coverage in 60 to 90 villages. In the southern district of Toledo, UNICEF is completing a $778,000 (U.S.) rural water supply and sanitation (WS&S) project that will serve approximately 30 villages.

To coordinate the activities of donors and to establish criteria and standards for water supply and sanitation, the National Coordinating Committee on Water Supply and Sanitation has been established. This committee has been instrumental in promoting the exchange of information and resources among projects, establishing national WS&S standards, and standardizing the use of the India Mark II handpump in all handpump projects.

Until recently, the Ministry of Health (MOH) was responsible for all WS&S activities (including well drilling and handpump installation and maintenance). As of April 1, 1987, these responsibilities were transferred to the Water and Sewerage Authority (WASA) under the Ministry of Natural Resources.

1.6 Prior Studies and Reports

WASH has been involved in CARE's water and sanitation efforts for some time. During the first six months of 1985, WASH consultant Richard Donovan worked with CARE/Belize staff to design and implement a baseline study for the VLWS Project. During that assignment, Mr. Donovan helped define the criteria for choosing communities for the project and designed a village water and sanitation questionnaire to be used in 58 communities. The profiles of 58 communities were developed and used to select the 16 communities that would participate in the VLWS Project. Mr. Donovan also designed a household questionnaire (baseline survey) and a scoring sheet for gathering information about each community once it had been selected. Mr. Donovan's report, "CARE-Belize Water Supply and Sanitation Baseline Survey," was published as WASH Field Report No. 147 in January 1986.

In April 1986, WASH and CARE collaborated on a workshop, held in Peru, for CARE personnel from ten Latin American and Caribbean countries. Three personnel from CARE/Belize attended the workshop. To prepare for the workshop WASH developed a planning guide to assist CARE in developing projects; "Framework and Guidelines for CARE Water and Sanitation Projects," published as WASH Technical Report No. 40, covers all aspects of planning a water project, community involvement, health education, and evaluation.

Following the workshop in Peru, Mr. Turner made a week-long visit to the CARE/Belize VLWS Project. The objective of that visit was to observe some of the technical and management aspects of the project, giving particular attention to the design of the RWS to be installed in San Antonio. Following that visit, WASH published a summary of the observations and findings in WASH Field Report No. 193, "Report on Technical Assistance to the Village-Level Water and Sanitation Project, CARE/Belize."

Chapter 2

METHODOLOGY

As indicated earlier, the evaluation team consisted of a civil engineer and a development anthropologist who were in Belize from March 27 through April 10, 1987. The primary method for collecting information was through interviews with CARE staff, with Government officials affiliated with the project, and with the directors of other water and sanitation programs in Belize. A listing of people interviewed is contained in Appendix A of this report.

In addition to interviews with officials, the evaluation team visited 9 of the 16 communities in which the project is being implemented. The evaluation team chose the communities to be visited on the basis of several variables, as follows:

- Reported (by USAID and CARE) success or problems with the program. The evaluation team wanted to visit the most successful and least successful projects.
- Length of time in the program. The evaluation team wanted to visit communities which had been in the program from the beginning as well as those that were recently under way.
- Presence of other CARE programs, such as Maternal and Child Health (MACH) or income generation (GROWTH). The proposal for the project indicates that one component of the water project would be the creation of home gardens.
- Type of water system. The evaluation team wanted to visit communities with wells, but also wanted to see all three communities where water distribution systems (called rudimentary water systems or RWS) were either planned or being considered.

Table 2, which appears on the following page, shows all 16 communities in the project. Those included in the sample are underlined.

Visits to each community in the sample lasted two to three hours. CARE arranged meetings for the evaluation team with members of the water and sanitation committees. Usually, members of the Village Council also were present. In some cases, people from the community attended the meetings as well. In at least two instances, the evaluation team held public meetings attended by more than 50 people. The team also attended a community meeting in Chan Pine Ridge that was held to discuss the WS&S project with CARE and Ministry of Health (MOH) personnel.

Table 2

COMMUNITY LIST

Community[1]	Rating[2]	RWS[3]	Other CARE Programs
Year 1:			
San Antonio	Good	Yes	GROWTH
Buena Vista	Good	No	MACH
Year 2:			
Chunox	Good	No	--
Nuevo San Juan	Good	No	GROWTH, MACH
San Luis	Good	No	MACH
Santa Marta	Good	No	MACH
San Victor	Acceptable	No	MACH
Year 3:			
Chan Chen	Acceptable	No	--
Louisville	Slow	No	GROWTH
San Pedro	Acceptable	No	--
Santa Clara/San Roman	Slow	Yes	GROWTH, MACH
Cristo Rey/Yo Chen	Acceptable	No	MACH
Douglas	Slow	Yes	GROWTH
Chan Pine Ridge	Slow	No	GROWTH
Santa Cruz	Acceptable	No	--
Trinidad	Slow	No	GROWTH

[1] Those communities that are underlined were visted by the evaluation team.

[2] Ratings of progress are a result of interviews with USAID and CARE.

[3] An RWS is under construction in San Antonio. In the other two communities, planning is still in progress.

Although CARE staff arranged the meetings, accompanied the evaluation team to the communities, and introduced the team, they did not attend the meetings. During the meetings, the team held semistructured interviews. A list of topics covered during each meeting is contained in Appendix B.

The evaluation team believes that its findings are based on an accurate assessment of the program. CARE staff were cooperative and open regarding their problems, and community members spoke freely about their thoughts on the process and products of the project.

Two factors may have had some influence on the team's perceptions. First, it was the end of a very dry season, rainwater catchment tanks were empty, and the availability of water was of concern to all. Second, it was the height of the sugar cane-cutting season, and most men were away for long hours cutting cane. Pit digging, latrine construction, and general enthusiasm for community activities all slow down during the cane cutting season. The evaluation team felt, however, that visible evidence of work that had been done and the information provided from interviews enabled the team to make an accurate assessment of the project's strengths and weaknesses.

Chapter 3

PROGRAM DESCRIPTION

3.1 Roles and Responsibilities of the Implementing Organizations

Although the principal project funding is provided by USAID, both CARE and the GOB also have offered financial support and are the project implementing organizations. The roles of each are described in the following sections.

3.1.1 CARE

CARE has primary responsibility for implementing the VLWS Project. The financial assistance of both USAID and CARE are for personnel, materials, and transportation to assist CARE in carrying out the project. The main elements of CARE's responsibility are to

- Prepare and carry out village profiles
- Select villages for the project
- Conduct baseline studies in each of the villages
- Provide project promotion and health education in each project village
- Furnish project materials, except local labor and materials
- Offer technical assistance in water supply and latrine design
- Train village water and sanitation committees in community organization, management, and operations and maintenance (including fee collection and use)
- Coordinate the inputs of the Government of Belize in the project.

3.1.2 Government of Belize

From the inception of the project, the Ministry of Health (MOH) had responsibility for siting wells and latrines, drilling wells and installing handpumps, and maintaining all below-ground well and handpump components. MOH responsibilities were carried out through the Public Health Inspectors (PHIs), one each in Corozal and Orange Walk, and the ministry's well drilling and repair crews. The MOH also had responsibility for the storage and inventory of project materials in its warehouses prior to delivery to project sites.

With the shift in responsibility for all water supply and sanitation from the MOH to the Ministry of Natural Resources (MNR), most of the project responsibilities will also be transferred to the MNR, including the transfer of all drilling personnel and equipment. The Public Health Inspectors of the MOH will continue to be involved in the VLWS Project and will support health education on an informal basis. The MOH will also continue to approve well and latrine locations and test for water quality. The MOH (with assistance from USAID) has established a water quality laboratory for testing of both new and existing water sources.

3.2 Community Responsibilities

Each community in the VLWS program is responsible for developing a Village Water and Sanitation Committee (VWSC). Regarding wells, community members cooperate with CARE, the PHI, and WASA in choosing well sites. Community members are encouraged to assist with well drilling by watching the operation, providing drilling crews with food, accommodations, and some local labor. When the wells are drilled, WASA builds a concrete drainage pad and soak-away, but community members are responsible for all above-ground maintenance on the pumps. The VWSC is responsible for raising funds to pay for any repairs. Below-ground repairs are the responsibility of WASA.

In those communities where RWS will be used, community members provide all labor to dig trenches and install pipes. The VWSC has the continuing responsibility to collect funds to pay for fuel to run pumps and generators, to maintain and repair all elements of the system, and to supervise the connection of pipes to the system as it expands.

In the sanitation component of the project, each family is responsible for digging the pit for their own latrine. They construct slabs, risers, and collars from molds provided by CARE but belonging to the community. CARE provides approximately $88.00 (U.S.) in materials for constructing each latrine. Each family is then responsible for constructing the house over the pit. The VWSC is responsible for storing and maintaining the molds and for storing and distributing materials used in construction.

In the health education component of the project, one member of the VWSC is chosen to be responsible for adult health education. That person goes to special training workshops held by CARE. School teachers are responsible for the school component of the project. Many primary school teachers are from the communities in which they teach, and these teachers are trained to use the 11 health education lesson plans in their science classes. When community health education programs are offered, CARE staff are responsible for most of the presentations, with the cooperation of the VWSC health education representative.

Chapter 4

PROJECT DEVELOPMENT AT THE COMMUNITY LEVEL

4.1 Community Selection

The 16 project communities were chosen from 58 communities in Corozal and Orange Walk Districts. The process of selection was essentially a collaborative effort between the MOH, CARE, and USAID.

First, letters were sent to all Village Council Chairmen explaining a proposed visit to the community. Then a village water and sanitation profile was completed for each community. This profile is an overview of water and sanitation resources and problems in each community. Each profile is based on interviews with formal and informal community leaders and was completed by a team of CARE and MOH staff. The profiles also rate the level of interest the community has in a project such as the VLWS.

The original criteria for choosing project communities were as follows:

- A population of between 10 and 250 families
- All-weather access road
- Evidence of sufficient community cohesion to carry out the project
- Long distance to present water supply
- History of water- or excreta-related disease
- Poorly functioning current water supply.

Originally, all of the projects were to be handpump projects, but in some communities deep wells were infeasible. For that reason, three communities were selected to carry out RWS projects.

Once the communities were chosen, the household baseline study was carried out by CARE, MOH, and community leaders. Through a series of meetings, Village Water and Sanitation Committees (VWSCs) were formed, and the project was explained to them and to members of the community by CARE staff. The method and criteria for choosing the communities are explained in greater detail in the Donovan report (WASH Field Report No. 147, January 1986).

The communities chosen during the last year of the project used the baseline household survey somewhat differently than they did in the first two years. Although someone in every household was interviewed, 50 percent of the households were given a shorter form. Further, the survey was conducted after the VWSC was formed so that it could be used by them to introduce the project to

the community. The data provided by the household survey was very useful in developing both the technical and health education/community participation components of the project. Although all of the survey data were tabulated, the results have not been used by the project to evaluate project progress and effectiveness. No follow-up surveys have been conducted. Presumably, the survey will be repeated at the end of the project though no plans exist for such activity at this time.

4.2 Community Organization

Each community in Belize is run by a Village Council, which usually has seven members. The Village Council members are elected, but tend to be highly political and have a history more of factionalism than cooperation, though some communities have more progressive councils than others. Village Councils have no regular source of funds and must hold either fairs or raffles when money is needed for some community project.

The communities in which the projects are being implemented are relatively homogeneous. Some have experienced in-migration of refugees from Guatemala and El Salvador, but others have policies which discourage settlement to "aliens." All of the communities have an agricultural base, and most depend on the declining sugar cane industry. Some individuals own plots of land on which they plant their own cane and some men work as casual laborers on the larger plantations. In a few communities, such as Chunox, vegetable farming is the primary economic activity.

The vehicle for implementation of the VLWS in the community is the organization of the VWSC. Membership on the committee is largely by self-selection. Anyone who expresses an interest can be on the committee. VWSCs have seven to ten members, are mostly men, and in every case have the full endorsement of the Village Council. Oftentimes, several members of the VWSC are also members of the Village Council. The VWSCs were organized to sidestep the political in-fighting that characterizes the Village Council.

VWSC responsibilities are as follows:

- Representing the project in the community
- Organizing the distribution of molds for latrine construction and distributing cement and other construction materials
- Resolving problems and conflicts relating to the VLWS Project
- Requesting technical assistance from CARE or WASA, when needed
- Carrying out the health education program
- Maintaining the system once it is installed

- Supervising the construction of latrines
- Motivating people to build latrines and participate in the education program
- Coordinating the construction of the RWS if one is being installed.

Usually, one member of the committee is designated the health education representative, and one member the maintenance representative.

4.3 Planning

Project planning and coordination are the responsibility of the CARE project manager, who works with the GOB National Water and Sanitation Coordinator (formerly under the MOH, but now under the MNR). The CARE project manager also supervised two expatriate advisors (the Health Educator and the water and sanitation advisor) during the first two years of the project. They have since been replaced by local personnel and a technical consultant.

