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WATER AND SANITATION
FOR HEALTH PROJECT

Operated by
CDM and Associates

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MIDTERM EVALUATION

OF THE USAID/CARE

COMMUNITY WATER SYSTEMS

DEVELOPMENT PROJECT

IN THE REPUBLIC OF HAITI

WASH FIELD REPORT NO. 205

FEBRUARY 1987

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Prepared for
the USAID Mission to the Republic of Haiti
WASH Activity No. 325

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Prepared for the USAID Mission to the Republic of Haiti
under WASH Activity No. 325

by

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and
Jacqueline Nowak Smucker

February 1987

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LIST OF ACRONYMS

CAEP	Comité d'Approvisionnement en Eau Potable (Water Users' Association)
CCQ	Comité de Quartier (Standpipe committee)
COS	Community Organization Specialist
FFW	Food for Work
GTZ	German Technical Assistance Agency
KAP	Knowledge, Attitudes, and Practices
lpcd	liters per capita per day
MOA	Memorandum of Agreement
ORT	Oral Rehydration Therapy
PACD	Project Activity Closing Date
POCHEP	Poste Communautaire d'Hygiène et d'Eau Potable (Inter-American Development Bank project through Ministry of Health)
PVO	Private Voluntary Organization
SNEP	Service National d'Eau Potable (Haitian National Water Agency)
USAID	United States Agency for International Development
WASH	Water and Sanitation for Health Project
WS&S	Water Supply and Sanitation

Please note that throughout this report the community development promoters will be referred to as "promoters" and the user education and sanitation promoters will be referred to as "educators."

ACKNOWLEDGMENTS

The WASH evaluation team wishes to express its appreciation to the various offices of USAID, CARE, and SNEP for their interest and valuable assistance.

The team extends special thanks to members of the CARE staff who led us on our tours of project sites. These individuals include Lewis Jasmin, Anne Rapoza, Gary Philoctets, Frank Santelli, and Bill Barron. The team is most indebted to Peter Buijs and Steve Redding for their untiring support in arranging logistics and providing detailed answers to our many questions.

The team also thanks Dave Smith of USAID and Pierre Sajous and Michael Merisier of SNEP for their support and assistance.

Finally, the team would be terribly remiss if we did not thank the citizens of the project villages who patiently responded to our questions and who provided valuable insights into project operations. We wish them good health and long satisfaction with their new water and sanitation systems.

Chapter 1

EXECUTIVE SUMMARY

1.1 Purpose of the Evaluation

At the request of the USAID mission in Haiti, the WASH Project sent a two-person team to the Republic of Haiti in January 1987 to conduct a midterm evaluation of the Community Water Systems Development Project. The objectives of the evaluation were to assess the efficiency and effectiveness of project implementation to date and to make recommendations to USAID and all of the implementing agencies regarding project duration, financing, planning, implementation, and monitoring during the remainder of the project.

1.2. Project Summary

The Community Water Systems Development Project is a continuing rural water supply and sanitation project, commenced in July 1984 and implemented by CARE. The project plans to serve approximately 160,000 people in some 40 communities in the southern peninsula of Haiti by June 1988, using primarily capped springs and gravity-fed systems. At present, CARE is seeking an 18-month extension, thereby bringing the project activity completion date up to December 1989.

The goals of the project are to improve the quality of life in the targeted communities and to strengthen community institutions to enable them to manage the water supply and sanitation systems constructed under the project. To accomplish these goals, the project designs and constructs potable water systems, promotes community participation and the strengthening of local institutions, and develops and implements user education and sanitation activities in all target communities. Training is provided for community leaders, community plumbers, and governmental counterparts.

Project objectives are to:

- Build or upgrade 40 potable water systems in small towns and villages in southern Haiti. (The project is not involved with water supply for primary or secondary cities.)
- Provide approximately 160,000 persons with a regular, sufficient, and potable water supply.
- Set up local institutions for each water system in order that communities may operate and maintain the systems with minimum supervision by the National Water Authority.

- Offer sanitation education and facilities (town drainage systems, and so forth) and to train standpipe committee members for the maintenance of sanitation at all water points.
- Provide user education to increase water use for hygienic purposes and to protect water purity.
- Match community participation in a pilot latrine project in six water system sites to build a total of 1,800 latrines.

To implement this project, CARE has established an office, warehouse, vehicle fleet, and a team of 45 staff in the town of Les Cayes in southern Haiti. USAID provides a total of \$6 million to CARE to implement this project over its life, with additional contributions provided by the GOH, CARE, and beneficiaries.

In April 1986, a three-person USAID team conducted a rapid assessment of the project, which has been the only formal evaluation to date.

1.3 Major Findings

1. Project administration and management are appropriate and, at this point, proceeding well after a lengthy period of delays and slow implementation. A plan and budget have been submitted to USAID to extend the project by 18 months and to complete 39 systems (PACD December 21, 1989), without increasing costs.
2. Under the terms of the proposed extension the more likely number of sites to be completed will be 29 instead of the 40 originally planned, with a corresponding reduction in beneficiaries. It is believed that the original target of 40 water systems over a four-year period was too optimistic.
3. Engineering design and logistics have been generally satisfactory. The design of water supply for standpipes of 60 liters per capita per day (lpcd) is somewhat excessive but allows for possible future expansion. The design of the Port-à-Piment urban drainage system appears to be incorrectly dimensioned.
4. Construction has been generally satisfactory. The use of locally available materials, depth of trenches, and concrete quality appear to be particularly good.

5. Operations and maintenance plans have not yet been sufficiently tested. These plans are dependent on household connections to provide revenues. These connections, however, have not yet been accomplished under the project. The overall plan appears sound, but will require some fine-tuning.
6. Cost-recovery plans appear appropriate, but willingness to pay and sufficiency of revenues compared to O&M costs are problematic until more experience is gained under actual operating conditions.
7. Training of CAEP members and local plumbers appears sound to date; more training is planned.
8. Environmental issues include drainage around the standpipes and watershed protection. With some exceptions, drainage is generally good. Watershed protection needs to be emphasized in the future.
9. Sustainability of the project has been established on a sound basis, but some fragile areas in O&M still need to be addressed. In that the project serves as a model, replicability is possible. Because the project is not building an institution within the GOH, however, replicability is not an issue.
10. Community participation in providing labor for water system construction is going reasonably well, given that this labor is largely voluntary.
11. The CAEP's leadership, motivational abilities and level of cooperation with the community development promoters are more significant than the provision of Food-for-Work (FFW) incentive payments in mobilizing the community labor contribution to the project.
12. The CAEP electoral system is well understood and accepted by the officers.

1.4 Recommendations

1. CARE should prepare a new proposal for submission to USAID outlining alternatives of extending the project closing date and/or possibly reducing the number of sites to be completed. The proposal should provide the costs associated with each alternative, bearing in mind that no additional dollars will be available but that counterpart funds may be.

2. To improve the rate of production (that is, rate of completing projects with the maximum number of beneficiaries) a ranking of potential sites should be undertaken. Priority should be given to matching concentrations of population with cost-effective water systems. The sites should be ranked and clustered throughout the project area. Work should then proceed cluster by cluster to obtain maximum efficiencies in travel logistics.
3. In assigning priorities, consideration should be given to expanding existing water systems. It is recognized that there are inherent difficulties in expanding older systems or systems that have not been well implemented but, nonetheless, these systems do offer certain resources which need to be considered.
4. In consideration of the inherent uncertainties in well-drilling, it is recommended that drilling sites should be accorded a lower priority than springs. At sites where drilling is the only alternative, work on community organization and engineering design should not be undertaken until the well yield is determined to be sufficient for the community's needs. A short-term consultant should assist in locating drilling sites and in assessing the qualifications of drilling firms.
5. Community assessments should continue to be undertaken as part of the site selection process. Community participation initiatives, however, should not be undertaken until the feasibility of implementing the water system is determined.
6. The community participation approach to project implementation is sound and should continue to be used with modifications noted in this report. This approach has the greatest chance of ensuring that communities retain a vested interest in the systems such that they fulfill their operation and maintenance responsibilities over the long term.
7. Before construction of a water system begins, CARE should establish a contract with the community indicating how the community's labor input is to be organized. The contract should clearly state how much volunteer labor will be required and indicate how much of the work will be reimbursed with the FFW supplement. The amount of the FFW ration should be specified. The arrangement regarding reimbursement for semiskilled labor should also be indicated.

8. It is recommended that semiskilled laborers who work on a regular basis with project masons and plumbers not be asked to contribute a disproportionate amount of volunteer or undervalued labor. Remuneration to these workers should be made equitably. In these cases, consideration should be given to payment in cash.
9. CARE should minimize late, short, or spoiled FFW shipments as much as possible because these occurrences tend to undermine the credibility of the CAEPs.
10. Costs for household connections, officially authorized by SNEP, should be communicated in writing to all of the communities receiving a water supply system. These costs should include connection fees, installation charges, monthly water rates, and any other costs to be assumed by private households.
11. After the costs indicated in #9 above are relayed to the communities, private connections should be provided to all interested households as soon as possible. The household connections form the foundation for operation and maintenance of the water systems and, therefore, should be put into place quickly.
12. Where private connection fees are expected to be insufficient to cover O&M expenses, CARE should assist the CAEPs in determining alternative sources of income as soon as possible.
13. The COQs should be elected on a yearly basis rather than appointed and should be responsible for supervising the maintenance of the public standpipes or showers rather than performing these tasks themselves. Actual maintenance should rotate among households using the standpipes or, if this proves to be unsatisfactory, fountain or shower maintenance tasks should be performed by workers paid through the O&M account.
14. SNEP's financial responsibility for personnel and materials for major repairs (those beyond the financial and technical resources of the CAEPs) of the water systems needs to be clarified with SNEP personnel and communicated in writing to CARE and the CAEPs.

15. Studies should be carried out regarding the actual project costs of O&M, willingness to pay for household connections and standpipe use, and intermediate benefits (increased water consumption, improved water quality, decreased time in obtaining water, and so forth) related to the ultimate benefits of improved health and quality of life. A discussion of these studies is provided in Section 3.3.6.
16. The pilot latrine program, which is currently targeted at six sites and 1,800 latrines, should be expanded to include all of the sites in which water systems are built. CARE should develop a cheaper latrine model and use the money saved to further subsidize latrine builders' expenses.
17. In the area of user education and sanitation, CARE should reassess the educator's role in terms of allocation of time, suitability of messages communicated, materials used, and their relationship to desired outcome. In this regard, it is suggested that CARE use the services of a consultant who is a specialist in user/health education.
18. USAID should encourage SNEP to ensure that the POCHEP water systems in the project region, such as Les Anglais, are repaired and that an O&M program be developed. The POCHEP systems are deteriorating and represent resources that will be wasted unless action is undertaken soon.
19. SNEP should ensure the timely collection and analysis of water quality samples. Fecal coliform tests should be run at each site before the systems are placed in operation, at least two times a year thereafter (during the dry season and at the beginning of the rainy season), and whenever there is reason to suspect pollution of the water supply.

1.5 Evaluation Methodology

1.5.1 Objectives and Organization

The overall objective of the midterm evaluation was to provide USAID and CARE with an assessment of the Community Water Systems Development Project regarding its suitability, efficiency, and effectiveness and further to identify problematic areas and provide recommendations to address the problems.

The approach taken in conducting the evaluation consisted of interviews with key project personnel, interviews with members of the targeted population, and on-site inspection of constructed facilities and their utilization. Key project personnel consisted of staff from CARE, SNEP, and USAID both in Port-au-Prince as well as Cayes and other field locations. Members of the evaluation team conducted interviews with the elected officers of the community organizations formed to manage the water systems and also with users of the water and sanitation systems. Specific questions were posed to these individuals to determine their views on the project and its role in achieving the stated goals. Field visits were conducted to inspect both completed systems and sites where work was under way. The team also inspected five of the completed water system sites as well as three sites which were under construction. During site visits, assessments were made of the quality of construction, the functioning of the system, and the use of the system by the local population.

The model used in this evaluation was based on the premise that the project could be viewed under three basic categories: project implementation, project performance, and project impacts.

Project implementation is subdivided into inputs, implementation activities, and outputs. Inputs consist of the financial, commodity, and personnel contributions of the participating organizations (USAID, CARE, and SNEP). Project implementation describes the activities, designs, and plans made to achieve project goals. Outputs are, then, the results of the inputs and implementation activities and are described in terms of their construction and operational status. Project implementation is, therefore, evaluated in terms of efficiency in achieving stated goals.

Project performance is described in terms of the effectiveness with which the water and sanitation systems are used. Specific indications include water utilization, sanitation practices, and community support.

Project impacts are viewed primarily in terms of the impacts on health, economic, social, and environmental arenas. Often these impacts are difficult to measure and do not occur until after the project is completed.

It should be noted that the model described herein was followed in this report, but that additional focus has been placed on specific evaluation issues provided by USAID. These issues have been addressed at appropriate places within the model. Further, a specific format was recommended to WASH by USAID/Haiti for this report, and this has been essentially followed although it deviates somewhat from the usual WASH report format.

1.5.2 Itinerary and Other Logistical Details

The evaluation took place during a three-week period from January 25 to February 13, 1987. Initial meetings were held in Port-au-Prince with the staff of USAID, CARE, and SNEP. The evaluation team then traveled to the headquarters of CARE at Les Cayes. Over a ten-day period, meetings were held with project personnel and visits were made to field sites.

The evaluators traveled in CARE vehicles and were accompanied by key personnel from CARE and SNEP. Site visits were made to Maniche, Arniquet, St. Georges, Zanglais, Tiburon, La Cahouane, Port-à-Fiment, Rosier, and Laurent.

The latter part of the evaluation period was devoted to report writing and to presentations to the concerned organizations in Port-au-Prince. The travel from Les Cayes to Port-au-Prince was advanced somewhat over previous plans because of concern over travel during the first anniversary of the new government.

1.5.3 Evaluation Team

The evaluation team consisted of two members, Philip Roark and Jacqueline Nowak Smucker. Mr. Roark, team leader and water resources engineer, is a staff member of WASH. He has had extensive experience in managing, designing, and evaluating water resources in developing countries. Mr. Roark focused primarily on evaluating the engineering and construction activities of the project.