Project implementation has been scheduled to permit the entry of two communities in the project during the first year, six during the second year, and eight during the third year. The program has been designed to follow a consistent sequence: community selection, formation of village committees, health education, latrine construction, and handpump or RWS construction. Because of the length of the health education curriculum, this element continues throughout the project.

4.4 Design and Construction

All technical design work and construction supervision (except well drilling) is CARE's responsibility. As mentioned above, CARE provided a water and sanitation advisor for two years (until February 1987). The advisor had the responsibility for selecting a latrine design and providing construction details to villagers. For the VLWS Project, the advisor selected the Ventilated Improved Pit (VIP) latrine. Two designs are provided--a standard VIP latrine with a nine-foot deep pit and a raised latrine that is constructed on a raised concrete block base when high groundwater conditions are encountered.

For water supply, 14 of the 16 project villages will receive handpumps. In these villages, CARE assists the community in locating the well sites and in siting latrines to ensure that they are at least 100 feet from the nearest well. In two communities, CARE is designing an RWS that will provide yard connections at each house. CARE has the responsibility for supervising all construction.

With the departure of the water and sanitation advisor, CARE is using a local consultant to design the RWS projects and provide construction supervision. CARE is following Belizian norms for the design and construction of both water and sanitation systems. Where norms do not exist, CARE uses its experience and engineering judgment to provide a consistent practice.

All construction (with the exception of well and handpump installation) is carried out by villagers. For latrines, CARE provides cement, rebar, forms, roofing materials, and the riser pipe. For the water systems, CARE furnishes piping materials, valves, pumps, and miscellaneous components. For both latrine and water system construction, the community provides all locally available materials (pipe bedding, sand, rock, and so forth).

4.5 Health Education Program

The health education component of the project was designed by an expatriate technical advisor who worked with the project during the first two years. From the beginning, the health education component focused on school children and was modeled on a successful CARE experience of developing lesson plans for schools.

The Relevant Education for Agricultural Production (REAP) Program began in 1976 as a pilot program in eight primary schools. As it evolved, it included CARE; the Peace Corps; and the Ministries of Education, Agriculture, and Health. The purpose of the program was to teach young people how to grow vegetables, how to care for animals, and to expose them to some of the rudiments of agriculture. The REAP Program was successful and spread throughout Belize. The ten lesson plans and accompanying manuals have been widely distributed and many primary school teachers have been trained in their use.

The VLWS health education program included two health educators in most villages, a schoolteacher and a community member interested in doing health education. The schoolteacher directed the school health education program, while the community member concentrated on adult sessions. The adult health educator often worked with children as well. Health education groups included adults and children and were often facilitated by both the schoolteacher and the community health educator.

The VLWS health education program began with a series of presentations to school children by the VLWS Health Educator. As these presentations were used and refined, they developed into a series of 11 modules on water and sanitation-related health issues:

1. Village Study
2. Disease Transmission
3. Water and Human Health
4. Disposal of Human Waste
5. Disposal of Other Wastes
6. Insects and Disease (flies)
7. Insects and Disease (mosquitoes)
8. Water- and Excreta-borne Disease

9. Water- and Excreta-borne Disease and ORT

10. Water-washed Disease (lice)

11. Water-washed Disease (scabies)

By the time the expatriate health education advisor left, these modules had been developed, and primary schoolteachers in all the project communities had been trained to use them. It might be noted that a serious shortage of books and educational materials exists in Belize schools, and teachers, therefore, welcome such helpful materials on any subject. A variety of visual methods, such as puppet shows, role playing, posters, and other techniques, are taught to the teachers and used for instruction.

The current VLWS Health Educator worked with the advisor while he was in Belize and assumed responsibility for the health education aspects following his departure. The Health Educator's focus has been to implement the complementary adult education component of the project. School lesson plans were adapted for use by adults, with the idea that parents would attend education programs on the same subjects their children are learning in school. The current health educator is also developing three new modules to be added to the health education program--bring the total number of modules to 14.

The health education representatives of the VWSC are invited to training sessions where they are taught how to make health education posters and carry out the health education program in their respective communities. Village artists, particularly in Chunox and Buena Vista, also participated in the production of health education materials. HECOPAB is also assisting CARE in the production of a water and sanitation manual, a photo novel, flash cards, and situational pictures.

4.6 Operations and Maintenance of Water Supply and Sanitation Systems

All latrine operations and maintenance (O&M) is the responsibility of the individual homeowner. CARE estimates that the latrines being constructed can last from six to eight years--at which time new pits must be excavated and the latrine slab and shelter moved. Training in the use and care of latrines is provided as part of the health education curriculum.

Operations and maintenance of handpumps has been planned as a three-tier system. The community will be responsible for maintaining the above-ground components of the India Mark II handpump. The GOB has responsibility for maintaining all below-ground components. No fee is charged for the governmental repair service. CARE (in conjunction with GOB repair crew visits) provides some training to communities in handpump maintenance and repair.

Because the VLWS Project was conceived as a handpump project, no advance planning was directed toward O&M of the RWS. Communities, however, will bear the entire responsibility for the O&M of these systems. CARE is still developing a plan for training RWS communities in O&M.

4.7 Community Financing

The VLWS Project represents a shift for communities (especially RWS communities) away from dependence on the Government for maintenance of much of their water supply needs. Because communities will be largely self-sufficient, they will have to conduct preventive maintenance programs, have tools and spare parts ready, and pay for recurrent costs, such as fuel or electricity for pumping. Fundamental to the sustainability of this type program will be the ability of the communities to collect fees to finance their continuing O&M costs. Fees may be collected on either a monthly or annual basis or through special fund-raising events. CARE, through the promotion of the VLWS Project, is making communities aware of their responsibilities for financing O&M. CARE, however, has not yet evolved a training plan to equip communities with the organizational and management skills that will be required.

Chapter 5

FINDINGS

5.1 Status of the Project

Although this project assessment is a mid-term evaluation, only eight months remain to complete the project. The following is a discussion of project status to date.

5.1.1 Budget

The evaluation team was informed by USAID and CARE that all of CARE's funds for the project, $340,000 (U.S.), will have been expended by June 1987 at the current rate of expenditure. USAID, on the other hand, has expended only $212,000 (U.S.) of its $700,000 (U.S.) budget. CARE has requested that USAID amend some of its line-item budgets to provide additional funds for implementation. The request was made because CARE paid for additional vehicles and transportation costs that were not budgeted, but are necessary, and CARE provided all health education personnel for the project. The GOB health educator was never provided.

5.1.2 Schedule

With eight months remaining in the project, CARE has begun work in all 16 communities, but has not completed all work (including health education) in any of these. Buena Vista, however, is almost complete. CARE estimates that an additional six months (from the December 1987 deadline) will be required to complete all of the work.

5.1.3 Targets

Project progress against the project targets is shown in Tables 3 and 4, which follow. Note that these tables do not include health education, which is discussed in this Chapter.

On the basis of information provided by CARE, the estimated number of beneficiaries from the VLWS Project will be approximately 6,300 persons. This number is significantly lower than the pre-project estimate that the project would serve about 8,500.

Using the current estimate of 6,300 beneficiaries, the WASH team calculates, based on the total project cost of $1,300,000, that the cost for water supply, sanitation, and health education will be approximately $210 per person. Compared to other USAID-funded rural water supply and sanitation projects in Central America, this cost is high. If the project served 8,500 persons, as originally estimated, the cost would decrease to about $153 per person.

Table 3

VLWS HANDPUMP INSTALLATION
(Life of Project Summary)

	VILLAGES IN	TARGET	ACTUAL INSTALLED	BALANCE	PERCENT COMPLETED	ESTIMATED BENEFICIARIES
	COROZAL					
1.	Buena Vista	7	7	0	100%	330
2.	San Victor	10	10	0	100	350
3.	Chunox[1]	10	0	10	0	450
4.	San Pedro	7	0	7	0	312
5.	Louisville	10	0	10	0	450
6.	Santa Clara/San Roman*	0	0	0	0	910
7.	Cristo Rey/Yo Chen	11	0	11	0	600
8.	Chan Chen	8	0	8	0	368
	Subtotal	63	17	46	27%	3,770
	ORANGE WALK					
1.	San Antonio*	0	0	0	0	344
2.	Nuevo San Juan	6	6	0	100%	160
3.	San Luis	5	5	0	100	145
4.	Santa Marta[2]	7	0	7	0	271
5.	Santa Cruz[3]	4	0	4	0	147
6.	Chan Pine Ridge[4]	7	0	7	0	350
7.	Trinidad	7	0	7	0	600
8.	Douglas[5]	1	0	1	0	500
	Subtotal	37	11	26	30%	2,517
	TOTAL	**100**	**28**	**72**	**28%**	**6,287**

Notes:

* A Rudimentary Water System will be installed rather than handpumps in these two villages.

(1) Although 10 handpumps are planned for Chunox, problems are expected to be encountered due to the salinity of the soil.

(2) Although 7 handpumps are planned for Santa Marta, problems will be encountered due to low-lying areas.

(3) Although 4 handpumps are planned for Santa Cruz, the community is requesting a type of catchment system.

(4) Although 7 handpumps are planned for Chan Pine Ridge, problems are expected to be encountered due to salinity of the soil.

(5) Only 1 handpump is planned for Douglas since the community already has a good water tank. One problem anticipated will be to find a source of good water.

As of February 29, 1987.

Table 4

VLWS LATRINE CONSTRUCTION COMPONENT
(Life of Project Summary)

	VILLAGES IN	TARGET 1	UNDER CONST 2	COMPLETED 3	%COMPLETED 4
	COROZAL				
1.	Buena Vista	45	22	28	62.0%
2.	San Victor	70	32	22	31.0
3.	Chunox	92	50	23	25.0
4.	San Pedro	63	24	10	16.0
5.	Louisville	85	61	6	7.0
6.	Santa Clara/San Roman	156	81	15	10.0
7.	Cristo Rey/Yo Chen	100	38	3	3.0
8.	Chan Chen	81	12	2	2.5
	Subtotal	692	320	109	16.0%
	ORANGE WALK				
1.	San Antonio	65	13	54	83%
2.	Nuevo San Juan	44	21	19	43
3.	San Luis	32	4	20	63
4.	Santa Marta	68	35	41	60
5.	Santa Cruz	30	8	10	33
6.	Chan Pine Ridge	55	1	2	4
7.	Trinidad	88	3	0	0
8.	Douglas	78	2	0	0
	Subtotal	460	87	146	32%
	TOTAL	**1,152**	**407**	**255**	**16%**

Notes:

1. Target - original targeted families. Was averaged at 100 families per community or 1,600 families. Further investigation, however, reduced the participating families to 1,152 targeted.

2. Under Construction - Collar and house not yet completed, but all other components are provided at site.

3. Completed - A completed latrine consists of a unit with the following: pit dug, collar constructed, slab and riser in place and house enclosing it, that is, functional.

4. Percent constructed is determined by dividing number of latrines completed by number targeted, that is, column 3 divided by column 1 = percent column 4.

The $210 per person cost could be justified if the project contributed significantly to the development of MOH or MNR capabilities. However, as discussed in the following sections of this report, the VLWS Project provides inadequate institutional development assistance.

5.2 Project Management

The CARE VLWS Project appears to have followed sound practices in the purchasing of material, control of inventory, logistical arrangements, and in meeting project reporting requirements. At the beginning of the project, CARE had an insufficient number of vehicles, but additional ones were provided by CARE and are adequate to meet project needs. In addition, there was a long delay in the delivery of the India Mark II handpumps caused by the ordering procedures followed by UNICEF in New York. The delay did not affect project progress, however, because handpumps were borrowed from another project in Belize.

Of major concern to the consultants is the lack of adequate staff for CARE to implement the project. At least two additional staff, that is, one for each district, are needed to provide closer supervision of the field activities, to assist the communities in developing the necessary organizational skills, and to implement training programs for operations and maintenance within each community.

Further, the consultants find that in addition to having heavy workloads, staff also lack critical skills in the following areas:

- Community organization and development
- Technical capability and experience
- Project planning and monitoring (focused on identifying and correcting implementation problems).

The absence of critical skills has contributed to delays in project implementation and the underdevelopment of community skills that will be required to ensure long-term project sustainability.

In April 1986, Mr. J. Ellis Turner of the WASH Project provided technical assistance to the VLWS Project concerning some of the same areas that still require attention: project planning and monitoring, standardization of community agreements and training programs, and the need to address a number of technical concerns. CARE staff should review the recommendations that are presented in that report (WASH Field Report No. 193). Additional assistance also was provided to CARE through the development of the "Framework and Guidelines for CARE Water and Sanitation Projects," WASH Technical Report No. 40, June 1986. Both of these documents should be reviewed by CARE staff and incorporated in the VLWS Project.

At present, no mechanism exists for monitoring the impact of the project. The baseline survey did not collect information to measure progress on the indicators suggested in the Donovan report, nor was there a plan to provide follow-up measurement of the indicators.

Communities were chosen for inclusion in the project during the first year on the basis of a Village Profile completed by a team from CARE through in-depth interviews with community leaders. During the next two years, the same Village Profile forms were used, but the decision about which communities to add was based more on a dialogue between VLWS staff and members of the community. The Village Profile contains information on community resources (water and other), level of interest in the project, and degree of organization. This information is then transferred to a scoring sheet which rates the community on a number of variables. These scores are then totaled. The scales, however, are not well constructed and mix both nominal and ordinal data. The resulting scores, therefore, are not useful in determining the suitability of the community for a VLWS project.

Once villages were chosen, a survey of all households was conducted, and data were tabulated by hand. During the third year, a shorter form was used in 50 percent of the households, while the longer form was used in the other 50 percent. This change in the way the household survey was used as the project developed made it much more useful to the VWSCs and VLWS staff. The household survey was used to introduce the project to the community rather than as a source of information for the project. Data from the household surveys have not been used in any systematic way for either project monitoring or planning.

It is suggested that the Village Profile be used to collect information upon which decisions may be made about whether to undertake a VLWS project in a particular community. It should be modified, however, to obtain more information on indicators of community organization so that each may be rated on a scale of 1 to 5 (1 being factionalized and unmotivated and 5 being highly motivated and organized). The rating on the scale should determine the techniques used to introduce the project to the community and decide how much time will have to go into community organization and motivation before either construction or installation of wells should begin. For the records, the Village Profile form should contain a short statement explaining why a certain community was not selected to participate in the project.

The household survey form needs to be simplified to enable members of the VWSC to administer and analyze more effectively the information they collect. They should then use the results to design their own five-year plan and to set their first-year goals. Indicators from pages 15 through 18 of the Donovan report should be used, and community members should be taught to collect information using participatory, nonsurvey methods. Indicators regarding community organization and motivation should be included. Committees might submit progress reports (or make a presentation) to CARE staff semiannually highlighting their accomplishments and explaining their setbacks. Women should be included in the design of the evaluation system. Finally, in designing the monitoring and evaluation system, it should be kept in mind that it is better to monitor a few well-chosen indicators and do it well than attempt too much and do it poorly.

5.3 Institutional Development

The Village Water and Sanitation Committees are an effective vehicle for implementing the project. Because most Village Councils are factionalized and have difficulty overcoming political differences, the WASH consultants found a consensus that the VWSCs have been able to set politics aside and work together. In some of the communities, the formation of the VWSC marks the first time such an organizing effort has been successful.

We found, however, that the project lacks planning for longer-term institutionalization. The VWSCs have responsibilities for implementing the project, but when the pumps have been installed, little remains for them to do. The handpumps are low-maintenance items, the latrines are individually owned, and the health education program is the responsibility of the school teacher. Hence, the VWSCs are left with few responsibilities. The exception is in those communities where rudimentary water systems are being built. In such cases, it is likely that the committees will continue functioning because they must collect fees to run the generator and to maintain the system.

Few women are represented on the VWSCs, and efforts to include women have not been as comprehensive as they could be. CARE has just initiated a Maternal and Child Health (MACH) Program which has the potential to increase the involvement of women in community health issues.

A very positive development in the project was the relationship with the Belize School of Nursing. An arrangement was established whereby nursing students participated in health education and community organization sessions. This exposure is helping to provide students with an understanding of community health problems and the role of communities in helping to solve them.

The water component of the project meets the current needs of the communities, but a feeling exists that the pumps will require little repair. One person on each VWSC is responsible for maintaining the pumps, but it is the observation of the consultants that they have not been trained adequately to do routine maintenance and minor repairs which will inevitably occur. It is well understood that members of the community are responsible for maintenance and repairs, but they do not know how to do it. This problem is exacerbated by the fact that they also lack tools and spare parts. People have high expectations of the pumps. Responsibility for repair and maintenance records needs to be shared among committee members.

Potential exists for the private market to provide replacement parts for the India Mark II pump now that it is being installed throughout Belize. Replacement parts now being ordered from the United States need to be checked for compatibility with the handpumps being purchased from India.

Wells have been installed to meet the current needs of the community. As new families build homes, additional wells will need to be built. The Ministry of Natural Resources is scheduled to assume responsibility for installing all wells in 1990. Whether or not it will have the resources to do so remains to be seen.

The latrine component of the project is also designed for existing homes. People have worked hard to dig the pits for their latrines and have often shown considerable creativity in constructing the cabin. It is likely that they will be maintained and used. A VIP latrine, however, is too expensive for the average family to construct without some subsidy, and it is, therefore, unlikely that a young family just starting out would be able to build one. Unless either the VWSC or the MNR can find a way to subsidize latrines built in the future, those now built with CARE assistance will not meet the needs of the growing communities.

The health education component of the project is likely to continue in the schools. The materials are well designed, and the shortage of teaching materials on any subject makes the lesson plans a welcome part of the school curriculum. The adult education component of the project is the responsibility of one member of the VWSC, and is currently carried out mostly by the CARE Health Educator. Because of the shortage of staff, these programs have not been offered in any systematic way, and it is unlikely that they will continue beyond the life of the project.

It is the opinion of the WASH consultants that great potential exists for increasing the effectiveness and sustainability of the VWSCs by involving them much more in project planning, by teaching them more leadership skills, and by helping them set annual goals for the community. These local goals would include broad responsibility for maintaining the system, carrying out environmental sanitation programs, and increasing community awareness of health issues. VWSCs could also collect information on changes in behavior and carry out self-evaluations.

All VWSCs, especially those where an RWS will be installed, need training in conflict resolution, motivation, adult education techniques, and system maintenance and repair. Such training will be required particularly in Santa Clara and San Roman because they will share a pump and distribution system that will be managed by one committee comprised of members of two village councils and two VWSCs.

The WASH consultants found Buena Vista to be representative of what is likely to happen to the VWSCs under the current system. Buena Vista is one of the first communities in which the CARE project started work (year one of the project). Now that nearly all of the latrines have been completed and all of the handpumps installed, the VWSC has lost interest and no longer meets. It was the only community where the evaluation team had difficulty persuading VWSC members to attend a meeting with them. At our first scheduled meeting, no one came. At a second meeting, only two VWSC members came, one of whom was also on the Village Council. Although the project is in full operation in Buena Vista, no evidence exists of the community having tools, spare parts, or a fee collection plan.

The primary constraint to the institutionalization of the VLWS Project is the lack of counterpart involvement by representatives of the GOB. The project is currently carried out with little input from the Government. Originally, the MOH provided assistance to the project through the public health inspectors (PHIs) through the National Water and Sanitation Coordinator, but no permanent staff were assigned to the VLWS Project.

PHIs were responsible for supervising the siting of the wells and for overseeing drilling. They also had many other responsibilities, however, such as meat inspection, restaurant inspections, and water-quality testing, and played a key role in promoting the project and attending community meetings. Because they have no vehicles, they coordinate with CARE, which can provide some transportation. With the change in counterpart responsibility to the MNR, the MOH has little direct responsibility, but is still supporting the VLWS education efforts. The MNR has not yet committed personnel (other than the WASA drilling crews) to the project. A national coordinator is, however, to be appointed in the near future.

Because of the lack of counterpart involvement in the project, the lessons learned, the contacts made, and the process started will likely end when USAID funding stops. Conversations with representatives of WASA indicate that it has plans to incorporate the VLWS Project, along with the two other water projects (MCD/PRAGMA and UNICEF) under its supervision. This approach may well solve the problem. When this plan is operational, CARE should cooperate fully and might also work more closely with the community development staff of the Ministry of Social Services which is reputed to have general community development skills and responsibilities.

5.4 Relationship Among USAID, CARE, and the Government of Belize

Coordination among USAID, CARE, and the appropriate governmental ministries is good at all levels. The National Water and Sanitation Coordinating Committee was extremely important in coordinating the efforts of the various water and sanitation projects in Belize and helped all of the projects by devising guidelines and technical specifications for pumps, wells, and latrines throughout the country. Unfortunately, this committee has not met since October 1986 when it was chaired by a representative of the MOH. CARE staff have also participated in the health education subcommittee of the National Water and Sanitation Coordinating Committee.

Effective 1 April 1987, all water and sanitation projects come under the supervision of the MNR. Some concern exists regarding how this switch will affect the VLWS Project. It is the view of the consultants that this change will have no negative consequences for the VLWS Project and that it may have positive results. At present, the VLWS has little contact with the Government. The Ministry of Natural Resources will continue to provide a well-drilling rig and it plans to hire a Health Educator to coordinate the health education efforts of all of the water projects. The MNR also plans to coordinate operations and maintenance services and training. Currently, it is developing a five-year plan for the coordination and development of all water and sanitation efforts in Belize. The evaluation team views this as a constructive move and one with which both CARE and USAID should cooperate. The primary concern of MNR is whether it will have the resources to carry out its own plans.

Collaboration with the Ministry of Health has been limited to cooperating with public health inspectors, but this association has been beneficial to the MOH as well as to CARE. By providing transportation, the PHIs' capabilities have been extended and their presence has helped reinforce the VLWS health education messages. The switch from MOH to MNR will possibly increase the effectiveness of the PHIs. Because they will no longer be responsible for well-siting and drilling supervision, they will have more time to focus on environmental sanitation.

Collaboration between USAID and the VLWS Project has been unusually close. The PVO officer has made field visits and stays well informed of progress on the project. USAID, however, needs to develop indicators of project success which include progress in community organization, community involvement in planning and evaluation, and in VLWS management rather than just project "outputs," such as latrines constructed or wells drilled. The number of latrines constructed is not a sound indicator of progress because the wells are used as an incentive and latrine construction is motivated largely by the serious need for water.

CARE needs to work with USAID to develop such indicators and collect the information needed to assess progress. This collaboration would also serve to refocus the project on the process of development at the community level and might also increase the sustainability of the project.

5.5 Technical Aspects

5.5.1 Latrines

The latrine program is well designed and offers communities two alternatives--either the standard VIP latrine or the raised latrine. In a few isolated instances, the compost VIP latrine also was used. The raised latrine is typically used where there are high levels of groundwater which would have a negative impact on the latrine's effectiveness or which make excavation of the pit impossible.

The VIP latrine appears to be well accepted, and both completion and usage rates are high. In some of the last communities to enter the program (such as Chan Pine Ridge), the quality of the latrine construction should be improved by increasing the screened area (to improve ventilation) and by ensuring that the construction of the shelter leaves no holes for insects to enter. It is important that the first several latrines that are built in a community meet the highest standards of construction because they serve as models for the rest of the community.

In all of the communities, CARE has established sound siting criteria for the latrines. Communities are well aware that latrines should be located at least 100 feet from any well.

5.5.2 Handpumps

The selection of the India Mark II handpump and its standardization throughout Belize has created an opportunity for both the communities and the Government of Belize. With adequate planning and the encouragement of private-sector participation, the GOB can ensure that spare parts and experienced maintenance personnel will be available.

The handpumps that have been installed to date are functioning well and are placed on well-constructed drainage pads that drain to soak-aways. The only problems that have occurred are related to the distance of some users from the nearest handpump. Because the handpumps were located to provide a supply to an average of ten families each, some houses are located more than 300 feet from the pump. A number of families are using their existing wells rather than carrying water from the handpump. Instead of locating handpumps based on the number of users, the number and location of handpumps should also be based on minimizing the distance from users (no more than 200 feet to 300 feet). Despite the distance problem, the consultants found that the handpumps were located with an unusual amount of cooperation among the village water committee, CARE, and the MOH.

5.5.3 Rudimentary Water Systems

Plans to construct rudimentary water systems were conceived after the project was initiated. They address the desire and capability of some of the communities to construct water systems that provide a higher level of service than handpumps. The evaluation team found that RWS systems are appropriate for a number of communities and that alternative water system plans should be developed for each village. Depending on their skills, financial status, and the costs (construction and O&M), each community may select the type of system which is most appropriate.

Implementation of the rudimentary water systems has been hampered by a lack of technical capability and experience of the CARE staff. CARE has recently hired a local consultant to help with the design and construction supervision of the RWS in San Antonio and San Roman/Santa Clara. A review of construction plans and field work in San Antonio revealed that the consultant's designs are sound and that he has the experience to assist CARE in the RWS communities. Additional assistance is needed, however, to resolve other problems as they arise in other communities. For example, CARE is unsure about what technical solutions should be followed in Douglas and Chunox. In Douglas, the installation of a new well could provide the basis for rehabilitating the existing distribution system which has been out of service for seven years. Special attention must be given to siting the well to avoid groundwater problems that are prevalent in the area.