Ms. Smucker, a social scientist, is a WASH consultant with significant experience in Haiti. She has undertaken several assignments in evaluating rural development projects in Haiti and is a Creole speaker. Ms. Smucker has focused primarily on evaluating community participation and user education/sanitation activities within the project.

Chapter 2

PROJECT DESCRIPTION

The project description, as provided in this chapter, is summarized from the USAID Project Design document. Many details of project implementation have evolved during the course of project undertakings. The most significant of these undertakings are described in the following Chapter 3, "Findings."

2.1 Development Problem

The majority of rural communities and villages in Haiti, and particularly those in more remote areas, do not have easy access (that is, less than one kilometer) to a safe supply of water for drinking, cooking, washing of clothes and utensils, bathing, cleaning of residences and yards, and for consumption by animals.

In those areas where a supply of safe water is extremely remote or inaccessible, or where the community primary source is contaminated, it is likely that the health of many residents is being adversely affected. Deleterious effects on the health of small children and infants are particularly heart-rending. As indicated above, preventable waterborne diseases and diarrhea are endemic throughout rural Haiti. Installation of potable water systems is obviously not in itself a guarantee of improved long-term community health. In those areas where contaminated water sources are extant and used for consumption purposes, significant long-term benefits are expected from the development of a potable water system and concomitant measures for (a) continuing maintenance, financed by the users; (b) prevention of contamination; and (c) user education.

The project is expected to install systems only where: (1) an apparent and measurable need exists; (2) broad community participation in systems financing, construction, and maintenance can be reasonably assured, and (3) it is technically and financially feasible.

2.2 Project Goal and Purpose

The goal of the project is to improve the quality life of the inhabitants in the south and southwest regions of Haiti. This improvement will be measured in increased economic activity and improved access to greater quantities of better quality water in rural communities.

The purpose of the project is to construct or rehabilitate rural potable water systems and to assist community groups in operating and maintaining these systems. Water user education will assist communities in not only maximizing use of the systems but also, more importantly, in educating the user in water-related sanitation.

While this project builds upon the efforts and successes of the predecessor USAID/CARE potable water projects, it is more than a mere extension of the previous small-scale efforts which focused almost exclusively on the construction of water systems. Rather, this project moves beyond the provision of additional quantities of and better quality water to rural areas and also includes the promotion of basic principles of sanitation and institution building at the local level.

The project includes three major components:

1. The construction/rehabilitation of rural community water systems, to provide safe water to approximately 160,000 persons. It is anticipated that this component will involve approximately 40 systems; the final number, however, will depend upon the actual costs of the systems selected for construction or rehabilitation, which is largely a function of the number of people serviced in a given community and their proximity to the water source.
2. A community institution building component, consisting of the establishment and training of a water association in every community where a system is built.
3. A health and sanitation component which involves instructional activities in hygiene and sanitation (water user education) in all communities selected for systems construction or rehabilitation, and a latrine construction program in six pilot communities.

2.3 Project Inputs and Outputs

USAID project inputs, financed through a \$5,856,000 grant, include: (1) the construction or rehabilitation of approximately 40 community-based water systems; (2) 451 person-months of technical assistance for engineering, user education/sanitation, and community organization; (3) training at various levels (CARE/community) for those implementing the project; (4) 6 vehicles and 12 motorcycles; (5) water user and sanitation education; (6) the construction of six community based latrine systems under a pilot program; and (7) two project evaluations. These inputs are being provided through a Cooperative Agreement with CARE, with the option to provide sub-grants to other private voluntary organizations which have a demonstrated ability to carry out water systems construction or health/sanitation activities in a given influence area.

In addition to the Cooperative Agreement with CARE, a Memorandum of Agreement (MOA) has been signed with the GOH describing, inter alia, SNEP's role in the project, relationships between SNEP and the other implementing organization(s), and the host country contribution. Letters exchanged between AID and the Embassy of the Federal Republic of Germany outline the nature and extent of the collaboration between the AID-supported project and that of GTZ.

The host country contribution to the project consists of community contributions toward system construction, that is, materials, labor, and sites for the systems infrastructure. GOH public treasury resources finance the SNEP community water resources office and the salaries of SNEP personnel detailed to implement this project. GOH counterpart PL-480, Title I/III generations for the most part fund additional administrative costs incurred by SNEP through its participation in the project. These are attributable primarily to field support required for SNEP engineers and community organization promoters. PL 480 generations also fund vehicle operation and maintenance and the procurement of minor tools and equipment.

As specified above, the project is either building or rehabilitating approximately 40 community water systems, to serve approximately 160,000 persons, during the four-year life of the project. Water associations are being established and are expected to manage the systems upon completion. Funds are to be collected regularly from private connection beneficiaries. Continued maintenance is to be achieved through the efforts of the local water association and, when necessary and if requested, with the technical assistance of SNEP. Water association personnel are being trained in water system administration and maintenance. SNEP will, however, be responsible for ensuring that major maintenance of the systems is performed properly. That is, should major maintenance needs arise, SNEP will arrange for systems repairs.

2.4 Project Assumptions and Strategies

1. PVO Construction and Community Organization: Given the history of strong PVO involvement in water supply and in gravity-flow systems in particular, given the strong commitment of USAID to support PVOs in principle--choosing to strengthen them as a group in order to provide a private institutional system to complement the activities of government, and given SNEP's past willingness to encourage private contractors to construct water systems in Haiti, PVOs, and primarily CARE, were designated to carry out the water system construction under the project.

It was also USAID's conviction that based on past PVO and CARE experience in Haiti, and in the development of community water systems worldwide, community organization should be the responsibility of the implementing, that is, construction agency. A basic premise of the project is that communities will ultimately be responsible for management operations and maintenance of systems built with major assistance from an external agency. As CARE is expected to be responsible for leaving in place a system with long-term viability, it must also ensure that the community possess not only the right skills but also the proper organization. Thus, the Community

Organization Specialist (COS) and community development promoters are key actors in the process, along with various construction and other technical personnel.

2. Gravity-flow Systems: Final selection of sites for gravity-flow systems were to be the first priority for the project. Because these systems are relatively uncomplicated in design, easy to construct and simple to maintain, they were to be the systems of first choice. According to preliminary geological, hydrological, and other technical data, sufficient sources were determined to be available either for capping, rehabilitation, or extension. Alternative technologies, however, were to be considered as appropriate, particularly if exploitable, elevated spring-fed sources for gravity systems are unavailable in an area where the other critical selection criteria (high population density, minimum needs not being met, and strong community motivation) can be easily satisfied.
3. Community Maintenance: Individual communities were to be made as fully responsible as possible for maintaining their own systems. This commitment was based on the following reasons: first, gravity-flow systems--the system of first choice for the project--are relatively maintenance free, and most maintenance required was expected to be minor. Second, community preventive maintenance should eliminate most of the risk of more serious maintenance problems. Third, if the community takes responsibility for all but the most major systems repairs, fewer administrative costs (for SNEP supervision and preventive maintenance) will have to be borne by the GOH. Fourth, allowing individual communities to have primary responsibility for the maintenance and repair of their systems--and control of sufficient community funds for repair and maintenance--should enable a greater freedom of choice for those communities to engage a repair and maintenance contractor. Fifth, because communities are being provided with a subsidized water system, they should be obliged to pay for all repairs.
4. Sanitation/User Education: A community-based user education program is required to ensure, at a minimum, proper handling and storage of water to prevent contamination. The initial program developed under the project is expected to evolve into a longer-term effort.

Chapter 3

FINDINGS

3.1 Project Implementation

3.1.1 Inputs

Four separate organizations have provided inputs to the project in the form of financial support, equipment, and personnel. These organizations are USAID, CARE, SNEP, and the local community organizations.

3.1.1.1 USAID

USAID, as the financing institution, has granted to CARE \$5,856,000 for project implementation over a four-year period. An additional \$144,000 has been earmarked for a USAID project officer/manager, which brings the total grant to \$6 million. The project budget is subdivided into line items as shown in Table 1, Budget and Expenditures. Expenditures by line item to date are also shown in Table 1 on the following page.

3.1.1.2 CARE

CARE, as the implementing organization, is responsible for site selection, water system design and construction, organization of community participation, user education, and a pilot latrine program. At this time, CARE has 49 employees, both expatriate and national, assigned to the project. The personnel are assigned to one of four organizational units--administration, health education/sanitation, engineering/construction, and community organization. In addition, research activities are carried out by a Peace Corps volunteer. An organizational chart is shown in Appendix G.

Materials such as pipe, fittings, hand tools, and so forth have been purchased duty free for the project primarily in the United States. Other materials, including cement and reinforcing bar, have been purchased locally. A computerized inventory system has been established which contains 300 separate items.

CARE uses the following vehicles on the project:

- 2 Flatbed trucks
- 3 Dump trucks
- 4 Pick-up trucks
- 8 Four-wheel drive jeeps
- 3 Sedans
- 17 Trail motorcycles.

Table 1

Budget and Expenditures

<u>Water Systems Construction*</u>	<u>Budget Cooperative Agreement Part VI</u>	<u>Amounts Expended (As Per December 31, 1986)</u>	<u>As Percent Of Line Item</u>
a. International Personnel	\$ 423,565	\$ 157,580	37%
b. Local Personnel	872,250	297,066	34
c. Vehicles	316,000	229,226	73
d. Materials, Equipment, Services	1,537,050	850,929	55
e. Vehicle O&M	304,110	125,101	41
f. Office Operations and Equipment	132,775	83,783	63
g. Other Support Cost	<u>84,000</u>	<u>19,159</u>	23
1. Subtotal WSC	\$3,669,750	\$1,762,844	48%
2. Technical Assistance	785,300	196,535	25
3. Vehicles (TA)	91,750	83,194	91
4. Vehicle O&M (TA)	73,400	23,918	33
5. Training	137,400	8,232	6
6. Water Use Education	183,500	17,378	9
7. Sanitation	275,200	20,732	8
8. Community-Based Health	91,750	0	0
9. Evaluation Audit	<u>64,250</u>	<u>0</u>	0
Subtotal	\$5,372,500	\$2,112,833	39%
10. Indirect Cost (10.34%)	<u>483,500</u>	<u>215,998</u>	45
Total	\$5,856,000	\$2,328,831	40%
Balance as of 12/31/86	\$3,527,169		60%

* Breakdown for PP, Annex 19, revised May 10, 1984 for first column and from Quarterly Progress Report, October - December 1986, for the second column.

3.1.1.3 SNEP

SNEP is, by law, the governmental institution responsible for all water systems in Haiti, except for Port-au-Prince. The Government of Haiti furnishes Title III counterpart funds for salaries of SNEP personnel assigned to the project, SNEP administration, minor equipment, and O&M of vehicles assigned to the project. SNEP personnel assigned full time to the project in Cayes include a project director, one engineer, one lab technician, one plumber, one regional promoter for maintenance, and five community development promoters. Other SNEP staff, both in Port-au-Prince and in the Les Cayes region, divide their time between the project and other SNEP activities. The project has provided two vehicles and six motorcycles for SNEP participants.

3.1.1.4 Communities

Local communities, as the recipients of the development activities have, nonetheless, provided a considerable amount of materials, land, labor, and time to the development process. Most of these contributions have been in-kind contributions in the form of labor in the construction process; organization and management of local activities; and procurement of locally available building materials, such as sand, gravel, and stones. Labor has been provided both free and under partial compensation through Food-for-Work payments. Direct monetary collections have been made by the communities to cover O&M costs. Calculations of monetary contributions and equivalent Food-for-Work payments are discussed in Section 3.1.2.4. Land or right-of-way across private holdings has been granted by individuals within the communities for pipelines, reservoirs, and standpipes.

A budget summary showing the expected financial contributions of each organization as derived in the Project Paper is shown in Table 2 on the following page.

3.1.2 Implementation Activities

3.1.2.1 Administration and Management

CARE project management personnel have undergone several changes during the past few months. Both the project manager and implementation manager have been on the job less than three months and the construction engineer, approximately six months. These three positions are critical to project success, and the new appointees appear to be well qualified. In fact, the project, after having gone through a phase of what may be described as a slow project startup, now appears to be reasonably well tuned and on the brink of better progress. The new management staff should be able to provide further fine-tuning and have the flexibility to make necessary changes.

Administration procedures appear to be well entrenched and are being correctly followed. Project files are sparse, but provide most of the basic details concerning project activities. A computerized inventory system was established by project staff, and accounts for about \$300,000 of equipment and

Table 2
Budget Summary*
(in \$000)

	<u>AID</u>	<u>PL 480</u>	<u>Host Country Public Treasury</u>	<u>Local Community Contribution</u>
I. Water System Construction/ Rehabilitation				
40 systems, average 4,000 beneficiaries per system, average \$25 per beneficiary 40 x 4,000 x \$25	\$4,000			\$ 440
II. Institution Building				
Technical Assistance	1,000			
Training	150			
Vehicles (6 vehicles and 12 motorcycles)	100			
Vehicle Operations and Maintenance	80	\$45		
Minor Equipment (Tools, etc.)		80		
SNEP Administration (Including Personnel)		475	\$500	
Community Water Association Development				160
III. Water User Education	200			200
IV. Sanitation/Latrine Program	300			100
V. Community-based Health Organizations (e.g., AOPS)	100			
VI. Project Evaluation (2)	<u>70</u>	---	---	---
Total	\$6,000	\$600	\$500	\$900
Project Total (All Sources)	\$8,000			

* From Project Paper.

materials. The warehouse manager appears to understand the principles of inventory control but needs more training and experience in the use of the computer system. The warehouse and garage facilities in Cayes are adequate for the assigned tasks. The Cayes office will benefit from the planned compartmentalization of the offices.