In Chunox, the village is scheduled for a handpump program. The community is, however, well organized and interested in an RWS. In addition, the problem of salt-contaminated groundwater in some areas of the community may make it more attractive to build an RWS that is supplied by a well that is located away from the problem areas.

Although the RWS system in San Antonio is well designed, no consideration has yet been given to the need for villagers to construct drainage pads and soak-aways at the base of each yard connection.

5.5.4 Well-Drilling Operations

The consultants found that severe technical and management problems continue to plague the well-drilling operations. The equipment that is being used is old and subject to frequent breakdowns, drilling techniques need to be improved, and there are competing demands for drill rig time, which frequently divert the rig to projects other than the VLWS. The evaluation team's concerns are also outlined in WASH Field Report No. 193, July 1986. These concerns must be addressed through additional training and technical assistance. Currently, the drilling crews are experiencing a low success rate in the installation of new wells.

5.5.5 Water Quality Laboratory

The water quality lab is under the direction of the MOH and is being supported through funding and technical assistance from the USAID Improved Productivity Through Better Health Project. The laboratory is well equipped and is being operated by a qualified technician. There is some uncertainty about the availability of supplies for the lab and the training of a back-up technician.

5.6 Community Participation

While this project has a strong self-help component in the implementation of the project (including health education, siting of wells and latrines, and formation of the VWSCs), there has been little involvement of the community in planning and none at all in evaluating the success of the project.

The project is currently using handpumps as an incentive to get latrines built. No wells are drilled until most of the latrine pits are dug. People are willing to dig the pits and construct the cabins because the water is important to them. No doubt exists that families view the latrines as being their own and that the communities feel they own the pumps, and each entity is certain of its responsibility to maintain these facilities.

The communities in which the VLWS is being implemented vary considerably in the degree to which they are organized and ready for a project. Some, such as San Antonio and Chunox, are progressive, relatively affluent, and have already had experience in cooperating in community improvement projects. Others, such as Chan Pine Ridge, are factionalized, face economic problems, and have little experience with community projects.

It would be helpful if CARE could assess the level of readiness of a community when it does the Village Profile for selecting communities for the project. CARE could identify eight or ten characteristics of a dynamic community and rate potential VLWS communities on a scale, for example from Level One (disorganized and unmotivated) to Level Five (highly organized and motivated). It could then develop separate strategies for working with communities at each level.

At present, the most successful projects have been in communities where there was already a high use of latrines and a strong awareness of the need for clean water and healthy homes. CARE staff, however, do not have strong skills in bringing unmotivated communities to the point where they are ready for a project.

It is the view of the WASH consultants that members of a community should have the opportunity to make many more decisions about how the project will develop in their community. A community might begin with a self-assessment of its problems, resources, and priorities. The community should decide, with CARE guidance, whether it would start with latrines, water, or environmental sanitation. Further, the community should also have some choice in what type of water system it will have.

The WASH consultants propose that the community should set yearly goals for itself which would include the collection of information on changed behavior (latrine use, water use, safe storage of water, and so forth), on improved environmental conditions, and other progress. The education component should be continuing, and the modules should coincide with current community activities.

CARE needs to train the members of the VWSCs in leadership skills, conflict resolution, motivation, adult education, problem-solving, fund-raising, project planning, and evaluation. In addition, the role of members of the VWSC should be increasingly visible. Community meetings should be chaired by VWSC members, and CARE staff should train them to answer technical questions, conduct meetings, and make decisions. At present, meetings and health education programs are initiated and controlled almost entirely by CARE.

Women play a secondary role in community life. Although a few women are represented on Village Councils, most women do not speak at public meetings. Their responsibilities are to the home and to the children. They are, therefore, the primary users of water. No special effort was made to guarantee their representation on the VWSCs. One Village Council member noted that women "only giggle and do not take committee membership seriously." Because the VWSC is serious, the men do not want women members.

It is important that more women be involved in the decision-making process. They might, for example, be trained to conduct routine maintenance of the handpumps and maintain relevant records. In addition, they could monitor water use and storage.

Stronger community involvement also is essential if the adult education component of the project is to be strengthened. Currently, much of the benefit of the sealed wells and efficient pumps is lost because the water is contaminated in transport and storage. Further, storage of water in the homes is unsanitary. Problems are evident regarding garbage, unfenced animals, and personal hygiene. Women, as the primary drawers and users of water, need to be involved in solving these problems.

The WASH consultants propose that CARE consider negotiating a contract with each community where, over a period of time and through discussion, CARE and the VWSC come to an agreement about what the community will contribute to the

project and what CARE will assist with. These agreements might be in writing but it is important that they be negotiated and mutually agreed upon, and that they not be a prescribed plan from CARE. CARE might, for example, agree to contribute more in those communities with fewer resources and less in those with greater resources.

It should be noted that what was intended as a project to increase water availability became a handpump upgrading project because most of the communities already had handpumps, though many were broken and all of the wells unsealed. Further, the project was implemented in communities with no particular history of either water- or excreta-related illnesses. It might be noted that level of income was not a criterion for choosing communities, and some of the communities, such as Chunox and San Antonio, are relatively well off.

5.7 Health Education

The health education component of the program has several positive elements. It started with something small and manageable, a set of educational modules for the schools, and then additional components for the parents of children who had the lessons at school. The health education component includes training for school teachers, who are often from the communities where they teach and are respected members of their communities.

The design of the health education component was built on a model (Relevant Education for Agricultural Production or REAP) that has been successful for CARE in the past. The REAP series has been incorporated into schools throughout Belize, and it is likely that the health education modules will be incorporated into other school curricula. The health education modules were based on modules developed by CARE/Bangladesh and were modified for Belize with input from both teachers and the communities.

Although the health education program is well conceived, it suffers in implementation from a lack of staff and counterpart involvement. The CARE Health Educator is the only VLWS staff person in the field all of the time. In addition to teaching many of the adult education modules, he organizes workshops for teachers and representatives of the VWSCs. He also monitors the technical aspects of the project and reports to the Project Director on construction problems, materials shortages, and other logistics. His time should be spent planning, developing training materials, and training trainers rather than working directly in the communities.

At the inception of the project, the Health Educator made presentations to the community but did not disseminate any instructional materials. Once they became available, individual lesson plans based on the CARE/Bangladesh and REAP model were used. These health education materials were all completed in December 1986.

Records of when education modules were given or who attended are unavailable for the first 18 months of the project. For example, although the VLWS Project Director believes that all of the 11 original modules for both adults and children have been taught in Buena Visa, the only records are of modules

presented in the past four months. It is commendable that these records are now maintained.

Attendance at the programs varied from a high of 68 people in Chunox for a session on disease prevention to a low of 18 people in Trinidad for the session on village study. In those two communities where two sessions have been completed, attendance improved dramatically at the second session, thereby indicating that they are of interest. The Health Educator has found that the use of films and slide shows boosts attendance.

The ten adult sessions have reached a total of 321 people, only 31 percent of whom are women. As the primary users of water, it is important that ways be found to increase participation of women in these sessions. Fortunately, records are now maintained concerning which sessions are given and citing attendance by men and women. Unfortunately, incomplete records exist of which modules have been taught, and there is no mechanism for assessing behavioral change which may result from the lessons. Members of the VWSCs should also maintain records of who attends so that they can broaden participation in these activities. This record-keeping will enable the VLWS Health Educator to monitor progress in this area.

At this time, all of the adult education sessions in the communities are initiated and carried out by the VLWS Health Educator. Because he has had many other responsibilities and has no one to assist him, this component of the program is moving slowly. Ten adult education programs were presented during a two-and-a-half-week period.

Renewed interest exists in establishing District Health Teams using public health nurses, public health inspectors, and health educators from the MOH and MNR. CARE can extend the outreach of these GOB representatives and draw on them for assistance by cooperating more closely with these teams.

The VLWS Health Educator needs to work closely with the Health Education and Community Participation Bureau (HECOPAB) of the Ministry of Health to design a realistic (considering the limited resources) plan for each community. The VLWS health education program should also draw on the organizational skills and technical background of all members of the District Health Teams once they are established. CARE staff need especially to learn community organization skills from HECOPAB and the Ministry of Social Services community development staff. The community education program in each community needs to be planned in collaboration with the VWSC and modules presented to complement the hardware component of the project.

The school health education program would benefit from some quality control and the development of ways to monitor the effectiveness of different modules. The materials may need substantial revision if used in communities with different ethnic backgrounds. In the Orange Walk and Corozal districts, people are already highly motivated to learn about and practice more healthy behavior.

CARE's progress in completing the delivery of the health education modules is shown in Table 5 on the following page.

Table 5

VLWS HEALTH EDUCATION COMPONENT[1]
(Life of Project Summary)

	VILLAGES IN	ADULT EDUCATION MODULES TARGET	ACTUAL TAUGHT	BALANCE	PERCENT	SCHOOL PROGRAM MODULES TARGET	ACTUAL TAUGHT	BALANCE	PERCENT COMPLETED
	COROZAL								
1.	Buena Vista	14	2	12	14%	14	1	12	7%
2.	San Victor	14	3	11	21	14	3	11	21
3.	Chunox	14	3	11	21	14	6	8	43
4.	San Pedro	14	2	12	14	14	1	13	7
5.	Louisville	14	4	10	29	14	4	10	18
6.	Santa Clara/San Roman	14	3	11	21	14	1	13	7
7.	Cristo Rey/Yo Chen	14	4	10	29	14	3	11	21
8.	Chan Chen	14	2	12	14	14	2	12	14
	Subtotal	112	23	89	20%	112	21	90	19%
	ORANGE WALK								
1.	San Antonio	14	2	12	14%	14	4	10	28%
2.	Nuevo San Juan	14	2	12	14	14	2	12	14
3.	San Luis	14	2	12	14	14	2	12	14
4.	Santa Marta	14	3	11	21	14	1	13	7
5.	Santa Cruz	14	4	10	29	14	4	10	28
6.	Chan Pine Ridge	14	3	11	21	14	2	12	14
7.	Trinidad	14	3	11	21	14	5	9	36
8.	Douglas	14	0	14	0	14	3	11	21
	Subtotal	112	19	93	17%	112	23	89	20%
	TOTAL	224	42	182	19%	224	44	179	20%

Notes:

[1] Measure of component achievement is number of health modules taught to village.

As of February 28, 1987.

CARE personnel report that these records may not include some of the lesson plans that were taught earlier in the program.

5.8 Utilization and Effects

The latrines are used by both adults and children. In these communities, most families had and used their own latrines prior to the inception of the project. Usage of the pumps is partly determined by the distance between the pump and the house. The evaluation team noted that utilization rates drop when pumps are located more than 150 feet from a house, especially when old unimproved wells and rainwater catchment tanks are located closer. In addition, it was noted that people are using large amounts of water and that personal hygiene levels are relatively high.

Overall, the WASH consultants suggest that communities carry out their own study of water usage before and after the project as part of their own educational efforts and furnish CARE with information on the effectiveness of the VLWS Project.

Because water is transported and stored in buckets, educational efforts need to focus on ways to ensure that buckets remain covered at all times, including when being carried, and that they are cleaned regularly. The pumps are easily used by children, though those near schools need an attachment connected to the pump outlet so that children can drink directly from a fountain rather than share a common cup from a bucket in the classroom or drink from their hands held under the spigot.

Although no serious problems were encountered with water-related illnesses in the communities before the VLWS Project, teachers report fewer incidents of diarrheal episodes, and children claim to wash their hands after using latrines. Because latrines are located at least 100 feet from pumps and often that far from the household water bucket, handwashing after using latrines is inconvenient at best and was not observed during the consultants' visit. People do seem to wash before eating, albeit in a common basin.

Environmental sanitation programs have been spotty. Some communities have organized clean-up campaigns, and others are working to get animals penned. Pigs and chickens now wander freely in most of the communities. Much remains to be done in the area of environmental sanitation, and each VWSC should have a long-range plan for educational activities and incentives to control animals, clean up garbage, control mosquitoes, and develop standards for healthy homes. Women should be involved in these efforts, goals should be set, and indicators of success should be monitored. Although the VLWS has certainly created a heightened awareness of sanitation, more work is needed in this area.

No evidence exists that the water component of the VLWS Project has been tied into ancillary projects, such as home gardens, poultry projects, or other activities. The VLWS Project was originally perceived as a complement to the REAP program, where home gardens would give children an opportunity to apply their horticultural skills.

The VWSCs are effective and have created nonpolitical leadership roles. For some communities, the project has provided a unique opportunity to work together to solve a problem. As they experience a productive exchange of

ideas and information and develop problem-solving skills, their self-confidence is enhanced. No doubt the skills VWSC members have learned (and hopefully will learn in the future from CARE) will transfer to other activities, especially in the area of health.