One management procedure, in particular, deserves special mention regarding its effectiveness. The field staff work a schedule of three weeks on and one week off. In consideration of the rather long distances and poor roads in the project area, this procedure doubtlessly improves efficiency significantly. New work plans (June 1986) and corresponding budgets have been prepared (September 1986) which request an extension of the project for an additional 18 months, to December 31, 1989. No additional funds are being requested, but the total project beneficiaries are proposed to be reduced from 160,000 to 156,000. It is clear, based on past project achievements, that the original targets were too ambitious and that several uncontrollable events (civil disturbances and flood) have negatively affected project progress. Given CARE's experience in Haiti with similar water projects, it is, in retrospect, unfortunate that more time was not planned at the beginning of the project for the usual factors which delay project implementation.

The question which remains, after two years of operation, is whether the proposed plans and budgets can be achieved. While the budget appears sufficient for the activities as proposed, the time schedule appears somewhat optimistic. It is noted, however, that the project now has achieved a momentum and a reputation among the communities in the project zone which should allow for improved efficiencies.

The work plan allows for the following time periods for each phase of water system activities, as follows:

- Preliminary study and community organization 1 month
- Design preparation and community organization 1 month
- Construction 6 month

Care must be taken to ensure that, while focusing on the construction targets, that sufficient time is accorded the critical role of community organization. Ultimately, the long-term sustainability of the water systems depends on the abilities of the community organizations. Inadequate attention to community organization and health education will diminish the anticipated project impacts on health.

3.1.2.2 Engineering: Design and Logistics

The basic principle, in design, has focused on spring-fed, gravity pipeline systems which minimize operation and maintenance requirements. Most of the systems require a storage reservoir, and three sites currently under study require well-drilling because no springs are available. The project incorporates a computer program in pipeline layout and dimensioning, which appears most effective. The piped systems, during the time of the evaluation, appeared to be functioning well.

One system at La Cahouane, however, is currently somewhat undersized for transporting all of the available water in a system which appears to have more village water demand than supply. It is recommended, therefore, that the spring yield be reexamined at the height of the dry season to determine whether an increased pipe capacity is warranted.

The design of the drainage system in Port-à-Piment appears to pose a problem. The drainage network covers 2,580 meters of rock and mortar-lined canal but uses only three sizes of structures. The dimensioning of the structures does not appear to sufficiently accommodate increasing flows from the increasingly larger catchment areas as one proceeds downstream. Further, the streets are not sloped, nor are entrance structures provided to the canal. While it is always difficult to determine design flows in an area for which little rainfall data are available (particularly in a hurricane zone), appropriate information is available from the U.S. Weather Bureau and other agencies in Puerto Rico. At this point, it is uncertain whether the system will provide the required drainage for Port-à-Piment. It is recommended that: (1) several key entrance structures to the canals be provided before the rainy season; and (2) careful inspection during the rainy season will provide a test for the adequacy of the canal design dimensions.

The water systems have been designed to supply 60 liters per capita per day to standpipe users and 100 liters per capita per day to household connections. Twenty percent of the community is assumed to require household connections. Total demand is based on expected populations 15 years into the future. The design per capita figures for standpipe users are assuredly much more than required, but this provides additional flexibility for other future uses and for expanding the system without significant increases in cost.

Another problem area, albeit minor, is the use of the India self-closing faucets. Faucets are often a vulnerable point in standpipe water systems, and this project is no exception. The primary purpose of the faucets are to conserve water and, for the most part, they accomplish this purpose. Some users, however, have learned to stick small objects into the faucet, which leaves the faucet running and possibly harms the faucet. The faucets are also sensitive to pressure in the system and are somewhat more difficult to operate, particularly for children, in the higher-pressure systems. According to CARE staff, there also appears to be problems in manufacturing quality of the faucets as one batch of faucets has had more operating problems than others. Adjustments are being made to the faucets, and it appears that past breakdowns may be eliminated.

It is recommended that, should problems with the India faucets continue, that the classic brass pressure faucets be considered for the project. These faucets offer the advantage of being readily available in Haiti and probably less expensive to purchase. They do, however, require rather frequent maintenance and replacement and, therefore, must be compared with O&M on the India faucets.

The design of the showers at some early sites has posed a problem for younger children (short people) to reach the faucet. This situation is attributable to the use of the India faucet. The newer facilities under construction, however, have lowered the valve mechanism so that shorter people may use the showers.

The supervising strategies employed by the project are satisfactory. Much of the strategies depend on community participation in marshaling the requisite workers at the proper time; therefore, coordination between the construction supervisors and the community workers is the key.

3.1.2.3 Construction

The quality of construction generally appears good, particularly when one considers that volunteer and Food-for-Work labor are used. The project has used local materials, such as rock and mortar, whenever possible which is to be commended. The construction of reservoirs has been undertaken with reinforced concrete to date. The reservoir at La Cahouane, however, is being partly constructed with concrete blocks, thereby eliminating much of the need for wooden forms. This construction type should prove cost-effective and should be encouraged, although there are practical limits to the height of the structures. Care must obviously be given to employing experienced masons in constructing the block structures.

The spring catchments are generally functioning well. Spring development is as much an art as it is a construction process, and no two sites are alike. The spring at Maniche captures only approximately 50 percent of the flow, which is more than adequate for the village demand. The remainder of the flow appears to be eroding one wall of the structure and will need repair in the near future. The springs at Tiburon, and possibly Rosier, will require gabion structures to protect the springs from flood flows as the river channel at these sites is unstable.

The project gained valuable experience from the recent floods in the need for reinforcing pipeline river crossings. While the floods are said to be of an unusually high magnitude, there are insufficient data to determine recurrence intervals or predict the probability that such floods may occur again in the near future. Attention should be given, in any case, to choosing river crossings where the river is least likely to erode during flood stages.

At present, well construction is proceeding at two sites. At the present time, neither site has proven to be productive, although adequate pump tests have not yet been undertaken. It is likely that other future sites will also need to rely on groundwater development. Groundwater development, however, is a major question within the project at this time because of the uncertainty surrounding the location of aquifers and the capabilities of the drilling organization. It is recommended that the groundwater development program be reevaluated by a short-term consultant to provide recommendations on suitable drilling sites and to investigate the capabilities of the drilling organization and possible alternatives.

3.1.2.4 Community Selection and Participation

CARE's approach to implementing the community water systems development project was to first notify communities throughout the southern peninsula of the availability of the project. CARE asked that interested communities

submit letters of request to participate in the project. To date, approximately 60 letters have been received. Requests are reviewed according to date of receipt, but also take into account CARE's efforts to cluster projects geographically for logistical ease in implementation. To avoid duplication, CARE also coordinates its efforts with the POCHEP water project activities in the area.

The request review process takes into consideration both technical and social feasibility issues. Because by design the project includes a significant community participation component, it is necessary for project community development workers to make a judgment, before the project is approved for implementation, regarding the likelihood that community participation and cooperation will be sufficient to construct and maintain the water system.

During the early stages of the project, this initial community assessment was not conducted. At first, SNEP initiated the implementation process by establishing contractual agreements with community councils. These agreements obligated CARE to establish some projects in areas which were not well suited to water projects for both technical and social reasons. As the result of these early experiences, changes were made in the site selection process. Currently, CARE, not SNEP, makes the final decision concerning site suitability as determined by a process of community and technical feasibility assessment.

At present, the following social and community organization issues are studied by CARE as part of the overall feasibility determination process:

- The need and availability of water for home and institutional use
- Water problems in the area
- The level of interest people have in organizing themselves to implement and maintain a water system
- The community's experience in community development
- The community's rapport with the initiator of the request for the water project
- The community's readiness
- The community's willingness to pay for maintenance
- Bad experiences or failure of other projects
- The expected manner of participation of the population in implementing the project
- The availability of materials
- List of leaders, institutions, and authorities interviewed in the community

- Indication of rainy seasons, planting, and harvesting periods
- Estimated population and indication of the source of this information.

To date, none of the communities assessed have been rejected for reasons of lack of sufficient community participation potential. While there have been problems with lagging community participation efforts in some systems during the construction phase, these have never been sufficiently serious to abandon the project entirely. In one locality, however, community factionalism and resulting lack of participation were sufficiently serious to cause CARE to temporarily withdraw its efforts until the community could resolve its differences.

It should be noted that the presence of factionalism in a community is not viewed as a sufficient reason to reject a community from participation in the water project. Factionalism is prevalent in Haitian communities. It has been noted by CARE staff that the effect of the introduction of a water system project sometimes serves to bring the community together around an issue upon which all can agree.

Once a community is approved for the construction of a water system, the local water users' association, Comité d'Approvisionnement en Eau Potable (CAEP), is formed through a general election organized by CARE's community development section. Elections are held for four positions: president, vice-president, treasurer, and secretary. A fifth position, that of advisor, is appointed by the president. All members are elected for a period of one year, but can hold office for the same position (if reelected each year) for a period not to exceed three years.

A member who has held the same office for three years may, however, be elected to a different office the fourth year with the same three-year maximum provision. A person who has held a position for three years is eligible to run for the same office again after an interim of one year.

This electoral system is well understood by all of the eight CAEPs visited. To date, the electoral system is working well and is well accepted by the officers. Some of the associations have already conducted their third elections with CARE's assistance. CARE is now making arrangements and putting together materials to instruct the associations regarding how to conduct their own elections in the future.

Once elected, the CAEP takes on a series of responsibilities during the water system construction phase. Their initial responsibility is to provide the leadership necessary to motivate the community to provide the amount of labor requested by CARE.

In each of its water projects, CARE assesses the community volunteer labor requirement at one meter of trench digging per person in the system. For the remaining work, CARE provides a supplemental reimbursement for labor in the

form of Food for Work (FFW). In one locality where equivalent information was requested, it was found that the FFW ration was approximately 22 percent of the daily wage labor rate in the area.

The CAEP is responsible for organizing the labor groups who are then supervised by a foreman. Where FFW is involved, the CAEP has the responsibility to receive the shipments and distribute food (bulgur wheat, cooking oil, and occasionally milk) to the workers according to the reimbursement schedule prepared by the foreman. The volunteer and/or FFW labor arrangements have varied.

In some constructed systems, a portion of the unskilled labor was provided on a voluntary basis, and the rest received a partial reimbursement through FFW. Some individuals, however have worked completely on a voluntary basis, while others received FFW supplements. In other systems, all of the unskilled labor was provided on a voluntary basis. In these systems, the FFW supplement was given to semiskilled laborers who worked with the masons and the plumbers on a regular basis.

FFW recipients have been rural residents or lower income town's people. More affluent town's people have no interest in receiving FFW and would withdraw from labor which is to receive FFW reimbursement. More prominent towns people have on a number of occasions made their contributions to the project in cash payments for laborers rather than performing the work themselves. It should be noted that up until the present time, the recipients of the FFW supplement have been beneficiaries of the water system. No evidence exists that unemployed individuals from outside the system are working on the project for the sake of the employment it provides. This is probably a function of the low rate of reimbursement for this labor. Two localities, however, are providing volunteer labor to a system under construction, without the assurance of being able to benefit from the water system. These localities were not included in the original design, and it is unclear at this point, whether it is technically feasible to include them now, even though there is general agreement that these localities are in desperate need of water. This issue needs to be resolved as soon as possible to prevent any accusations of exploitation of labor.

To what extent FFW significantly facilitates the implementation of the water systems remains unclear. CARE's strategy has been to minimize the utilization of FFW in the project to the extent possible. It prefers to rely heavily on volunteer labor in order that people who use the system will feel invested in it by virtue of their voluntary labor contribution. It is expected that this approach will pay off in the long run in terms of community involvement in the operations and maintenance of systems which are not exclusively gifts from outside donors. At the same time, CARE is reluctant to discontinue FFW entirely, because it does not expect communities to be able to manage the labor input required entirely on its own. CARE also prefers to remain flexible in its use of FFW. It wishes to use FFW as a motivational tool on a case-by-case basis depending on the extent to which volunteer labor efforts are successful.

In resolving the FFW issue, two factors need to be addressed - equity and efficiency. CARE is, at the present time, addressing the issue of equity for unskilled labor. The strategy currently being implemented is that each work team is expected to perform a certain portion of its work on a voluntary basis. Once this work is completed, the same team will be eligible to receive the FFW supplement for the rest of the work to be performed. This plan appears to be equitable and should meet with general acceptance.

An equity issue that still needs to be addressed, however, is payment for semiskilled workers who work on a regular long-term basis on the system. For these workers to be paid the FFW supplement, means that some are likely to contribute a disproportionate amount of under-valued labor compared with the labor contribution of other project workers. Equity demands that these workers equivalent volunteer labor portion be no more than that expected of others on the project. The rest should be reimbursed preferably in cash, at the prevailing daily wage labor rate. Cash payment is preferred to avoid confusion with the FFW established pay scale for unskilled labor and possible accusations of unfairness as well as to comply with food aid policies.

While in principle the FFW supplement is supposed to be a spur to motivation, in fact, when introduced it usually has the effect of temporarily slowing things down and causing some disruption until its use becomes systematized. When food payments are delayed for extended periods of time, temporary work stoppages often result. These delays also undermine the credibility of the CAEPs and result in accusations of corruption. Work stoppages have also resulted among unskilled workers when semiskilled workers were given FFW rations while the unskilled were expected to work voluntarily. Workers often complain that the ration is too small, but this in itself usually does not cause work stoppages. Over time, workers have come to accept the fact that FFW rations are supplements rather than wages.

For all of the controversy and the additional administrative and logistical burden imposed by FFW, one might wish to eliminate it from the program. This cannot be done, however, due to the fact that communities have come to expect some FFW in these water projects. Nor should FFW rations be increased, because people have now, in general, come to accept the idea of FFW in this project as a supplement rather than as a wage. To change the approach now will simply renew the controversy. CARE can, however, minimize the disruption the introduction of FFW precipitates by clearly establishing the terms of its contractual agreement with the community before the project is implemented. CARE should carefully spell out its volunteer labor requirements, its willingness to provide a specified FFW ration for a specified amount of work, and its reimbursement arrangement for semiskilled labor. If the conditions are outlined before work is undertaken, any negotiations concerning the terms can be settled before work begins, thereby minimizing time loss when FFW is introduced and increasing efficiency.

CARE's community participation approach to the construction of water system, which relies heavily on volunteer labor and uses FFW as a supplement rather than a wage equivalent, has both strengths and weaknesses. Its strength lies in the fact that it demands community investment in the water system. This investment is expected to pay off in greater community involvement in the operating and maintaining the water system because people will not wish to

waste their investment. It should also pay off in building a greater sense of community pride and solidarity as the result of this collective accomplishment, which could also encourage the community to take on other projects in the future.

The major weakness in this approach is that it is less efficient than hiring workers to install the system. Volunteers are by definition less reliable than paid workers over whom the employer can place greater demands and exert more control. Volunteers are available at their convenience rather than according to the labor required to get the job done. This has, on occasion, resulted in many more volunteers appearing for work at a given time than there is need for, as well as on other occasions too few.

On balance, however, the community participation approach should remain the implementation method of choice, because it has the greatest chance of ensuring the longevity of the system when coupled with a well conceived operation and maintenance plan. The success of the community participation approach is, however, heavily dependent on the quality of leadership available in the community to overcome factionalism and motivate people to contribute their efforts to the implementation of the system. In this regard, the sophistication and community organization skills of project promoters to work with community leaders and encourage a sense of common purpose and expectation of attainment become critical factors in ensuring the successful implementation of the water systems.

While organizing and managing the community labor input is the CAEP's major responsibility during the water system construction phase, a number of other tasks are performed by the CAEP as well. As mentioned above, the CAEP receives and distributes the FFW rations to the workers. They provide a warehouse for construction materials and receive these materials as they come in. They maintain an inventory of the tools used in the project and, in some cases, provide meals and lodging for construction personnel. With the exception of the problems late and short FFW shipments pose to the credibility of the CAEP, these other functions pose no difficulty.

Once the water system construction phase is completed, the CAEP has primary responsibility for the operations and maintenance of the system. In this regard, the CAEP solicits funds from the community during the construction phase to establish a bank account, which is to form the foundation for an operations and maintenance fund. The CAEP requests \$1.00 from each household for this fund. The amount that is contributed, however, varies according to people's ability to pay. Some people give \$0.20, \$0.40, or \$0.60, while others contribute \$5.00, \$10.00, and so forth. One individual made a contribution of \$100. Funds are asked from local residents but former residents currently living in Port-au-Prince or abroad are also asked to contribute. The bank accounts established vary from \$100 to \$1,000. These funds are to be supplemented through private connection fees. As private connections have not yet been made, this arrangement poses certain difficulties for completed systems which have already needed repair. Moreover, certain systems may permit few if any private connections. These circumstances then require the CAEP, with CARE's assistance, to identify alternative sources of income to meet operations and maintenance expenses when needed.

The CAEPs understand that they are to be responsible for system maintenance and minor repairs. Standpipe/shower maintenance is to be handled by the Comité de Quartier (COQ), and minor repairs are to be made by locally trained plumbers.

COQs are formed around each standpipe and usually consist of three members who live near the standpipe. The majority of the members are women. COQ membership is assigned on a permanent basis. While COQ members are to be chosen by the CAEPs and standpipe users, more often this has not been the case. In response to the question of who chooses the COQ members, the following responses were given by CAEP members: (1) the educator, (2) the CAEP and the general assembly, (3) the general assembly, (4) the educator/promoter and people of the locality, (5) the CAEP, and (6) the educator asks for volunteers.

COQ members view their primary responsibility as keeping the standpipe/showers clean, monitoring, and maintaining order at the standpipes and showers. A few members view their role not as cleaning the facilities themselves but as organizing others in the locality to do so. Some COQ members have assumed the responsibility for painting the standpipe and planting flowers in the vicinity. Few COQ members view it as their responsibility to educate others regarding sanitation and hygienic practices.

In a few communities, the CAEPs indicate that COQ members are inactive. In one such community, the CAEP has taken action to replace former adult COQ members with school children in an effort to ensure higher standards of cleanliness around the standpipes. It was indicated that school children have fewer responsibilities than adults and, therefore, are expected to have more time to clean the standpipe.

COQ members indicate that they have problems with disorderly children and people washing clothes within the standpipe areas. Some COQ members have complained that they do not get the respect and cooperation they need from local people. Others indicate no problems.

CARE needs to make some revisions in its approach regarding the COQs in order that they function in a more structured way. Consideration should be given to having the CAEPs organize yearly elections of COQ members - the voters to be standpipe or shower users in the area. The role of the COQ members should be revised and standardized. COQ members should supervise the maintenance and orderliness at the standpipes or showers, but local residents should bear the responsibility for these efforts.

Standpipe maintenance responsibilities should rotate among households using the standpipe. Household members could either perform the necessary upkeep themselves or hire others to provide these services. In this way, responsibility would be shared and people's commitment to standpipe maintenance in general would be increased. Under the present system, it is clear that after the novelty of piped water wears off, COQ members' commitment to standpipe maintenance will lag, as has already occurred in some places.

If the approach proposed above does not meet with community cooperation or proves unfeasible, thought should be given to paying for the provision of these maintenance services through revenue available from the operations and maintenance fund or temporarily interrupting service until proper maintenance is restored, as CARE suggests, or initiating some other strategy which meets with community acceptance. A viable standpipe maintenance system needs to be ensured because unsightly, ill-maintained standpipe or showers will discourage use and pose health hazards.

Regarding major repairs, the role of SNEP vis-a-vis the CAEP is not well understood even by SNEP personnel. One employee indicates that SNEP will perform major repairs, but the CAEP is responsible for paying all labor and material costs. Another SNEP employee indicates that SNEP will pay all labor and material costs for major repairs. Another SNEP employee says that SNEP will pay for labor, while the CAEP is expected to cover the cost of materials. Clearly, SNEP needs to clarify its role here to make it known to SNEP employees as well as communicate it in writing to CARE staff and the CAEPs.

As CARE now moves into the operations and maintenance phase with the CAEPs, it is beginning to address the need for a paid administrator and plumber. The CAEPs will be unable to pay for these services, however, until they start to receive regular income from the private connection fees or other to be named continuing sources of income. Future plans include consideration of the formation of a CAEP cooperative, each CAEP being one member. As a cooperative, the CAEPs would be in a better position to order materials and would also have duty-free privileges.

3.1.2.5 User/Health Education and Sanitation

The user/health education and sanitation component builds upon strategies identified in a KAP (Knowledge, Attitudes and Practices) study undertaken by CARE and conducted by an anthropologist familiar with Haiti. It focuses on two activities - user education and a pilot latrine building project at six sites, 300 latrines per site. The objectives of this component are: (1) sanitation at all standpipes and showers, (2) increased use of hygienic practices, (3) building and use of latrines, and (4) the assurance of purity of the water supply between collection and consumption. To promote these objectives, the program has developed four educational themes which are to be communicated through a methodology oriented to problem-solving and behavior change. These themes are:

1. Wash your hands with soap before eating and after defecating.
2. Protect your water, especially in transport.
3. Maintain cleanliness at standpipes and showers.
4. Build and use latrines.

Brightly colored posters have been made up to promote these themes, but they have not, as yet, been widely distributed.

In the initial phase of the program, educators spent nine months in each community and made three home visits to 25 percent of the population (selected at random) to communicate the four themes. Later CARE conducted a post-test which revealed that those who received the home visits and those who had not knew the same information. Changes in attitudes and behavior, however, were not tested.

The department has since practically eliminated home visits due to the feedback from the posttest and because educators are now spending six months in each water system area rather than nine months. Educators now spend four months at the locality prior to the inauguration of the water system and two months after. Formerly, the educators left the area at the time of the completion of the system. This pattern changed, however, as it was discovered that the educational themes needed to be reinforced once people were actually using the water systems.

At the present time, the user education department is in the process of developing a new curriculum to be used by the educators in working with user groups. Once completed, the curriculum will be used as a user education manual consisting of 42 lessons and accompanying educational photographs. The material will continue to be oriented to a problem-solving approach to adult education. It will be highly structured, however, to suit the educators' needs. The material in this manual will be presented in a series of ten meetings to be held in each neighborhood where a standpipe is located. This material will be supplemented by films, filmstrips, the use of proverbs, plays, and radio spots (previously developed and tested by the project) which are currently in use.

The user education component also works with COQ members to encourage them to be role models to the community regarding hygiene and sanitation practices. COQ members themselves, however, rarely indicate this activity to be part of their responsibilities. The user education program is also setting up seminars to instruct local institutional leaders in the user education themes. These leaders are then being asked to present 12 lessons to their constituencies around the four user education messages. The first of these seminars was conducted in December 1986.

The stated goal of the user education program is to change behavior. To date, however, little behavior change can be identified, although CAEP and COQ members know the user education messages. While it is clear that behavior change is a complex process which occurs over an extended period of time, unless behavior change can be demonstrated, it is uncertain that the program is making progress in achieving its goals.

Regarding the behavior changes sought within the program, one can state that at present:

1. Evidence regarding handwashing is unavailable. It is an activity conducted within the privacy of the home.
2. The most easily observed practice, that of covering water in transport, rarely occurred during the evaluator's observations.
3. At the majority of standpipes observed, standards of cleanliness and reliable drainage are being maintained.
4. Except where CARE is subsidizing latrine building, few people are undertaking this activity on their own.

In looking at the user education component, two questions come to mind. First, are the messages being presented the most appropriate ones and, second, is the manner of message presentation the most cost-effective.

The issue of message suitability needs to be reassessed. While handwashing with soap is clearly beneficial and should continue to be promoted, this message could be stated in a more useful, more broadly based manner. Handwashing before touching food (whether eating, preparing, or serving) and after having had contact with feces (rather than just after defecating) would cover more situations than does the current approach. Many Haitian people tend to be literalists. If the focus of a given message is too narrow, it will result in minimal behavior change.

The health benefit of emphasizing the protection of water in transport from the standpipe to the house is being debated by health professionals. What seems to be more at issue is possible contamination within the home, an area less emphasized in these user education messages.

The promotion of cleanliness around standpipes and showers is clearly appropriate and should receive periodic reinforcement.

Where people cannot afford to build latrines, the simple promotion of latrine building is useless. If CARE is going to continue to promote this message, it should do so within the context of providing economic assistance in latrine building beyond the six pilot sites. Where latrines are built, it is necessary to periodically inspect the sites and educate people on correct sanitary practices.

The issue of cost-effectiveness arises in relation to the intensive effort (ten meeting series) being conducted by the educators to promote these four messages at the neighborhood level. It is possible that a less intensive meeting schedule would yield the same result. Perhaps fewer meetings, which include films and other items of general interest to the water users, spaced in such a way as to serve a periodic message reinforcement function, both

before and especially after the inauguration of the water system, may be as or more effective. (This is said in view of CARE's own post-test data which indicate that after a series of home visits, there was no difference in knowledge between those who received the visits and those who had not.) Educators then might better redirect their efforts toward more intensive promotion of hygiene in the courtyard and the home through observation and individualized situational instruction opportunities. Another area which could benefit from more intensive input would be the promotion of subsidized latrines. The work being done to encourage community leaders to promote user education appears to be a useful approach which is expected to result in wide coverage of the population.

A number of issues have been raised here which require further study. It is, therefore, recommended that CARE consider hiring a short-term consultant to reassess the suitability of the content of the user education messages, identify the most cost effective manner of educational presentation to achieve the desired behavior change, and indicate what level of staff educational background and experience is needed to accomplish the task. This consultant should be a specialist in user education and sanitation and should be familiar with Haitian culture.

To date, the latrine pilot project is in the process of being implemented at two sites. At the first site, the latrine implementation process began in September 1985, with the contacting of community leaders and the construction of two latrine models. At the present time, 62 latrines have been completed. This represents only 20 percent of the originally planned 300 latrines at this site. Latrine building came to a standstill because community members think that the latrines need to have reinforced pits. Soil type varies in the community, and during the floods four latrines fell in. The community is now unwilling to continue to build latrines, unless CARE is willing to pay the cost of reinforcing the pits. CARE's position is that reinforcement costs should be paid by the user. Community members indicate that for them this cost is prohibitive. CARE is now giving the community a deadline of March 11 to decide whether it wants to cooperate in the continuation of the latrine project.

An unfortunate polarization has occurred between CARE and this community over the construction of latrines. Because only 4 latrines out of 62 have fallen in, it is not at all certain that all latrines will require reinforcement. This could be decided on a case-by-case basis depending on soil type and placement of the latrines. It is suggested that where reinforcement is determined to be necessary, CARE provide some assistance. If the community then is still unwilling to cooperate in the project, CARE should move on to another site.

Latrine building at the second site began in November 1986. To date, 160 latrine contracts have been signed. A community meeting is currently planned to encourage a remaining 140 people to sign contracts. The project wishes to target its latrine building activities to the most needy, but the most needy are unable to meet their share of the expenses.

On the basis of the latrine-building experience to date, it is unlikely that there will be 300 households per site who will be willing to meet their share of the expenses. Even with CARE's subsidy for many people, the cost is still prohibitive. Further, other water project sites not included in the pilot latrine project are requesting CARE's assistance with latrine building. They rightly understand that water and latrine projects should go together. While CARE's rhetoric promotes the building and using of latrines, in fact, the project communicates the message that in reality water systems are more important than latrines, because there are to be 40 water projects but only 6 latrine projects. It is therefore recommended that the pilot aspect of the latrine-building effort be dropped and that latrine building be undertaken at all water project sites. Rather than attempting to concentrate the building of 1,800 latrines at 6 sites the project should be restructured to achieve a minimum of 1,800 latrines (or more budget permitting) at 40 sites. CARE might also investigate the possibility of introducing a cheaper basic model to free up funds for more latrines. The current model could still be made available as an improved model for which the user would be required to pay an additional charge. In areas where soil stability is questionable, advice should be sought from project engineers before latrine building is undertaken.

3.1.2.6 Operations and Maintenance

The basic premise of the O&M component of the project has been to place as much responsibility as possible within the CAEP. The CAEP has been trained in management and financial practices and is empowered to collect fees for cost recovery. Local plumbers have been given on-the-job training during the construction phase, and one plumber has been appointed as the official plumber for each system. It is planned that further training will be provided to the plumbers before the beginning of the private connection phase of the project. A manual describing the monthly duties of the plumber and the CAEP has recently been prepared.