The concepts of nonformal and adult education have been introduced in the community, and, with some guidance from the District Health Team and the VLWS Health Educator, they should be able to take charge of their own health education program.

5.9 Lessons Learned

1. Traditional water sources, particularly rainwater and dug wells, will continue to be used where potable water is supplied from handpumps that are located 150 to 200 feet or more from the house. Even when water is supplied from a yard tap, a large percent of the rural population can be expected to continue using rainwater collection to supply water for drinking and cooking. To ensure an adequate drinking water quality, water supply program and health education efforts should include information and instruction on how to improve the traditional sources.

2. The quantity of water used and even the willingness to use a handpump decline as the distance from the house to the handpump increases. The criterion for locating handpumps--ten families per handpump--does not account for this fact. Handpump location should also be based on the distance from the user to the house. Better information on the distance criterion can be obtained from some relatively simple surveys of handpump use in selected villages. Villagers can perform most of the work for this type of study.

3. For long-term project sustainability and community development, good organizational and problem-solving skills have to be passed to the community. This requires that the project staff (including counterparts) have skills and training in community development and that the community be involved in many more aspects of a project--especially identifying problems, setting priorities, planning, selecting of alternatives, defining responsibilities, and so forth.

4. The development of a Village Water and Sanitation Committee in each community has been an extremely effective method of avoiding the political conflicts that tend to polarize efforts to organize at the community level. The village water and sanitation committee can continue to be the focus for development and health education efforts within the community.

5. Any program has to take into account the seasonal nature of work in the Orange Walk and Corozal (or any other) districts. Because of sugar cane cutting, villagers are often either unavailable or uninterested in participating in self-help projects during the cane-cutting season. Project scheduling should allow for this factor. In addition, the involvement of more women in the project could allow some of the project activities--especially health education and collection of information--to continue during these times.

6. The success of the latrine construction program in Orange Walk and Corozal is most likely due to both the health education efforts of the VLWS program and an existing awareness that latrines are necessary. Nearly all of the families in the project area were using latrines before the program began. Families are taking advantage of the USAID/CARE program to upgrade to the VIP latrine design (which has been widely accepted) at a low cost. Because of the existing felt need for the latrine and CARE's insistence that latrines be constructed before the water project begins, the high rate of latrine construction and use is an unsuitable measure of the effectiveness of the health education program. Caution should be applied to transferring the strategy for the VLWS Project to other areas of Belize--where much stronger community education and development efforts may be needed to achieve the same results.

7. Some significant advances in health education have been developed through the VLWS project--especially the production of health education modules that are modeled after the successful REAP program. It can not be assumed, however, that because the effort is there that major changes in health and hygienic practices will automatically occur. Sound indicators for the effectiveness of the health education program and monitoring in each community are necessary to determine whether changes in hygienic practices are occurring. For the reasons mentioned above, the success of the latrine construction program is an unsuitable indicator of the effectiveness of the health education component.

8. Community studies that use villagers as surveyors and focus on observations of existing conditions and practices can be far more useful than elaborate baseline studies in assessing needs and monitoring health education efforts. These studies also can be used by Village Water and Sanitation Committees as a continuing community management tool.

9. The VLWS Project has shown that a narrowly focused water supply project--using only handpumps--does not adequately address the needs of all of the communities. In addition, this type of program overburdens the Government's already limited drilling operations and does little to support the concept of community participation in the water supply project. More flexibility is needed in working with a community to develop its water supply. Depending on the needs and capabilities (both financial and organizational) of each community, water systems might be composed of various combinations: handpumps, rudimentary water systems, combinations of rainwater catchment and either handpumps or RWS, staged RWS systems, and either pilot solar or wind-pumped systems.

10. To address the technical problems that arise during project implementation and to assist communities in studying project alternatives, full-time personnel with both technical qualifications and experience are needed full time. The skills required include a broad range of field experience in groundwater development, well-drilling, alternative technologies, design, and construction.

11. Although there was a commitment on the part of the MOH to provide counterpart participation in the VLWS Project, this support was never provided. Similar problems have also been experienced in the UNICEF and IPTBH projects. For the long-term development of institutional capability in water and sanitation within the Government of Belize, counterpart participation by ministry personnel is essential. Counterpart involvement should be required in all of the water and sanitation projects. Such involvement is even more critical as new personnel are trained and skills are developed within the Ministry of Natural Resources, the new counterpart agency.

12. The self-help nature of the VLWS program has introduced the important concept that villagers can accomplish improvements in their communities through their own efforts, with less reliance on the Government. Solid indications exist in the VLWS communities of a sense of community ownership of the handpumps and latrines that have been installed. These gains should be reinforced by stronger community development efforts in this and subsequent projects. In addition, governmental services, where possible, should be provided for a fee and efforts should be undertaken to stimulate the entry of the private market in water and sanitation, particularly in the maintenance of handpumps and RWS systems that use motor-driven pumps.

13. Community development means more than participation in either project implementation or self-help. It means helping the community make decisions about project plans and an assessment of their own progress. Project staff need to be able to teach people techniques for motivation, decision-making, leadership, problem-solving, and fund-raising.

14. Project sustainability also requires planning for a transfer of skills and information to the communities and the GOB and an end to external funding. Project sustainability must be considered during initial project planning. To achieve the most effective use of the experience and information gained during the project, community files (including maps and design information), cost data, well records, and water quality information must be compiled and made accessible to CARE, the communities, and the GOB. Since such information is scarce in Belize, the compilation of well-drilling and groundwater information is especially important. Using that information is essential to improved well siting.

5.10 Sustainability

A number of constraints exist to sustaining the VLWS Project as it now exists: the cost of new latrines, training for operations and management of water systems, the lack of community involvement in the planning and evaluation of the continuing aspects of the program, and the lack of counterpart (GOB) involvement in the program.

Regarding the latrines, no doubt exists that the community has learned skills in the construction of latrines. Most people seem to understand the air-flow principle which makes the VIP odor and fly free, and they are capable of constructing new latrines using forms, concrete, and locally available materials. In places where pits could not be dug, built-up models have been used. Where pits caved in, people used local materials to shore up the sides of the pits. Cabins have been constructed of local materials.

The materials now provided by CARE cost about $88 (U.S.) per latrine and are beyond the means of most families; therefore, financial assistance from CARE and the Ministry of Natural Resources is critical. The MNR does not have the resources to subsidize materials, and VWSCs have no plans to raise funds to pay for new latrines. If new families revert to the old-style, unimproved latrines, it could have consequences for the whole community. Latrines already built will almost certainly be maintained and kept clean. Each family has its own and is proud of the modern features, cool interiors, and easy cleaning.

Regarding pumps, maintenance representatives on the VWSCs are fully aware of their responsibility to maintain and repair the pumps should they break. They have, however, not been adequately trained, nor do they have the tools to make repairs. They will also need a responsive team from WASA to make below-ground repairs. Drilling crews report that some wells are already filling up with silt and sand and they may, therefore, need redrilling or recasing before the pumps break.

The health education component of the project will be sustained only to the extent the community takes responsibility for it and it can tap into other resources, such as the MACH Program and the District Health Team personnel. The responsibility for the health education program should rest with the entire VWSC, not just with one member of the committee. This program, and the training of VWSC members in community organization, should be coordinated with HECOPAB and the Ministry of Social Services community development staff.

The VWSCs will last only as long as they have things to do. When latrines and pumps are installed, the committees will gradually dissolve unless they begin to take more responsibility in planning, education, community organization, environmental sanitation, water-quality control, fund-raising, and planning for future water and sanitation needs. The committees should, by the end of the VLWS program, be the "prime movers" for all water and sanitation activities in the community. They should know how to tap other resources, to make plans, and to monitor progress. CARE must keep its own visibility to a minimum, while bolstering the confidence and leadership skills of VWSC members.

As discussed earlier, there is little continuing GOB involvement in the implementation of VLWS. Therefore, lessons learned and skills that could have been acquired by GOB personnel will likely be lost. As yet, no plans exist for the transition at the end of USAID funding and for a transfer of skills, project information, and records to the community and appropriate GOB representatives. Plans for that transition and suitable agreements with the government should begin immediately.

Chapter 6

RECOMMENDATIONS

6.1 USAID

1. Because of past successful efforts of the National Coordinating Committee on Water Supply and Sanitation, USAID should take an active role in supporting the reactivation of the committee. The committee can play a critical role in assisting the Ministry of Natural Resources during this time of transition.

2. To promote institutionalization of the capability to implement water and sanitation projects, USAID should require the participation of counterpart staff in all of the projects. If possible, personnel from the Ministry of Natural Resources should be assigned to work with the VLWS Project immediately. The evaluation team understands that the MNR has plans to provide permanent staff--particularly health educators--that could work with CARE. This action would help relieve the project's current staff shortage as well as to develop capability within the MNR.

3. USAID and CARE should consider actions to assign additional staff to the project. The team believes that in addition to the full-time Health Educator, one full-time person should be provided in each district to work with the communities and to plan and implement training programs in community organization, water system management, and operations and maintenance.

4. In addition to monitoring the progress in completing the project targets, USAID should encourage CARE to develop indicators for other measures of community development--related to the long-term goal of project sustainability. The indicators should show:

   - Effective village water and sanitation committee organization
   - Ability of the community to define problems and establish priorities for action

- Ability of the committee to motivate widespread community participation--especially of women--in the project.

- Ability of the committee to show leadership and initiative, that is, starting clean-up campaigns, organizing fund raising events, promoting community standards for hygiene and environmental sanitation, and so forth.

5. The evaluation team believes that the VLWS Project is basically sound but needs support in those areas that will lead to long-term sustainability. Support for this and similar projects is warranted. To reduce the burden on the GOB for recurrent project expenses and to promote entry of the private market in this area, USAID should encourage the MNR to begin charging fees for maintenance services on handpumps, and the MOH should charge, where possible, for water-quality testing.

6. Future water and sanitation projects should be more flexible and should provide communities with a range of alternatives for technical solutions and level of service. Further, future projects should include targeting areas that have no water supply coverage or include communities with particular health problems or low income. The inclusion of large communities would also increase water-supply coverage at a lower cost per person.

6.2 Government of Belize

6.2.1 Ministry of Natural Resources

1. Additional personnel will be required to provide support to the continuing water and sanitation projects that have been recently transferred to the MNR. The MNR's plan to provide health educators and other staff who are responsible for projects in each district is sound. The team recommends, however, that the health educators have additional skills in community organization because they should become key personnel in the link between community development and water and sanitation programs. Use of Ministry of Social Services personnel to provide assistance and training in community development also is encouraged.

2. It is recommended that the MNR take the lead role in reactivating and providing a chairperson for the National Coordinating Committee on Water Supply and Sanitation. MNR participation also is recommended in the district health teams being established by the MOH.

3. Effective, standardized community training programs for the operations and maintenance of handpumps, water systems, and latrines are needed. MNR should use the resources of USAID and CARE and other funding agencies and contractors to develop the programs and training materials.

4. Significant problems are evident with the condition of drilling equipment and techniques used by drillers. It is therefore recommended that the MNR seek sources for long-term (1-1/2 to 2 years) funding of at least one and possibly two well-drilling advisors to work with the well-drilling crews and continue efforts to rehabilitate or replace drilling equipment.

5. Spare parts for handpumps and the availability of repair crews are already problems and will continue to be so as more new handpumps are installed. The consultants recommend that MNR seek ways to ensure the availability of both parts and crews. Charging fees for repair services would help reduce the recurrent cost burden on the MNR, support community self-reliance, and promote the entry of private market suppliers and mechanics in this area.

6. Management practices for both drilling operations and repair crews should be improved. The objectives should include:

   - Better use of well log and water quality information to assist in groundwater mapping and well siting
   - Better planning of drilling operations to ensure that all required materials are on hand to complete a well installation
   - Faster response to requests for handpump maintenance
   - Careful record-keeping regarding maintenance frequency, types of problems, and costs of handpump repairs
   - More participation of MNR crews in training community maintenance workers.

6.2.2 Ministry of Health

1. The evaluation team understands that the MOH intends to continue its close cooperation with the VLWS Project and with the MNR on both the ministerial level and with field operations. This commitment to improving health conditions in Belize is commendable. In particular, the role of the PHI in supporting VLWS health education efforts is crucial. Using field testing equipment and the new laboratory facilities, the PHIs can use water quality data to reinforce the message that rainwater catchment tanks and traditional wells need to be either improved or abandoned if new sources are available. We also support MOH efforts to establish the district health teams and encourage the continued participation of the MOH in the National Coordinating Committee on Water Supply and Sanitation.

2. The training of a back-up water lab technician will be required to ensure the successful operation of the water quality laboratory. MOH should seek funding and/or assistance for the training of the additional lab technician. Additional funding also will be required to ensure that in the future all recurrent costs for salaries and supplies are covered. It is recommended that the MOH consider charging fees, where possible, for water quality analyses, especially for testing private wells or storage vats or for hotels and restaurants.

3. The personnel in HECOPAB are dedicated and working hard to improve health education in Belize. Their resources, both personnel and materials, are, however, limited. The evaluation team recommends that HECOPAB focus its efforts and concentrate its resources. Currently, staff are stretched too thinly and try to cover too many topics in too many districts. By concentrating its efforts and working in areas where other projects (such as the VLWS) are already working, HECOPAB can take advantage of those resources and, based on lessons learned, develop complete programs that can be adapted to other districts.

6.3 CARE

1. The evaluation team recommends that CARE develop a project management system that uses bar charts or other techniques to plan the implementation schedule for each village and that can be used to monitor project progress and allocate resources. A discussion of the need for a monitoring plan and standard agree-

ments and procedures was presented in Mr. Turner's July 1986 report to CARE (WASH Field Report No. 193). This report should be reviewed, and the appropriate actions taken by CARE.

CARE should use the "Framework and Guidelines for CARE Water and Sanitation Projects" (WASH Technical Report No. 40; June 1986) to focus its efforts on project elements (such as community involvement in decision-making and operations and maintenance training) as this will improve the sustainability of the VLWS.

2. CARE should periodically review staff capabilities, responsibilities, and performance to determine whether its project staffing is adequate to implement the project and to resolve problems that arise. Where existing staffing are inadequate, CARE should take timely, decisive actions and should provide additional staff or staff training, as needed. More reliance on CARE/New York and the Regional Technical Advisor as technical resources also is recommended.

3. The evaluation team believes that the existing project is understaffed and recommends, therefore, that CARE provide an additional person to work in each district with responsibilities for:

   - Assisting communities in developing organizational and leadership skills
   - Coordinating the inputs of other project staff and the ministries
   - Ensuring that technical assistance is requested and made available to resolve problems that the village is unable to solve.

4. The team recommends that CARE take immediate actions to improve the long-term prospects for project sustainability. These include:

   - Developing, in collaboration with the Ministry of Natural Resources, standardized training plans for the communities in handpump operations and maintenance and maintenance of rudimentary water systems. Training also should be given in management, record-keeping, fee collection and use, and planning for system replacement (for pumps and generators) and expansion.

- Developing a plan for the transition phase of the project--when the villages take over complete responsibility for their projects. The transition phase should include periodic visits and assistance to the villages and plans to use other CARE projects, such as MACH and GROWTH, to reinforce the VLWS Project.

- Provide more training to CARE staff in community participation, community organization, and participatory evaluation techniques to ensure an effective transfer of organizational skills to the communities.

5. For future projects, CARE should provide more alternatives to each community and assist the community in determining what its costs and responsibilities would be for each alternative. This assistance will help ensure that communities are more involved in the planning and design of the projects to meet their needs and capabilities. Projects should also be designed to encourage the use of existing, inexpensive sources of water (such as rainwater catchment) and should promote improvements in existing sources (rainwater catchment and dug wells) that are likely to be used even when new projects are completed. Pilot projects to selectively try other technologies, such as solar pumps, also should be considered.

APPENDIX A

PERSONS INTERVIEWED

Persons Interviewed

CARE

Frank Brechin	Country Director
Sylvano Guerrero	Program Manager
Estilito Loria	VLWS Project Director
Ravey Smith	VLWS Health Education Director
Nancy Minnet	Maternal and Child Health (MACH) Project Nurse/Health Educator
Carol Rice	Consultant to MACH
Douglas Walker	Technical Advisor on San Antonio Water Distribution System

USAID/Belize

Neboycha Brashich	Mission Director
Sam Dowding	Health Projects Officer
Mary Ellen Tanamly	Project Development Officer
Arturo Villanueva	Evaluation Officer

Government of Belize

Douglas Fairweather	MOH, Permanent Secretary
Anthony Nicasio	MOH, Director of Health Education and Community Development Bureau (HECOPAB)
Lorraine Thompson	MOH, Public Health Inspector for Corozal District
Eleanor Hall	MNR, Permanent Secretary
Albert Hoy	MNR, Executive Director of Water and Sewerage Authority (WASA)
Denroy McCord	MNR/WASA Engineer

E. Gillett	MNR/WASA Coordinator
Bill Flower	MNR/WASA Chief of Handpump Maintenance Team for Corozal, Orange Walk, and Belize Rural Districts

Others

Merrill Wood	Chief of Party, Improved Productivity through Better Health Project (IPTBH)
Harry Phillipeau	IPTBH Sanitary Engineer
Terri McLean	IPTBH Community Development and Health Education Advisor
Richard P. Bourgoin	IPTBH Drilling Advisor
Mary Kroeger	Project HOPE, Project Director
Thierry DelRue	UNICEF, Progam Director

APPENDIX B

DISCUSSION TOPICS FOR COMMUNITY INTERVIEWS

Discussion Topics for Community Interviews

- Background of the project, when and how it started.
- Community expectations when project started and how.
- How the project was introduced and explained to the community.
- Assessment of how successful the project is in water, sanitation, and health education.
- How the VLWS has been integrated with other CARE projects in their community.
- How the VWSC was formed, its functions, how well it operates. Specific duties of individuals.
- Whether community political disagreements have affected either the project or the committee.
- Observed changes in behavior as a result of the health education program.
- Any activities which may have developed because of the project (businesses, home gardens, and so forth).
- Assessment of the level of community interest in the project.
- Issues of project ownership and responsibilities for maintenance of latrines, wells, etc.
- Training of VWSC members.
- Where they go for technical assistance when they have problems.
- The level of participation in the health education program. Activities they have undertaken, level of attendance at meetings, and assessment of effectiveness.
- Past history of community collaboration on a project.
- History or plans for fund-raising to pay for replacement parts, new latrines, or health education activities.

APPENDIX C

PHOTOGRAPHS OF THE VILLAGE-LEVEL WATER AND SANITATION PROJECT

Figure 1. Health education workshop with participants from each VLWS village.

Figure 2. New VIP latrines at school in VLWS Project village.

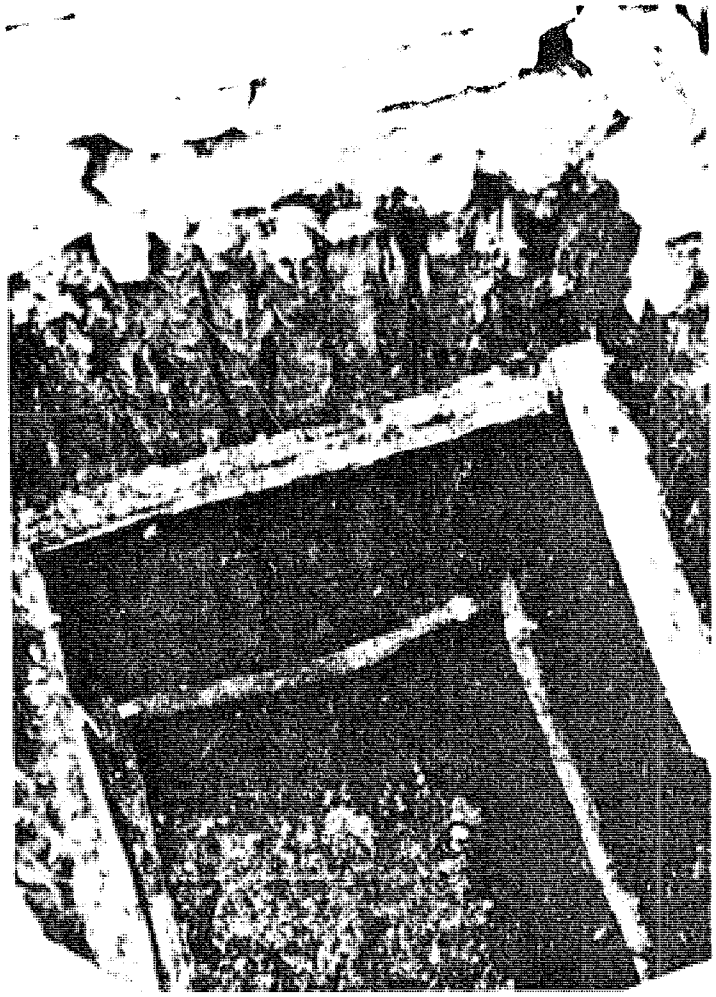


Figure 3. Latrine pit reinforced with local materials.

Figure 4. Construction of latrine collar.

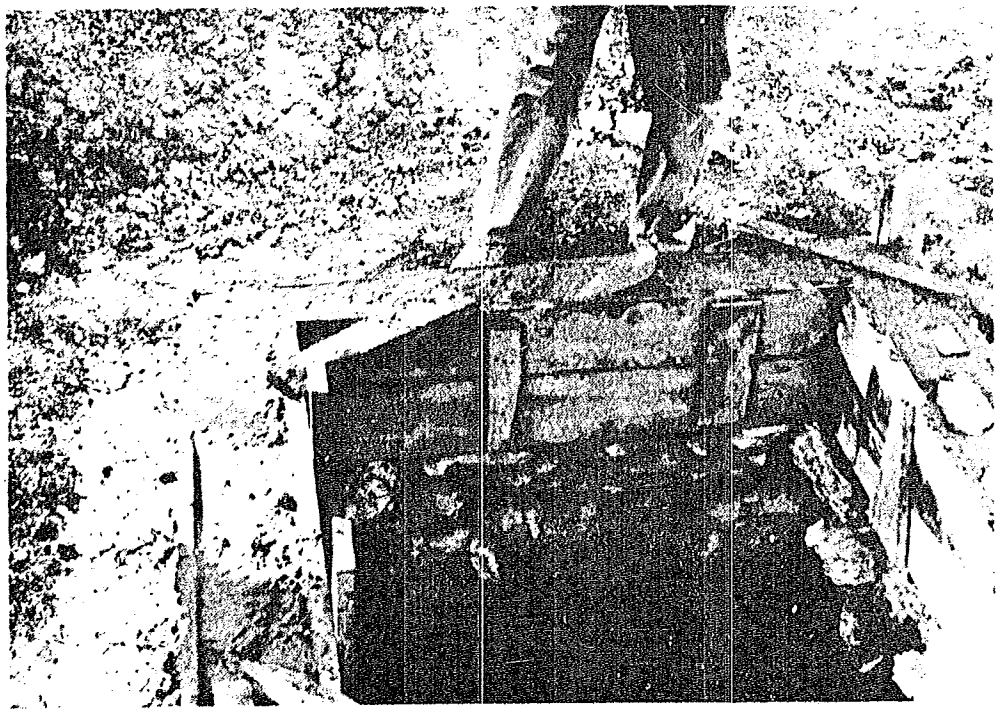


Figure 5. Latrine collar and base slab.

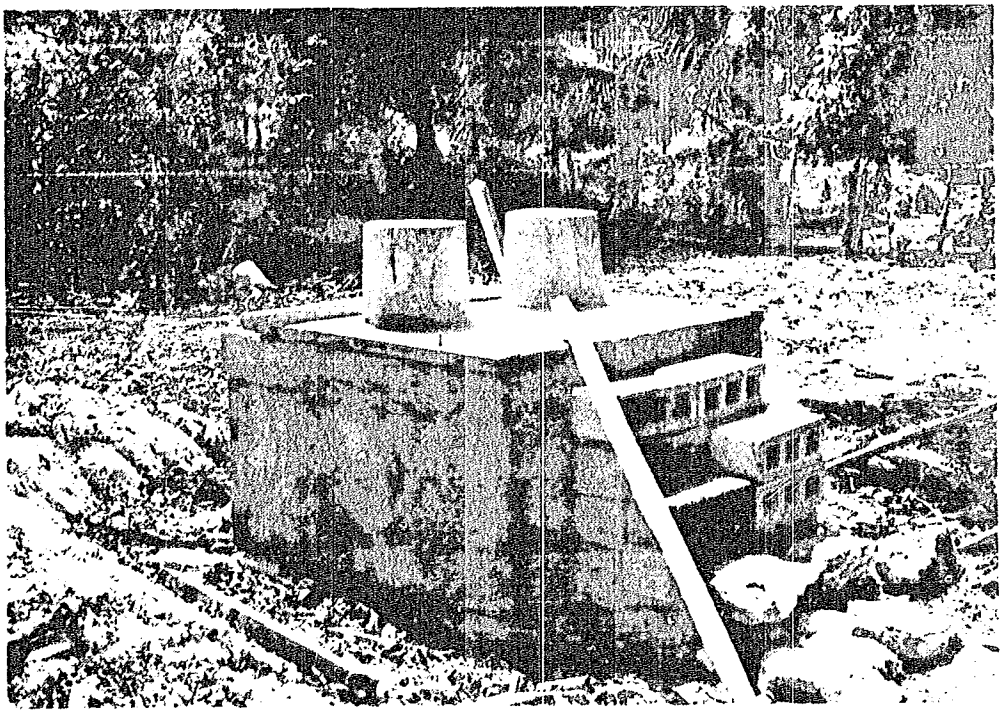


Figure 6. Raised latrine with dual risers.