The financing of O&M and the precise role of SNEP and O&M has been the subject of many meetings throughout the history of the project. Recently, it appears that agreement has been reached on the details of financing. The salient points are enumerated below:

1. All materials for secondary lines and regulation installations will be procured by SNEP from Title III funds. These materials will be provided to the CAEP free of charge, and these secondary lines and the regulation installations will belong to the public systems.
2. The subscriber will be responsible for paying the following to the CAEP:
 - a. A standard connection fee (privilege) of \$10.00

- b. An additional \$10.00 to cover labor costs for the installation of secondary lines, the regulation installation, and standard private plumbing with one faucet
- c. The cost of the following materials for the standard faucet/plumber: one length of 1/2" galvanized iron (g.i.) pipe with a socket; one each 1/2" g.i. tee, elbow, endcap; one 1/2" faucet; these parts will belong to the subscriber
- d. A standard \$3.00 monthly subscription fee for residential connections (industrial/commercial connection will be determined).

Further, subscribers will be liable for any labor and material costs for any additional plumbing to be installed in their yard/home. Such plumbing will not be installed at the time of private connection installation.

- 3. The CAEP will be responsible for paying the following from its income under 2b and 2c above:
 - a. Salaries/fees for its plumbers performing all work
 - b. Unskilled labor for digging and backfilling trenches
 - c. The parts listed under Item 2c.

Moreover, it is anticipated that with the income under Item 2a the CAEP will acquire a stock of 1/2" pipes and fittings to be sold to subscribers who want to install additional faucets on their property.

- 4. All private connections and secondary lines will be installed by the trained CAEP plumbers. The CAEP will prepare and sign contracts with all subscribers and oversee the plumber's work. SNEP-Cayes will supervise all aspects of the private connection component of the CWSD project in all sites. SNEP-Cayes will also be responsible for the delivery of materials to all sites.

3.1.2.7 Cost Recovery

Cost recovery has been addressed within several project components. In both construction of water systems and latrines, significant amounts of free or undervalued labor have been provided by the communities. Cost recovery within these project components are addressed in other sections of this report.

Cost recovery within O&M is of major importance because it is the foundation upon which the long-term system reliability is dependent. The project has embarked upon a policy which places cost recovery of O&M to be primarily dependent upon household connection fees. The premise is that households with private connections should bear the entire system cost of O&M because they will be the largest individual consumers of water and are assumedly the wealthier members of the community. The communities have been provided with some information regarding the probable costs of their subscription but, as described earlier, this information was misleading because the actual costs have only recently been established. (See previous section on O&M).

At this point, calculations of recurring costs in O&M and the recovery of these costs can only be projected because no actual experience is available to date. An illustrative budget prepared by CARE is shown on the following page.

3.1.2.8 Training

Last year CARE began to implement a training program for CAEPs. Prior to this, in September 1986, a five-day training-of-trainers' seminar was held for promoters and educators. In late October 1986, a three-day seminar was held for all CAEP officers to explain their roles and responsibilities in operating and maintaining the water system. A one-day seminar for current secretaries and treasurers and four candidates for each of these posts was also held in October. The secretaries, treasurers, and candidates are to receive two additional days on-the-job training. This latter training has not yet occurred.

It is too soon to comment on the effectiveness of this training program. The CAEPs are just now beginning to move into the operations and maintenance phase of their responsibilities. The secretary/treasurer training is incomplete, and not of all the CAEPs have as yet participated in the seminars. What can be said, as the result of talking with CAEP officers, is that those who have participated in the seminar have a clearer understanding of their role than those who have not. Those who have participated found the experience to be worthwhile and look forward to further training opportunities.

Assume:

30 paid-up private connections
\$500.00 community contribution in bank account
\$ 20.00 average monthly materials cost for system maintenance
\$ 20.00 average monthly plumber cost (5 days x \$4.00)
\$ 20.00 average monthly tax collector cost (5 days x \$4.00)
\$ 10.00 monthly office/depot rent
\$ 10.00 monthly office supplies cost

Monthly Breakdown

<u>Income</u>	<u>Expenditures</u>	
30 x \$3.00 (rental) = \$90.00	Materials	\$20.00
	Plumber	\$20.00
	Tax Collector	\$20.00
	Rent	\$10.00
	Supplies	\$10.00
	Total	\$80.00

Capital Breakdown

<u>Income</u>		<u>Expenditures</u>	
Community contribution	\$500.00	Secondary distribution lines (30 x \$2)	\$ 60.00
Monthly profits	\$120.00	Office equipment (type-writer, etc.)	\$200.00
Connection fees	\$300.00	Maintenance tools	\$200.00
1-Year Total	\$920.00	Total	\$460.00

End-of-Year Balance - \$460.00

Interest on Invested Balance at 5% Annually - \$23.00

Total **\$483.00**

3.1.3 Outputs

To date, the project has progressed to the 60 percent point in terms of time elapsed and to the 40 percent point in terms of budget expenditures. As shown in Table 3, which follows, the project outputs are well below the established targets. The completion status to date for each site is shown in Table 4 and the expenditures by implementation component are shown in Tables 5, 6 and 7. Several extenuating circumstances have affected outputs. Floods and civil disturbances have both had a negative effect on work progress. The floods caused delays in work progress and several systems required major repairs. Civil disturbances, in some cases, prohibited road travel through much of Haiti and, perhaps even more significantly, caused inefficiencies in work progress because of the psychological uncertainties surrounding day-to-day activities. To some extent, these losses of time and material costs have been documented in Table 8 and adjusted for in Table 5. Even that accounting, however, is probably undervalued.

More significantly, it appears that the targets established in the Project Paper were too optimistic. Insufficient consideration was given to the time required for establishing community organizations and for the time required to use free and undervalued labor under Food-for-Work programs.

The question is, then, "what are appropriate outputs"? CARE has submitted a proposal which extends the project completion date 18 months (to December 31, 1989) and reduces the beneficiaries to 156,000 persons (39 communities) without increasing funding. Considering that 7.4 sites are complete, 35 months remain, and five construction crews will be in place, an average time of 5.5 months would be required for each site.

It is clear that the project has in the past cleared many hurdles and has now established a momentum and, more importantly, the confidence of many communities in the region. The potential for an increased rate of productivity appears good. Emphasis on water system construction at the expense of community development and health education, however, would be folly. The community participation component requires time, and it is difficult to speed up the process significantly. Probably a more realistic time for construction of water systems under the terms of the project is closer to eight months. Therefore, an expected output target would be 29 water systems by the end of 1989.

The only viable option to speed up the process and to achieve the 40 sites originally targeted would be to increase the number of construction teams. From a management perspective, this option is conceivable, but more vehicles would be needed which would require an increase in project funding.

In discussions with CARE, it was stated that eight construction teams could be established, but that many of the present vehicles would need to be replaced and several new vehicles added. Given the poor quality roads in the project area, the vehicles should not be expected to last more than two years. It is recommended that CARE prepare a detailed cost estimate for USAID's review of

(Text continues on page 43.)

Table 3
Project Outputs
(As of February 1, 1987)

<u>Targets</u>	<u>Achieved To Date</u>
40 Water Systems Completed	5
Under Construction	4
Under Study	6
 160,000 Beneficiaries	 19,261
40 Water Committees	
Functioning (O&M Stage)	5
Functioning (Construction Stage)	4
Being Established	3
 Training	
Sanitation	yes
O&M	yes
Committee Members	yes
 Hygiene Education	 yes
1,800 Latrines at 6 Pilot Sites	86

Table 4
 Completion Status by Site
 (February 1, 1987)

	<u>Site</u>	<u>Completion* Status (%)</u>	<u>Length** Pipeline (Meters)</u>	<u>Reservoir (R) Well (W)</u>
3	Rosier	100%	2,064	
4	Port-à-Piment	100	11,466	R
5	Morisseau	25	9,344	R
6	St. Georges	100	8,240	
7	Zanglais	90	5,201	
8	Arniquet	100	6,317	R
9	Maniche	100	5,826	
10	St. Jean du Sud	5	5,142	W/R
12	Laurent	5		
13	La Caouhane	95	5,293	R
14	Tiburou	15	9,290	R
15	Faugas	5		W/R
	Total	7.40 Sites		

* Completion status is estimated based primarily on construction stage but includes the requisite community development and health education programs.

** Length of total expected pipeline for unfinished sites is based on design estimates.

Table 5

Expenditures by Implementation Component⁽¹⁾

		<u>Expenditure</u>	<u>Percent</u>
I. Engineering/Construction	\$1,497,529	\$1,066,052	58
Inventory Adjustment ⁽²⁾	(300,000)		
Adjustment for Losses ⁽³⁾	(181,477)		
II. Community Development	88,998	81,184	4
Losses	(7,814)		
III. User Education/Sanitation	219,002	199,775	11
losses	(19,227)		
IV. Administration	307,304	280,324	15
Losses	(26,980)		
V. Indirect Costs	215,998	197,034	11
Losses	(18,964)		
	Total	\$1,824,369	
Average Cost Per Community (7.4 systems) ⁽⁴⁾		\$246,536	
Average Cost Per Person (37,595 people) ⁽⁵⁾		\$48.53	

(1) Estimated.

(2) Existing inventory of unused materials is estimated at \$300,000.

(3) Losses due to civil disturbances and floods.

(4) PP estimated (\$5,856,000 ÷ 40) \$146,400 per community.

(5) PP estimated (\$5,856,000 ÷ 160,000) \$36.60 per person.

Table 6

Subcategories of Expenditures by Implementation Component

I. <u>Engineering</u>	
a. Personnel ⁽¹⁾	\$ 278,136
b. Vehicles	220,226
c. Vehicle (O&M)	125,101
d. Equipment, Materials, and Services ⁽²⁾	<u>865,066</u>
Subtotal - Engineering	\$1,497,529
II. <u>Community Development</u>	
a. Personnel ⁽³⁾	\$ 45,062
b. Vehicles	27,731
c. Vehicle O&M	7,973
d. Equipment, Materials, and Services ⁽⁴⁾	<u>8,232</u>
Subtotal - Community Development	\$ 88,998
III. <u>User Education/Sanitation</u>	
a. Personnel	\$ 141,473
b. Vehicles	41,597
c. Vehicle O&M	11,959
d. Equipment, Materials, and Services/UE	17,378
e. Equipment, Materials, and Services/Latrines	<u>6,595</u>
Subtotal - User Education/Sanitation	\$ 219,002
IV. <u>Project Management/Administration</u>	
a. Personnel ⁽⁵⁾	\$ 186,510
b. Vehicles	13,866
c. Vehicle O&M	3,986
d. Office Operations and Equipment ⁽⁶⁾	83,783
e. Other Support Costs	<u>19,159</u>
Subtotal - Project Management/Administration	\$ 307,304
V. <u>Indirect Costs (10.34%)</u>	\$ 215,998
Total Expenditures From USAID Funds	\$2,318,831

⁽¹⁾ 25% of line 1, Table 1, plus 77% of line b., Table 1, plus \$10,000 from line 2, Table 1.

⁽²⁾ Includes some EMS for first two project years from Community Development line item; includes cost for EMS of stormwater drainage.

Table 6 (cont'd)

(footnotes continued)

- (3) Does not include expenditures for three SNEP animators assigned to CAEP section.
- (4) See footnote (2).
- (5) Includes 75% of line a., Table 1; and 23% of line b., Table 1.
- (6) May possibly include engineering equipment purchased during first two years of the project.

Table 7

Community Food-for-Work Contribution by Site*

	<u>Pipeline Length (M)</u>	<u>Current Population</u>	<u>Meters / Person</u>	<u>Meters Food-for-Work</u>
Maniche	5,826	4,494	1.3	1,332
Port-à-Piment	11,466	5,481	2.1	5,985
La Cahouane	5,293	2,393	2.2	2,900
Tiburon	9,290	4,971	1.9	4,319
St. Jean du Sud	5,142	1,557	3.3	3,585
Laurent**		2,022		
Zanglais	5,201	2,603	2.0	2,598
St. Georges	8,240	5,086	1.6	3,154
Morisseau	9,344	3,089	3.0	6,255
Rosier	2,064	1,592	1.3	472
Arniquet	6,317	2,608	2.4	3,709
Faugas**	_____	<u>1,699</u>	_____	_____
		37,595		

* Other community contributions include cleaning the spring, building/clearing access roads, and, in many cases, unloading materials, transporting materials, painting public standpipes, etc.

** Pipeline length dependent on location of well.

Table 8

Losses Due to Floods and Civil Disturbances

A. Costs Per Day

Project operations costs for January through November 1986 were \$357,012 for an average of 20 working days per month.

Daily Project Operations Costs: \$1,759

Including: Personnel (international and national)
 Vehicle O&M
 Office O&M
 Other Miscellaneous

Overhead (indirect NY cost) 10.34%: \$182
 Total Costs (POC & IC): \$1,941

B) Days Lost (from confidential files and CARE-USAID correspondence)

January	27 - 31	: 5
February	3 - 20	: 14
March	28	: 1
May	30	: 1
June	2 - 6	: 5* Flood
October	2 - 6	: 3
November	17 - 20	: 4
	Total	: 33

Flood repairs - June, July, and August: 60 days minus 5* = 55 days

Total days lost: 88.

C) Costs of Person-Days Lost

88 days @ \$1,941 = \$170,808

D) Materials Lost (see attached sheet)

As per attached sheet (not including FFW items)	\$30,500
Indirect costs (10.34%)	<u>\$ 3,154</u>

Total Materials/Equipment	\$33,654
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E) Total costs of losses incurred due to political problems and floods not assumed in project design: \$204,462

This does not include the materials used to repair flood damage in all construction sites.

Table 8 (cont'd)

The contents of the office were either destroyed or stolen. The warehouse suffered losses of tools and materials. Five motorcycles were stolen, and parts were taken from four-wheel drive vehicles.