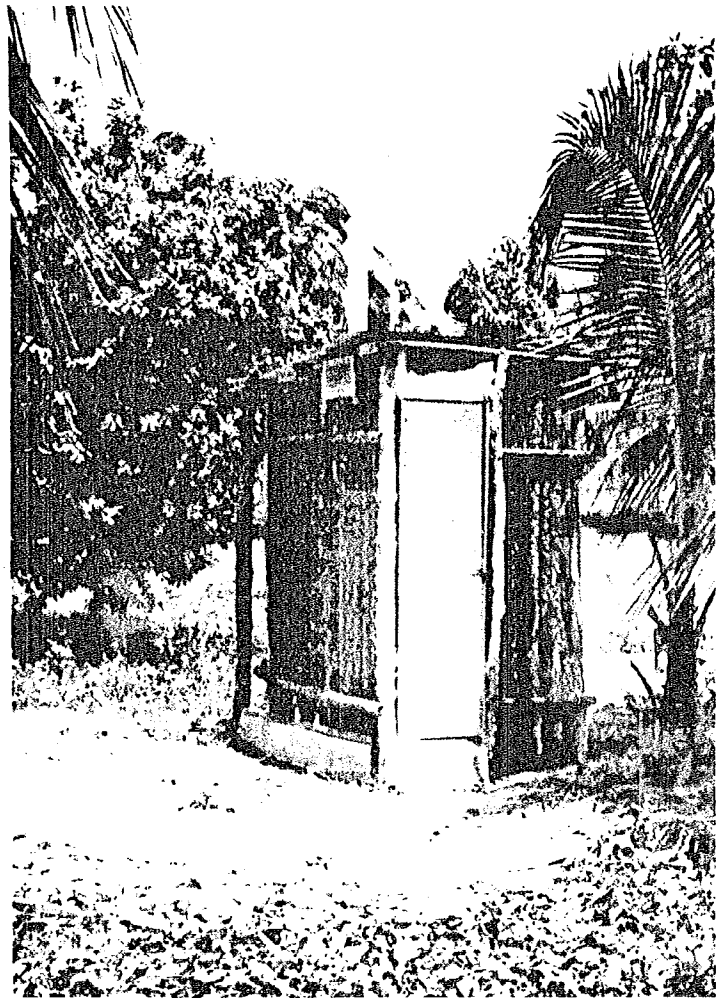


Figure 7. VIP latrine before outside coating of soil cement.

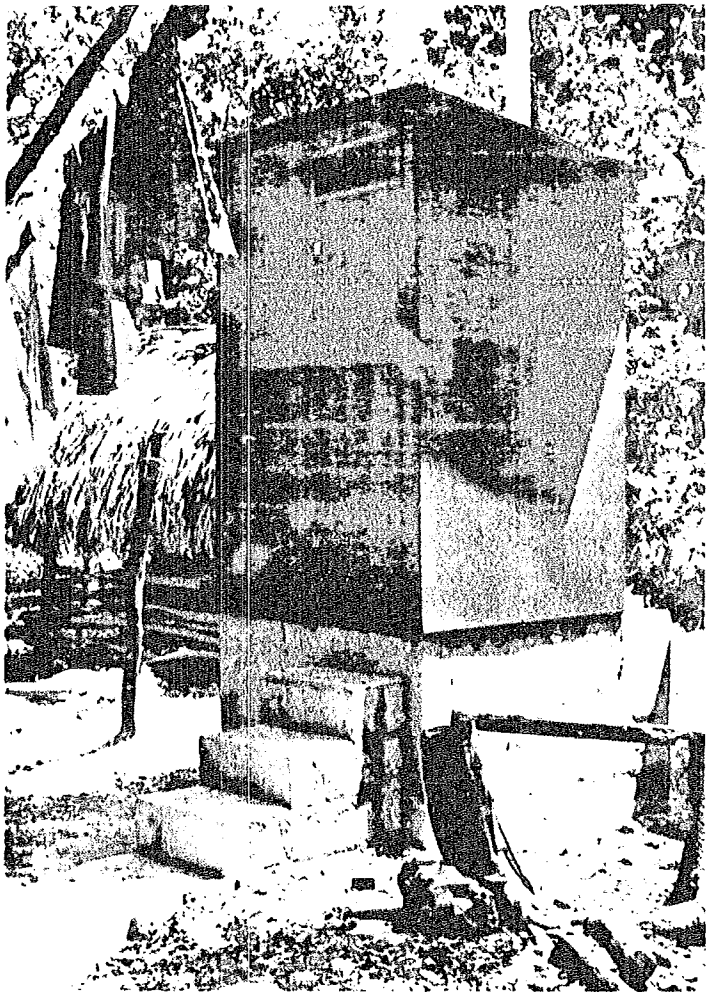
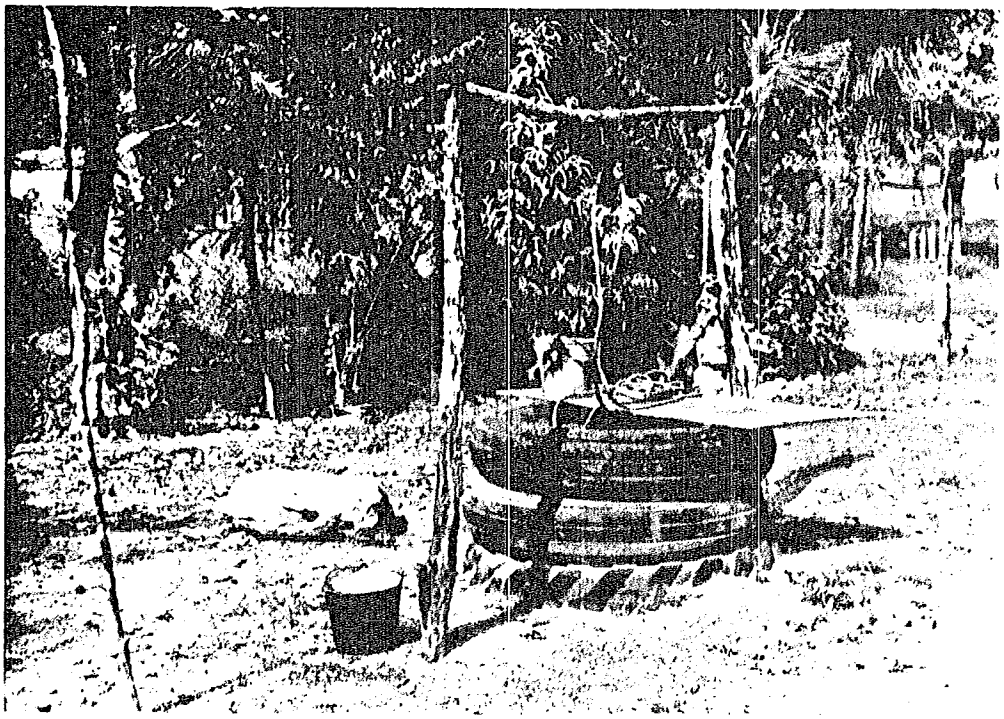
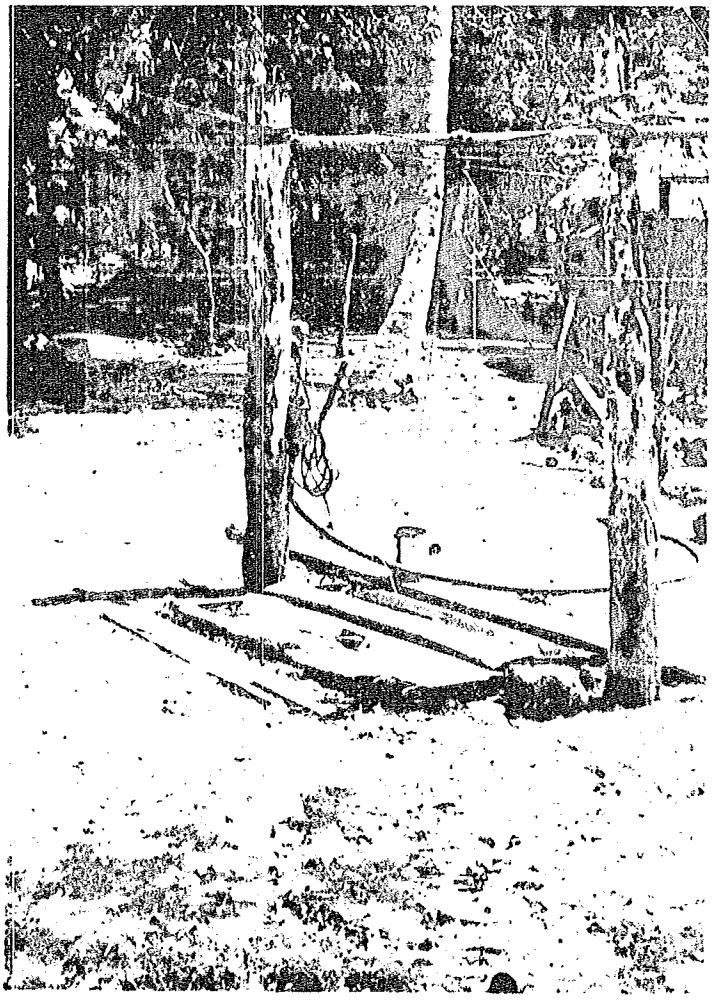


Figure 8. Completed raised VIP latrine with plywoood covering.





Figures 9 & 10. Unprotected, hand-dug wells.

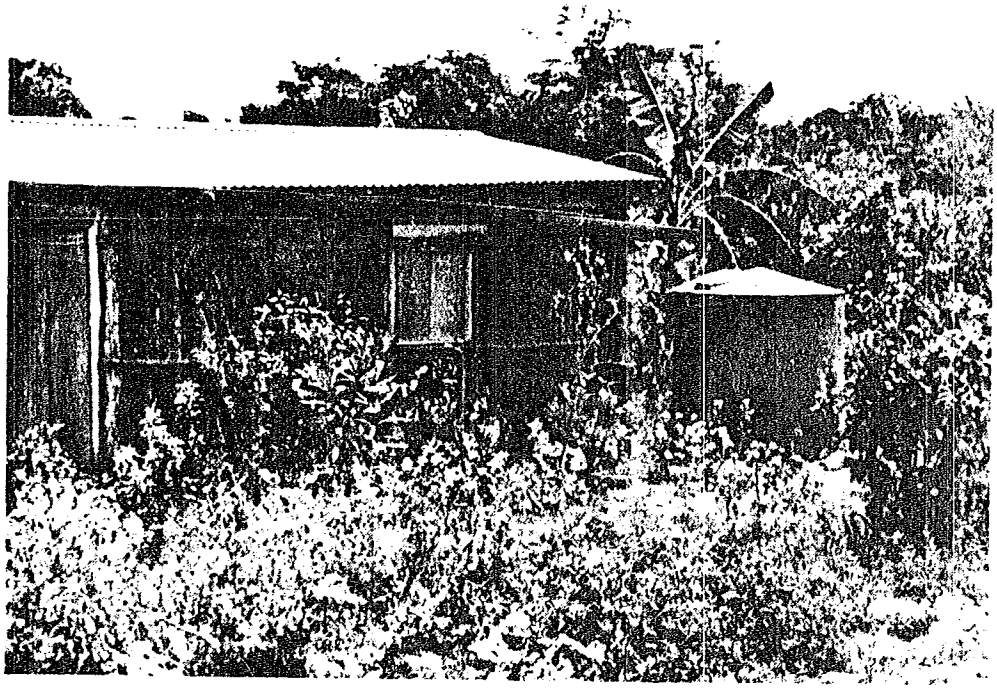


Figure 11. Typical rural rainwater catchment system.

Figure 12. Elevated water storage tank from previous CARE project in Douglas.