Estimated losses are:

Office furniture	\$ 5,000
Office fixtures and equipment	\$ 2,000
Office supplies	\$ <u>1,000</u>
Office subtotal	\$ <u>8,000</u>
Vehicles (5 motorcycles)	\$ 7,500
Vehicle parts from four-wheel drive	\$ <u>1,000</u>
Vehicles subtotal	\$ <u>8,500</u>
Warehouse tools	\$ 4,000
Warehouse materials	\$ 7,000
Refrigerator, stove, and washing machine	\$ 1,500
Emergency supplies (plates and lamps)	\$ 1,000
Damage to locks and doors	\$ <u>500</u>
Warehouse subtotal	\$ <u>14,000</u>
Total Value	\$ <u>30,500</u>
Bulgur: 4,000 lbs. @ \$.163/lb.	\$ 652*
Oil: 0.42 metric tons @ \$2.73/gal.	\$ 294

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* US prices

the proposed options. The options are (1) to work with five construction teams, a PACAEP of December 1989, and an output of 29 water systems; (2) to work with five construction teams, extend the PACAEP to July 1991, and to expect an output of 40 systems; or (3) to work with 8 construction teams, a PACAEP of December 1989, and an output of 40 systems.

Other efficiencies could be achieved by placing more emphasis on ranking the sites with the highest probabilities of success. Indicators of success include the following:

- Strong indication of community support based on letter of application
- Spring located near village
- Easily accessible by road.

Given the uncertainties surrounding wells and pumping projects, these sites should be undertaken as a second priority. Rehabilitation of existing systems should always be considered. The basic principle should be to do the easy ones first, save the difficult ones for last, and to cluster the sites to reduce travel time and costs.

To the extent that the foregoing recommendations are carried out in the future, improvements in cost effectiveness should also be achieved. To date, the project has spent approximately \$49 per capita to provide potable water with the attendant community organization and health education programs (see Table 5). Ideally, this value should be in the \$30 to \$40 range and will be in this range if the project achieves its planned rate of production.

3.2 Performance

3.2.1 Water Systems

The performance, or effectiveness of use, of the five systems currently in operation appears satisfactory. High-quality water is being distributed to the communities and consumption has doubtlessly been increased because of its closer proximity to most users. The number of standpipes and their distribution did not pose problems in user congestion. Some problems have been encountered with faucet breakdowns, but this problem appears to be solved. The showers appear to be particularly popular, although women and short people do not use them as much as men. For people living near streams, however, it was observed, not surprisingly, that clothes washing and bathing are still undertaken in the stream.

The standpipes and showers were found to be generally clean, and no evidence of vandalism was observed. Some users were, however, able to circumvent the self closing faucets by sticking objects into them. On the negative side, drainage around the system is not uniformly being carried out. At approximately 20 percent of the standpipes, stagnant and muddy pools had been allowed to develop. In several cases, however, the drainage is exemplary and worthy of unusual praise.

3.2.2 Latrines

Where latrines have been built, performance and usage appear satisfactory. The latrines are said to be properly used by the families involved, clean, and well maintained. Minor evidence of child defecation was observed on the open ground suggesting that some children may find the toilets beyond their capabilities. The above-ground portions of the latrines are well constructed using a variety of materials from cement blocks with tin roofs to patched houses with grass roofs. Users appear to consider the latrines as a point of prestige, and interest is keen to extend the latrine construction to other households.

3.2.3 Water Committees

The overall performance of the CAEPs (water committees) has been good to date. Their performance, however, has only been tested concerning the construction phase of the water projects. It remains to be seen how well they will handle their responsibilities in operating and maintaining the systems. At present, one CAEP is struggling with how to handle an exorbitant plumbing bill. The pressures related to this issue have prompted the resignation of some officers. Other CAEPs are concerned about the amount of work required from them in private connection fee collection. CARE is proposing that once private connection fees start coming in, the CAEPs each hire an administrator and a local plumber on a salaried basis. These arrangements should correct the type of problems that the water committees are currently experiencing. As CARE will continue to train and provide guidance to the CAEPs during the initial stages of operations and maintenance, it is expected that, while there is likely to be some trial and error, the CAEPs will be able to handle their responsibilities adequately.

As stated earlier, the COQ on the other hand, will likely fall apart unless some restructuring occurs. Little can be expected from COQ members, especially where they are children, in the area of sanitation education. This role more appropriately falls on community leaders and educators.

3.2.4 O&M Systems

To the extent that O&M has been undertaken to date on the five systems in operation, it was found satisfactory. The local plumbers have encountered the usual variety of maintenance and repair problems that one expects in such systems and have, in most cases, made the necessary repairs. Users indicated that the delay in making repairs was minimal. The plumbers themselves have worked without any compensation to date, and this was cause for some complaints.

It is clear that at this point in the project, the household connections need to be incorporated into project activities and that, preceding that, the communities must be clearly told what will be the actual costs to them. Further, the CAEPs must be shown how their budgets must be used, including who (plumbers and bill collectors at a minimum) will be salaried. It is recognized that there will be some uncertainties regarding whether the CAEP budget is in balance but this will tend to sort itself out over time. It should be noted that SNEP has the responsibility for implementation of the household connection program.

3.2.5 Fee Collection and Use

The cost-recovery issue is still outstanding because until private connections become operational and the number of subscribers to the system are known, it is impossible to determine its performance. The underlying issue is willingness to pay. This subject has been treated by a continuing WASH study which indicates that users are willing to contribute to the operation of a system, but the actual amount is difficult to determine. It is recommended that in addition to the household connections as a source of finance for O&M, that a modest user fee for the standpipes should be considered. Some research by the project may be needed to establish the appropriate fees.

3.2.6 Training and Education

Performance in relation to training and education is difficult to evaluate at this point. The first CAEP training cycle has not yet been completed, and certain information CAEP members will need to carry out their roles has not yet been clarified with them, such as private connection fee policies and the proposed hiring of an administrator and plumber. The user education approach continues to change. The new promoter curriculum is not yet complete and, therefore, is impossible to evaluate. It is hoped, however, that the structured lesson approach will contribute to dialogue and achieve its intended problem-solving objective. The danger in introducing a highly structured approach, however, is that it will degenerate into rote learning. It is expected that the user education activities to be conducted by community leaders who have received instruction from the user education department staff will go well, but they have not yet begun their activities. As stated earlier, user education activities to date have resulted in making its four messages known, but there is little evidence of behavior change.

3.3 Impacts, Effects, and Issues

3.3.1 Health Impact

The impact of the project on health can only be discussed, with minor exceptions, in theoretical terms at this point. Data on health impacts are not being collected, although it was considered earlier in the project. A WASH report entitled "A Plan for Evaluating Some Health Impacts of the USAID/CARE Community Water Systems Development Project in Haiti" (Report No. 154, September 1985) detailed a program to collect data on indices of anthropometry, mortality, and morbidity over a three-year period. This proposed program was not accepted, however, because of cost and staffing requirements.

While no data are directly available from the project, there are many benefits that can be expected in the long-term. The health benefits are of particular interest in that USAID/Haiti is proposing to shift the project portfolio from the Agriculture and Rural Development Division to the Health Division.

It is clear that WS&S contributes not only health benefits but also to economic and social benefits. As a health benefit to child survival programs, WS&S supplements ORT, immunization, and the other interventions in combating disease through the whole arsenal of public health, public works, and community participation. Without safe and accessible water supplies, most of the interventions which can be taken to prevent childhood diseases will be, at best, half measures.

As many as 30 benefits have been generally attributed to water supply and sanitation (WS&S) projects in developing countries. Benefits which are most deserving of attention include the following:

- Prevention of diarrheal diseases
- Control of other (nondiarrheal) diseases
- Improved primary health care
- Improvements in nutrition status
- Services to health centers, clinics, and schools
- Time released for women
- Household irrigation and animal watering
- Promotion of commercial activity
- Improved community organization
- Support for other sectors
- Improved quality of life.

The impact of WS&S on diarrheal disease varies considerably between environments depending on the various causes of such diseases at a particular location. A WHO study found that improved water quality and quantity provided a median reduction in diarrhea morbidity among children of 37 percent and a range of 0 to 81 percent.* When a project combines community participation and health and latrine construction, as is the case of this project, even greater reductions can be expected. The impact of WS&S is probably age specific and still better results can be expected among adolescents and adults where health education plays a significant role.

* Ersey S. A., R. G. Feachem, and J. M. Hughes (1985). Interventions for the control of diarrhoeal diseases among young children; improving water supplies and excreta disposal facilities. Bull WHO 61: 641-53.

WS&S also reduces diarrheal deaths among children and, as such, is often compared with ORT (oral rehydration therapy). The criterion of comparison is usually cost of death aversion where WS&S is found to be a more expensive intervention than ORT. The difference is that ORT may prevent a child's death but has no other benefits, while improved WS&S addresses the causes of diarrhea responsible for these deaths, and, at the same time, serves to prevent the transmission of other diseases, interacts with other child and adult health interventions to render them more successful and also provides many other benefits not directly related to health. Table 9, on the following page, contrasts some of the more significant benefits from improved WS&S with immunization and ORT.**

WS&S has historically played an important role in either reducing or eliminating the impact of other diseases, apart from diarrheal disease. These include cholera, typhoid, amebiasis, giardiasis, and a variety of helminthic diseases. Schistosomiasis and dracunculiasis are other diseases which WS&S may play a major role in controlling but which do not occur in Haiti.

Infection with trachoma is a leading cause of preventable loss of vision and blindness. Trachoma may be significantly reduced by programs of personal and public hygiene which emphasize the use of clean water. Water hygiene also reduces the prevalence of scabies, other skin diseases, and louse-borne and fly-borne diseases.

Hygiene education is an element of primary health care and is essential to the effective utilization of WS&S facilities. Indeed, hygiene education in the absence of WS&S facilities would be severely constrained in its effectiveness. In the absence of readily available water, the mother, to whom most hygiene education is addressed, is obliged to spend an inordinate amount of time bringing water to the home and will have little time, energy, or enthusiasm for any type of education.

The prevention of diarrheal diseases improves nutrition because enteric infections decrease food intake and increase metabolic losses. WS&S has been shown to aid and enhance other nutritional programs in achieving an improved nutritional status.

The education of mothers about increased breastfeeding, proper weaning, and other child care practices is most effectively accomplished in hospitals, clinics, health centers, and even in schools. Such institutions require WS&S facilities.

** Okun, D. The Value of Water Supply and Sanitation in Developing Countries. Paper in preparation.

Table 9

**Comparison of Benefits Between
Water Supply and Sanitation, Immunizations,
and Oral Rehydration Therapy**

<u>Benefits</u>	<u>Interventions</u>		
	<u>WS&S</u> ^(a)	<u>Immunizations</u> ^(b)	<u>ORT</u>
Health -			
Control of diarrheal diseases			
Curative			X
Preventive	X	X	
Control of other WS&S-related diseases	X		
Improved primary health care	X	X	
Improved nutritional status	X		
Service to health centers	X		
Economic -			
Time released for women	X		
Household irrigation and animal watering	X		
Promotion of commercial activity	X		
Support for other sectors	X		
Social -			
Improved community organization	X	X	
Improved quality of life	X	X	

(a) WS&S: Water Supply and Sanitation introduced with community participation and hygiene education.

(b) Immunizations: measles, DPT, cholera, typhoid, and polio.

Source: Okun, D. The Value of Water Supply and Sanitation in Developing Countries. Paper in preparation.

One of the major benefits of WS&S is bestowed upon women who, as the purveyors of water, traditionally spend significant amounts of time collecting water. The time released for women when WS&S is provided allows women to undertake more rewarding tasks, such as child care, child education, proper food preparation, and agricultural and cottage industries. Other health care services, such as breastfeeding, supplementary feeding, and household hygiene, as well as the administration of ORT, tend to increase the burden on women. When given a voice in program policy formation, women often rank water supply much higher than governmental planners.

Improved water supplies in rural areas are often used for irrigating small garden plots and watering animals. Such activities have obvious economic value and also contribute to improved nutrition.

The availability of WS&S has been found to increase commercial activities in communities. These activities include shops, restaurants, and small industries which provide employment and a firm financial base for the community.

When communities are involved, as is the case under this project, with the planning, construction, operation, and financing of WS&S facilities, they are obliged to involve their citizenry in committee and management activities. These activities, in turn, tend to lead to increased confidence to take on other community projects. The lessons learned from community participation often leads to such diverse activities as school construction, agricultural cooperatives, village electrification, and related problem-solving activities.

WS&S lends support to other sectors, in particular housing, to improve the overall community environment. Improved housing is inconceivable without WS&S services.

The final benefit that can be expected from a WS&S project is an intangible improvement in the quality of life. The availability of "running water" endows a community with enhanced status. This is readily observable in the communities that have constructed water systems under this project. These communities have demonstrated pride and appreciation for their new water systems and are able to speak of the benefits as well as the work required by themselves in building the systems. It is difficult to imagine significant improvements in quality of life without certain basic amenities of which WS&S is assuredly one.

As stated earlier, the project was not expected to collect data confirming the presence of the benefits indicated above. In fact, many of these benefits are difficult to measure while others would require significant personnel, financial, and time resources to verify their existence. It is more appropriate for the project to measure a few tangible project indicators and expect, to a greater or lesser degree, that the benefits indicated in this section will accrue to the target population. Indicators include increases in per-capita water consumption, improved water quality and decreased distance and time of travel to fetch water. A research program to collect data on such indicators is outlined in Section 3.3.6.

3.3.2 Economic Impact

The project has had certain economic impacts, both directly and indirectly, on the communities in which the water systems were built. Direct impacts include Food-for-Work payments made to workers primarily for semiskilled construction tasks. The stateside value of the wheat, oil, and milk products used in payment has totaled \$67,984 to date ranging from \$248 to \$25,207 per community. FFW values by commodity and site are provided in Tables 10 and 11 on the following pages.

FFW payments under the project are purposely kept well below the Haitian minimum daily wage of \$2.70, as the FFW is meant to be a supplement only. The actual payments are estimated to be approximately 22 percent of the daily wage rate. Thus, in effect, the community has contributed, to date, an equivalent of \$241,032 in undervalued labor. This is in addition to the one meter per person of free labor which, if valued at \$2.70 per meter, would total \$101,507 to date. Further, the communities have reportedly collected \$3,814 to date for their operation fund. The total monetary value then of the community participation totals \$346,354 or an average of \$46,805 per community, or \$9.21 per person.

Given the assumptions made herein, the exact values are arguably suspect. As a reasonable estimate, however, the indicated values show the magnitude of community participation.

It is usually the case that the introduction of water into a community leads to the concentration of other activities, such as small businesses, schools, and medical dispensaries. Moreover, the formation of community organizations, such as the CAEPs, also leads to initiatives in solving other community problems, such as building roads or bringing electricity to the village. While several new construction activities were evident in the villages, the people did not attribute these activities to the water system. Apparently, it is too early in the project to document significant economic impacts, as described above.

Another economic impact of interest is the issue of privatization. Assuming privatization to be defined as a shift away from government involvement, it can be said that the project has been successful in placing a major part of the management and operations and maintenance in the hands of the local communities. If the CAEPs are successful in maintaining their organization, then, little government intervention will be required. While the CAEPs are not designed, nor should they be, as a "private utility," to realize profits they must rely on the generation of sufficient local financial resources to operate and maintain their water systems. To that end, the CAEPs rely on private-sector sources to subscribe to the water supply system and to provide O&M, in the form of plumbers, to the system. Thus a considerable amount of reliance is placed on the economic forces of supply and demand to determine operating efficiencies. Another question concerns the actual legality under Haitian law of the CAEPs. This issue has been raised and will require SNEP to explore the ramifications to ensure the operations of the CAEP.

Table 10

Food-for-Work Values

<u>Site</u>	Value*	
	FFW (CARE)	Related Community Contributions
Rosier	\$ 248.40	\$ 880.69
Port-à-Piment	25,207.15	89,370.80
St. Georges	14,074.11	49,899.12
Zanglais/Morisseau	2,560.65	9,078.69
Arniquet	15,757.90	55,868.92
Maniche	7,444.35	26,393.60
St. Jean Du Sud	-	-
Corail	-	-
Laurent	-	-
La Cahouane	1,656.00	5,871.27
Tiburon	1,035.00	3,669.55
Faugas	-	-
Ka-savon	-	-
Moron	-	-
Total	\$ 67,983.56	\$ 241,032.64

* Food-for-Work and related community contributions per site based on value of FFW rations (\$0.594) and minimum wage (\$2.70) do not include "free" community participation (for example, 1 meter/head; C&M fund).

Table 11

Food-for-Work Community and Related Contributions

SITE 3: Rosier

Almost all work was performed with voluntary labor except for:

FFW				
12 sacks of bulgur	@	\$17.97	=	\$ 215.64
12 gallons of oil	@	\$2.73	=	<u>32.76</u>
Total value of FFW (22%)				\$ 248.40
Related balance-value community contributions (78%)				\$ 880.69

SITE 4: Port-à-Piment

FFW				
1,180 bags of bulgur	@	\$17.97	=	\$ 21,204.60
825 gallons of oil	@	\$ 2.73	=	2,252.25
105 boxes of milk	@	\$16.67	=	<u>1,750.30</u>
Total FFW value (22%)				\$ 25,207.15
Related community contribution value (78%)				\$ 89,370.80

Zanglais/Morisseau

FFW				
127 bags of bulgur	@	\$17.97	=	\$ 2,282.19
102 gallons of oil	@	\$ 2.73	=	<u>278.46</u>
Total FFW value (22%)				\$ 2,560.65
Related community contribution (78%)				\$ 9,078.67

St. Georges

FFW				
661 sacks of bulgur	@	\$17.97	=	\$ 11,878.17
438 gallons of oil	@	\$ 2.73	=	1,195.74
60 sacks of milk	@	\$16.67	=	<u>1,000.20</u>
Total FFW value (22%)				\$ 14,074.11
Related community contribution (78%)				\$ 49,899.12

Table 11 (cont'd)

Arniquet

FFW

703 sacks of bulgur	@	\$17.97	=	\$	12,632.91
473 gallons of oil	@	\$ 2.73	=		1,291.29
110 sacks of milk	@	\$16.67	=		<u>1,833.70</u>

Total FFW value (22%) \$ 15,757.90

Related community contribution (78%) \$ 55,868.92

Maniche

FFW

353 sacks of bulgur	@	\$17.97	=	\$	6,343.41
261 gallons of oil	@	\$ 2.73	=		712.53
23 sacks of milk	@	\$16.67	=		<u>388.41</u>

Total FFW value (22%) \$ 7,444.35

Related community contribution (78%) \$ 26,393.60

La Cahouane

FFW

80 sacks of bulgur	@	\$17.97	=	\$	1,437.60
80 gallons of oil	@	\$ 2.73	=		<u>218.40</u>

Total FFW value (22%) \$ 1,656.00

Related community contribution (78%) \$ 5,871.27

Tiburou

FFW

50 sacks of bulgur	@	\$17.97	=	\$	898.50
50 gallons of oil	@	\$ 2.73	=		<u>136.50</u>

Total FFW value (22%) \$ 1,035.00

Related community contribution (78%) \$ 3,669.55

3.3.3 Social Impact

3.3.3.1 Women

Women play an active role in the community water projects. They participate as community leaders, staff, and beneficiaries. Approximately one-third of the CAEP officers are women. Women are represented in each of the five offices. By project design, two-thirds of the COQ members are women. Because women play a primary role in the drawing and use of water, it was thought to be appropriate that they be well represented in COQ membership. With the exception of the audio-visual specialist and the mason/educator, the entire staff of the user education department are women. Women benefit from the health impact associated with water projects, both for themselves and their children. Healthier children, as well as a convenient water supply, allow women more time to devote to other activities.

The extent to which women are involved in this project is impressive, especially when compared with the participation of women in other water projects. As time goes on, it is expected that women will continue to play an important role in the operation and maintenance of the water systems.

3.3.3.2 Democratization

Democratization means different things to different people. Within this project, two different definitions have come up in discussion. One definition refers to the issue of equal access to the water system by all members of the community. There is at present equal access in the completed systems to both standpipe and showers. Private connections, on the other hand, will depend on the ability to pay.

A second issue regarding democratization revolves around the election of the management officers of CAEP through an open electoral process. In this area, CARE has made notable advances over the concentration of power and privilege one often finds within the community council structure. The electoral system established by CARE will not permit long-term domination by a few. Elections are held yearly and the same office cannot be held for more than three years. To date, there have already been changes among officers because some candidates for reelection were defeated. This type of electoral process is a welcome innovation within the Haitian context.

3.3.4 Environment

The impact of the project upon the environment of the target communities is generally most favorable. Indeed, as a basic objective of the project, the completion of capped springs, closed reservoirs, piped delivery systems, and latrines have helped to reduce the conditions under which fecal-oral and insect-vector disease chains occur. These construction achievements, when coupled with the health education program, can be assumed to have had a

positive effect on the overall environment under which the communities live. Assumptions based on site observations are necessary at this point in the project life because no baseline data are available, nor are all benefits associated with a water supply and sanitation project expected to be immediately available.

Several environmental issues have been "red flagged" in the environmental assessment section of the Project Paper. These include source/sink protection, upstream/downstream conflicts, flow variation, education requirements.

Source or spring protection, achieved through the capping of springs, has had a most favorable environmental impact. The springs have been sealed, and the area around the springs has been observed to be generally clean. "Sink protection" refers, in this instance, to the fountain areas. The fountains and showers themselves were found to be generally clean but, in some locations, poor drainage has provided a potential breeding site for insects. Diligence in maintaining the drainage around the fountains should continue to be emphasized in user education activities.

The issue of upstream/downstream conflicts was not generally found to be a problem at sites constructed to date, although some problems were experienced at Port-à-Piment. This has been mitigated by providing some fountains in the upstream rural areas to serve the people of the immediate area. Further, most springs have been constructed such that at least some stream flow is still maintained.

Potential problems of contamination of sink holes above the capped springs remain and must be addressed on a site-by-site basis. Periodic water quality testing by SNEP for fecal coliforms must be required.

Flow variations from springs and wells can be expected during times of drought and also, to some extent, from large-scale changes in watershed vegetation. The project design flows appear to be rather high and therefore should provide a degree of assurance for drought conditions. Vegetation reduction because of intense agricultural land pressure in Haiti is, however, a major problem. Large-scale removal of vegetation will reduce somewhat the available ground water flow, but more importantly, will cause increased erosion and sedimentation. The project should continue to emphasize the need to protect watersheds from improper land practices in order to protect the communities investment in their water supply. The project has, in some cases, provided diversion channels and planted trees in the area immediately surrounding the spring. This practice needs to be encouraged and diligently continued.

The activities of the health education component of the project are integral to improving the environmental conditions within the communities. Emphasis has been placed in health education, as it should be, on cause/effect relationships between, for example, water and diarrhea and mosquitoes and open water. Consideration should also be given to environmental education on the role of the watershed and the relation between vegetation, erosion, control, and water supply.

3.3.5 Sustainability and Replicability

Project sustainability is a function of the capabilities of the local community organizations. This issue has been addressed in detail in previous sections of this report. The specific purpose of the CAEP is to sustain the individual water and sanitation systems and they appear to be adequately trained to perform this task.

The issue of replicability, however, is more problematic if it is defined as providing the capability for an organization to continue the water development model in the future absence of CARE. Logically, SNEP is the organization that would replicate the model. SNEP's limited financial and personnel resources, however, would appear to forestall any plans in the near future. Their role would appear to be one of assisting in the maintenance of existing systems. To the extent that the project does serve as a model to, perhaps, other international development organizations, however, then replicability may be possible.

3.3.6 Research

The project has, at the present time, created an additional component which has been labeled "research". This section is staffed by a Peace Corps Volunteer who is experienced in water and sanitation issues and will be attached to the project for the next six months. It is recommended that he undertake the following studies/research during the next few months giving priority to the following subjects:

1. O&M Costs

Costs of materials, frequency of repair, and labor time should be documented at selected sites. The system at Rosier could provide interesting information immediately by taking inventory of the materials which were left at the site upon completion of the project and calculating repair costs. These costs should be monitored at several representative sites to compare with revenues which will be generated from the private connections.

2. Willingness to Pay

Further studies should be undertaken to determine whether the established connection fees and monthly charges are allowing an appropriate number of households to participate. WASH is producing a report on the willingness-to-pay issue which should be helpful in establishing a survey technique and in establishing some initial estimates. Consideration should also be given to establishing a payment for fountain users.

3. Latrine Construction

Cost appears to be the limiting factor in wider acceptance of latrines. Studies should be initiated which would consider the willingness to pay issue for latrines and whether lower cost models would allow wider acceptance.

4. Water Use

Water use studies should be continued at Maniche, Port-à-Piment, and several other representative sites to determine total consumption and the repartition among various uses. Previous studies regarding per capita consumption values appear to underestimate consumption. Seasonal, market day, distance to the source, and proximity to alternate sources of water are factors which should be evaluated in designing the study.

5. Distance and Time Saved

Representative averages of decreased distances between the water users and the standpipes should be compared with the previous preproject conditions. Both distance and time saved should be documented at each project site.

Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 Review of Past Evaluation Recommendations

In April and May 1986, USAID conducted a rapid assessment of the Community Water Systems Development Project because of its lack of progress in achieving its implementation targets up to that time. The recommendations that resulted from this assessment were that:

1. CARE should raise the FFW ration from approximately \$1.00/day to the equivalent wage rate in the area, or if there were other FFW projects in the area, to standardize the FFW ration to be in keeping with these projects.
2. CARE's initial community assessment should place more emphasis on documenting the proposed site's socio-political atmosphere, especially past and present community conflicts, issues, problems, and resolutions.
3. CARE should standardize the SNEP promoters' work style to the extent possible.
4. CARE should address the issue of long-term system maintenance and indicate the organizational structure through which this phase is to be implemented.

The FFW ration has not and will not be increased. In fact, the FFW ration at present is equivalent to less than \$1.00/day--as calculated according to current market value for these commodities. The ration has not been increased, because to have done so would have been inconsistent with USAID's Handbook 9 on Title II commodities, which states that food should not be distributed in quantities that would encourage sale of the commodities. Moreover, food aid is to be targeted primarily for those who cannot otherwise purchase food.

CARE's community assessment process has improved, as described in the community participation and selection section of this report.

The SNEP promoters seconded to the project are currently working in a more collaborative way with the project than formerly, but there are still a few areas to be improved. For example, the SNEP promoters send their monthly reports directly to the SNEP Port-au-Prince office, after which a copy is sent to CARE's office in Les Cayes. This process results in CARE's receiving the reports later than they would like in order to make timely interventions.

The SNEP promoters' pay is occasionally late, which understandably poses certain morale problems among these workers. Although the SNEP promoters are better paid than the CARE promoters, this situation does not appear to affect the performance of the CARE promoters. SNEP has made certain personnel changes, such as promoting one of the seconded promoters to a regional level position, which have created temporary discontinuities within the project. Ideally, CARE would prefer to have all of its promoters work directly for CARE, rather than have some of them employed and supervised by SNEP. The present situation can, however, be improved through increased dialogue with SNEP regarding CARE's expectations of the seconded promoters.

Since the time of the rapid assessment, CARE has made considerable progress in addressing the issues of long-term system maintenance. A curriculum for CAEP training has been drawn up and training sessions have gotten under way. Because the private connection policy has recently been completed, the installation of these connections and resulting fee collection is expected to start soon. Annual operation and maintenance costs have been estimated, and more detailed costs are to be the subject of a research effort. For the completed systems, plumbers have been trained to handle repairs; for the systems under construction, plumbers are in training. Details are being worked out such that the CAEPs are expected to be able to hire administrators and plumbers on a salaried basis. The possibility of establishing a CAEP cooperative is being considered. As more systems are completed, CARE and the CAEPs have no alternative but to address the issue of O&M as it is now a pressing priority.

4.2 Linkage Between Project and Mission Strategy Objectives

This section of the evaluation is taken from the project paper, "Community Water Systems Development Project/Haiti." (Project No. 521-0155)

The development strategy formulated and pursued by the Mission is directed toward addressing the various constraints described above. Of the six strategic goals identified in the FY 84 CDSS and reinforced in the FY 85 and FY 86 CDSS updates, the proposed project will attempt to address the following:

1. Improvement of basic rural infrastructure
2. Improvement of the health status of the rural population
3. Strengthening of human resources.