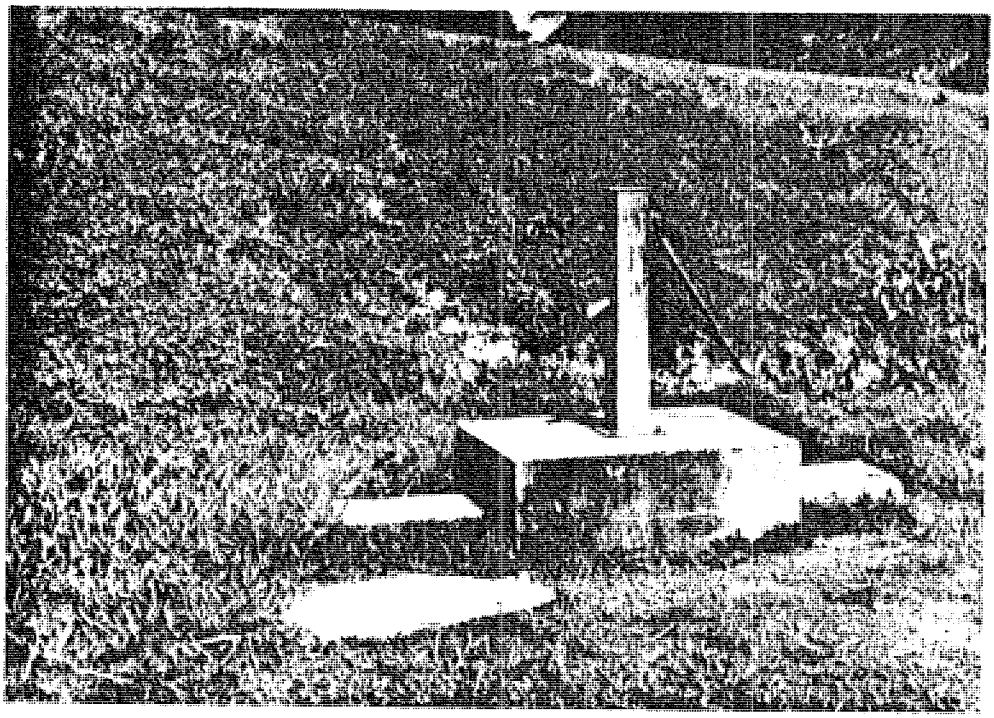


Figure 13. Consalen handpump.

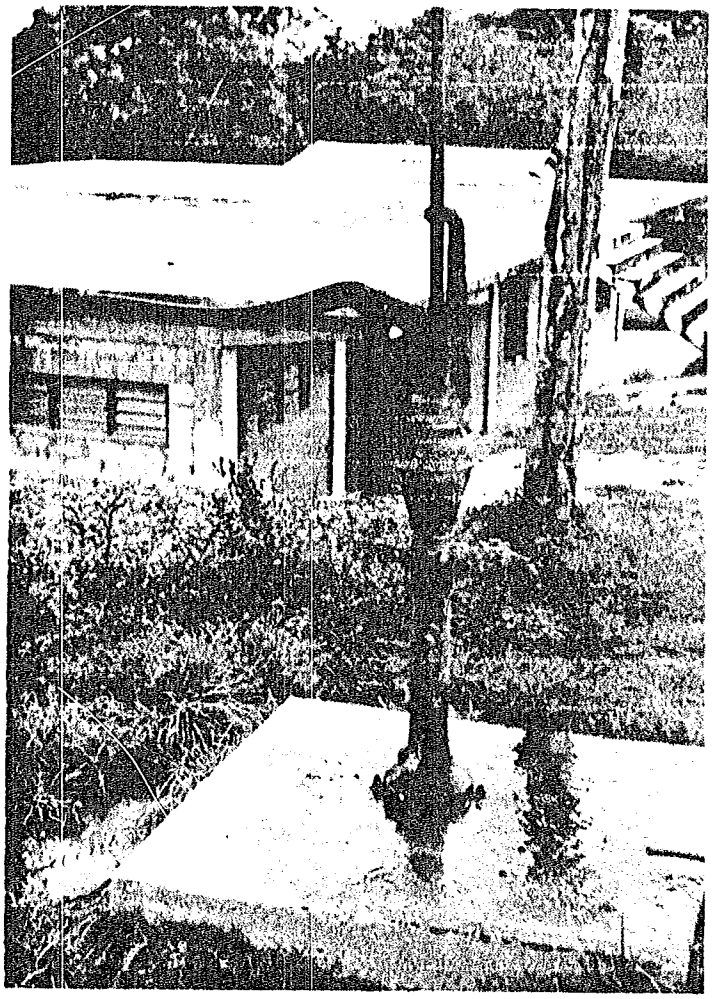
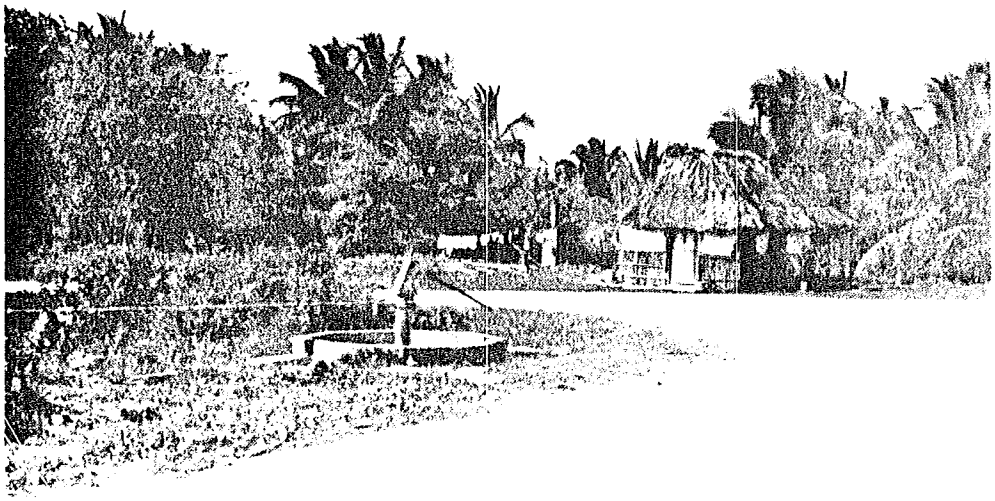
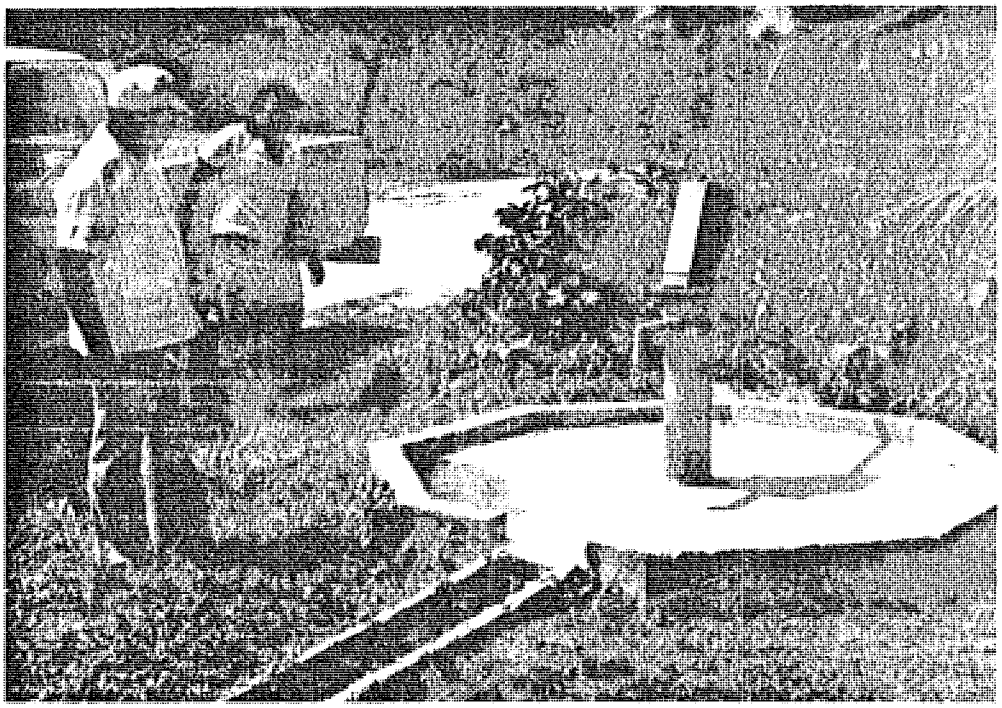


Figure 14. Dempster handpump.



Figures 15 & 16. New India Mark II handpumps installed under VLWS Project.



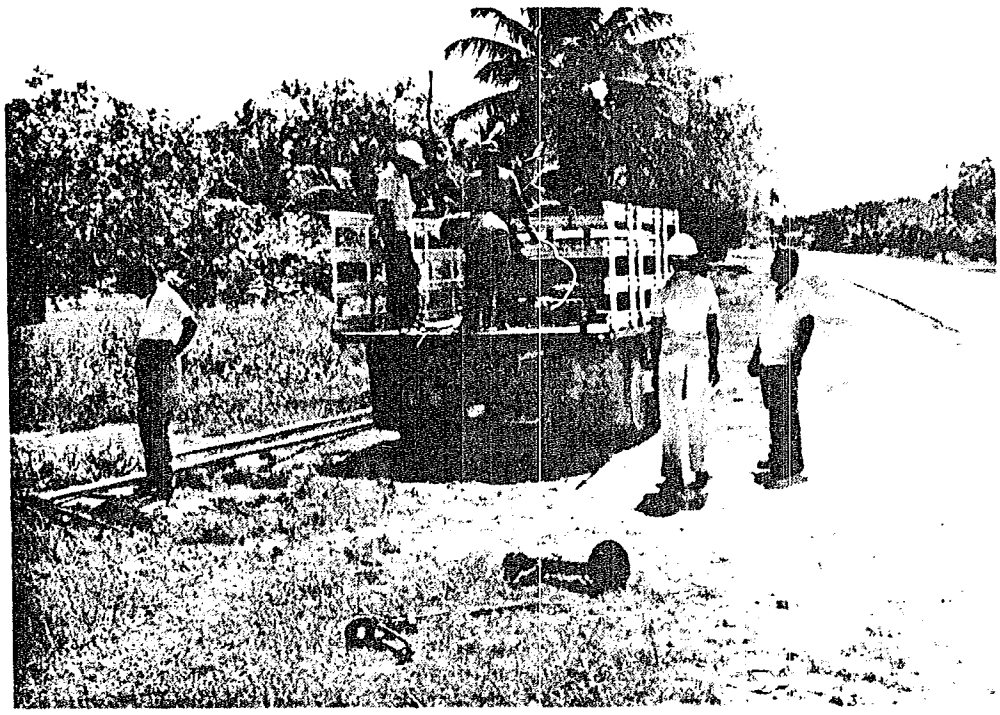


Figure 17. WASA handpump maintenance crew.

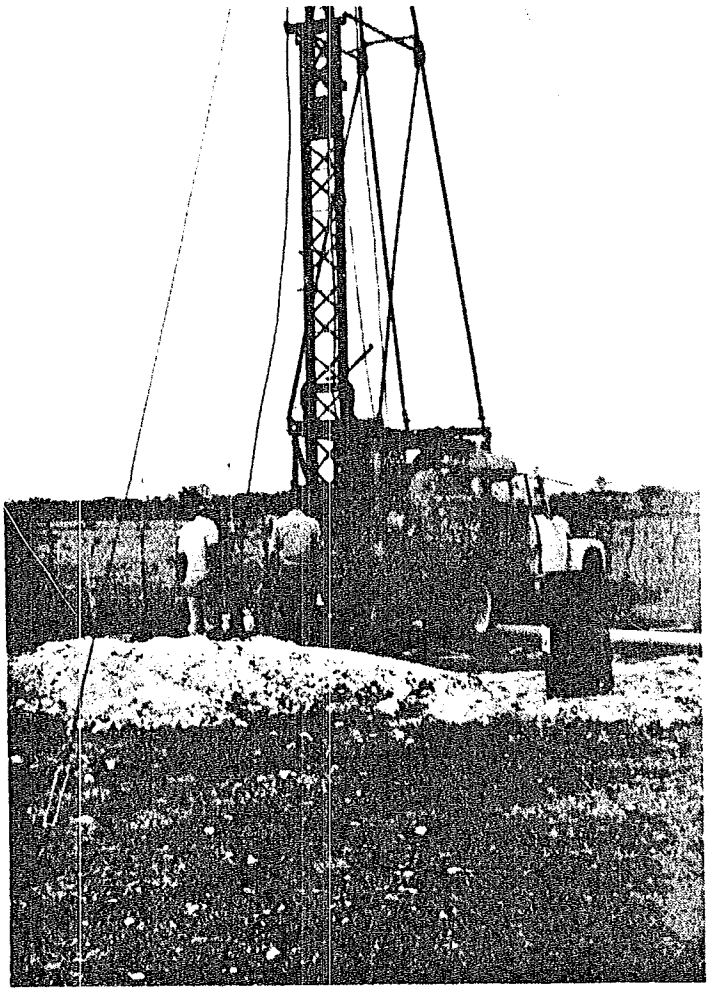


Figure 18. WASA drilling crew with cable tool rig.