USAID/Haiti is hereby proposing to address, for a significant segment of the rural population, the major problem of the lack of access to potable water. The project responds directly to the LAC Regional policy calling for development of rural water and sanitation infrastructure (highest priority category) in Haiti, the country in the region with the highest mortality rate

and greatest resource constraints. Further, the project will pursue its objectives through collaboration primarily with the private sector but also with the public sector--one of the objectives being to foster cooperation between the two. Finally, recurrent costs will be minimized and efforts maximized to educate participants in the proper use of water, as well as maintenance of systems, thereby also responding to AID policy for potable water and sanitation systems projects.

As indicated above, this project will conform with various aspects of the AID country strategy for Haiti, and thus will interact favorably with several continuing and new projects in the Southern Peninsula.

Given the Government of Haiti's (GOH's) limited resource base, particularly for meeting recurrent costs, and the presence of large numbers of private agencies throughout Haiti, USAID/Haiti has been implementing an increasingly larger percentage of its portfolio through nongovernmental organizations. Further, in view of the limited Development Assistance and other resources consistently allocated for the Mission's OYB, extreme care must be taken in the selection of not only project proposals for financing but also the organizational entities to implement those projects. Therefore, all other things being equal, organizations with proven track records of success in implementing projects in a given sector must be given priority for selection to implement new activities of a similar nature.

Of all the agencies with which USAID has cooperated in the area of potable water systems development over the past nine years in Haiti, CARE has been the strongest performer. As discussed elsewhere in this paper, USAID has developed a strong, even symbiotic relationship with CARE in Haiti in a number of sectors, and particularly in the area of potable water systems development. The CARE "model" has been developed over a four-phased pilot program and is now ready for large-scale replication throughout at least one region of rural Haiti.

The project is being implemented in the south/southwest region of the country, where USAID has chosen to concentrate a large percentage of its resources, because of the relatively strong agricultural potential of the region and the existence therein of almost half of Haiti's rural population. CARE recently established a regional water systems development office in Les Cayes, the major provincial town in the south and southwest. The office has begun to have contacts with other PVO's, GOH agencies and donors engaged in similar activities in the region for the purpose of information exchange and coordination of effort. These steps are seen as the beginning of the process by which a nucleus can be formed for a water resource center for the southern peninsula. The formation of a water resource center for technical assistance and training could become a significant element in the Mission's regional strategy, particularly if the scope of its support activities is eventually widened to include irrigation.

4.3 Recommendations

A summary of major findings and recommendations have been provided in the Executive Summary (sections 1.3 and 1.4).



Photo 1: Unprotected spring with children waiting their turn to fill a variety of containers.



Photo 2: Women dipping water from an unprotected spring.

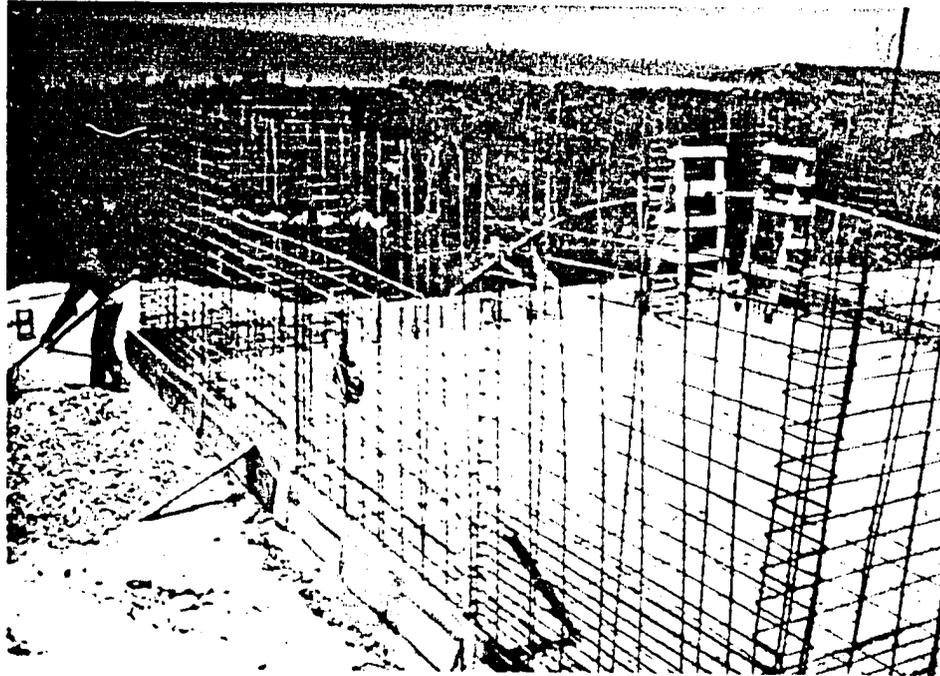


Photo 3: Reservoir under construction at Port-à-Piment.



Photo 4: Standpipe with apron under construction.



Photo 5: Protected spring with excess water flowing into stream. Clothes washing is typically done by rural population in Haitian streams.



Photo 6: Completed standpipe with water flowing by gravity from spring

APPENDIX A

Scope of Work - Cable Port-au-Prince 9316

ACTION COPY

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INCOMING TELEGRAM

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AIDAC

JAN 21 1987

FOR: ELLIS TURNER SBT/H (WASH) AND LAC/CAR

E.O. 12356: N/A
SUBJECT: MID TERM EVALUATION OF COMMUNITY WATER
SYSTEMS DEVELOPMENT PROJECT (521-0155)

REF: A.STATE 389607, B.PORT AU PRINCE 0076

1. SCOPE OF WORK FOR THE COMMUNITY WATER SYSTEM
DEVELOPMENT PROJECT IS AS FOLLOWS:

A. BACKGROUND

THE COMMUNITY WATER SYSTEMS DEVELOPMENT PROJECT IS AN ONGOING RURAL WATER SUPPLY AND SANITATION PROJECT, STARTED IN JULY 1984 AND IMPLEMENTED BY CARE. THE PROJECT PLANS TO SERVE ABOUT 160,000 PEOPLE IN SOME 40 COMMUNITIES IN THE SOUTH PENINSULA OF HAITI BY JUNE 1988, USING PRIMARILY CAPPED SPRING/GRAVITY FED SYSTEMS.

THE GOALS OF THE PROJECT ARE TO IMPROVE THE QUALITY OF LIFE OF THE TARGETED COMMUNITIES AND TO STRENGTHEN COMMUNITY INSTITUTIONS TO ENABLE THEM TO MANAGE THE WATER SUPPLY AND SANITATION SYSTEMS CONSTRUCTED UNDER THE PROJECT.

TO ACCOMPLISH THIS, THE PROJECT WILL DESIGN AND CONSTRUCT POTABLE WATER SYSTEMS, PROMOTE COMMUNITY PARTICIPATION AND STRENGTHEN LOCAL INSTITUTIONS, AND DEVELOP AND IMPLEMENT USER EDUCATION AND SANITATION ACTIVITIES IN TARGET COMMUNITIES. TO IMPLEMENT THIS PROJECT, CARE HAS ESTABLISHED AN OFFICE, WAREHOUSE, VEHICLE FLEET AND A TEAM OF 45 STAFF IN THE TOWN OF LES CAYES IN SOUTHERN HAITI.

B. OBJECTIVE

THE OBJECTIVES OF THIS MID TERM EVALUATION ARE TO EXAMINE THE EFFICIENCY AND EFFECTIVENESS OF PROJECT IMPLEMENTATION AND STRATEGIES, IDENTIFY PROBLEM AREAS AND MAKE APPROPRIATE RECOMMENDATIONS TO ADDRESS THEM.

C. SCOPE OF WORK

THE EVALUATION TEAM WILL REVIEW PROJECT DOCUMENTS, MEET WITH USAID OFFICIALS, CARE PROJECT STAFF, GOM PERSONNEL AND REPRESENTATIVES OF THE BENEFICIARY POPULATION, VISIT PROJECT SITES, OFFICES AND WAREHOUSES TO ASSESS THE APPROPRIATENESS, EFFICIENCY AND EFFECTIVENESS OF PROJECT IMPLEMENTATION INCLUDING:

1. PROVISION OF PROJECT INPUTS INCLUDING PERSONNEL, PROCUREMENT OF VEHICLES, EQUIPMENT AND MATERIALS, COMMUNITY CONTRIBUTIONS OF LABOR AND MATERIALS AND FUNDING.
2. PLANNING, ENGINEERING DESIGN AND CONSTRUCTION CONSTRUCTION SUPERVISION STRATEGIES AND PROCEDURES INCLUDING THE SITE SELECTION PROCESS, DESIGN STANDARDS, LEVEL OF SERVICE, ENGINEERING DESIGN, SCHEDULING OF PLANNING, DESIGN AND CONSTRUCTION ACTIVITIES, QUALITY OF CONSTRUCTION AND OPERATIONS AND MAINTENANCE TRAINING PLANS AND PROCEDURES.
3. ADMINISTRATIVE PROCEDURES ESTABLISHED BY THE PROJECT WITH REGARD TO PERSONNEL, PROCUREMENT, INVENTORY CONTROL, VEHICLES, EQUIPMENT AND FINANCES.
4. STRATEGIES AND PROCEDURES DEVELOPED FOR COMMUNITY ORGANIZATION. THE EVALUATION TEAM WILL PROVIDE A DESCRIPTION OF THE COMMUNITY ORGANIZATION PROCESS, COMMENT ON ITS EFFECTIVENESS, IDENTIFY CONDITIONS MOST CONDUCTIVE TO SUCCESSFUL COMMUNITY ORGANIZATION, ASSESS THE ADEQUACY OF RESOURCES PROVIDED TO THE COMMUNITY DEVELOPMENT EFFORT, EVALUATE THE TRAINING PROGRAM AND ASSESS THE FUNCTIONING STATUS OF CAEP'S AS VIABLE ORGANIZATIONS.

5. WATER USERS HEALTH EDUCATION AND SANITATION STRATEGIES AND PROCEDURES INCLUDING A DESCRIPTION OF PROJECT ACTIVITIES AIMED AT IMPROVING HYGIENE, BEHAVIOR AND SANITATION, EVALUATION OF EDUCATION MATERIALS DEVELOPED AND THEIR SUITABILITY AND WITH REGARDS TO THE PILOT PROGRAM AND EVALUATION OF PROGRESS IN LATRINE CONSTRUCTION, FUNCTIONING STATUS

AND DESIGN OF LATRINES, AND TO THE EXTENT PRACTICABLE THE IMPACT OF LATRINES ON COMMUNITY HEALTH.

IN ADDITION THE EVALUATION TEAM WILL ADDRESS THE FOLLOWING:

- THE APPROPRIATENESS OF IMPLEMENTATION PLANS AND BUDGETS AND THE POTENTIAL EFFECTS ON PROJECT DURATION AND COST.
- THE APPROPRIATENESS OF PRIVATE CONNECTION POLICIES AND STRATEGIES.
- PROGRESS MADE IN IMPROVING SNEP'S CAPABILITY TO PROMOTE PROGRAMS FOR THE INSTALLATION OF RURAL POTABLE WATER SYSTEMS, ASSIST IN THE MAINTENANCE OF SYSTEMS AND FUNCTION AS A REGULATORY BODY FOR THE RURAL WATER SUPPLY SECTOR.
- THE CURRENT INSTITUTIONAL RELATIONSHIP BETWEEN SNEP AND THE COMMUNITY WATER USERS ASSOCIATIONS (CAEP) INCLUDING A DESCRIPTION OF THIS RELATIONSHIP, AN ASSESSMENT OF ITS ADHERENCE TO PROJECT PROVISIONS AND RECOMMENDATIONS ON THE APPROPRIATE LEVEL OF RESPONSIBILITY AND AUTONOMY OF CAEP'S IN MANAGING AND MAINTAINING POTABLE WATER SYSTEMS, INCLUDING LEVERAGE THE MISSION CAN USE TO ACHIEVE THE RECOMMENDED OBJECTIVE.

D. REPORTING

THE EVALUATION TEAM WILL SCHEDULE A DEBRIEFING SESSION FOR THE BENEFIT OF MISSION, CARE AND SNEP

To WASH: 21 Jan 87 JHK
ACT 325

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Department of State

INCOMING
TELEGRAM

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PERSONNEL TO DISCUSS THE EVALUATION REPORT'S MAJOR FINDINGS AND RECOMMENDATIONS. THE TEAM IS REQUIRED TO SUBMIT A COMPLETE DRAFT EVALUATION REPORT, FOLLOWING THE ATTACHED MISSION'S EVALUATION REPORTING FORMAT (SECTION G) PRIOR TO DEPARTURE. FOLLOWING RECEIPT OF MISSION'S COMMENTS, THE REPORT WILL BE FINALIZED AND SUBMITTED TWO WEEKS THEREAFTER.

E. BACKGROUND MATERIAL (PREVIOUSLY TRANSMITTED)

~~WORKPLAN~~

A DETAILED WORKPLAN CAN BE AGREED UPON ARRIVAL OF THE TEAM IN HAITI. HOWEVER, SOME GENERAL INFORMATION IS PROVIDED HERE TO ASSIST THE TEAM IN PREPARING THEIR MISSION DURING THE WASH TEAM PLANNING MEETING.

THE USAID MISSION, THE CARE COUNTRY MISSION AND SNEP (FOR RURAL WATER SUPPLY SERVICE) ALL HAVE THEIR OFFICES IN PORT AU PRINCE. THE USAID PROJECT OFFICER, THE CARE PROJECT COORDINATOR AND THE SNEP NATIONAL COUNTERPART ARE BASED IN PORT AU PRINCE.

THE PROJECT'S BASE OF OPERATIONS OFFICE, WAREHOUSES (ETC.) IS IN LES CAYES, A FOUR HOUR DRIVE FROM PORT AU PRINCE. THIS IS WHERE ALL REMAINING PROJECT PERSONNEL ARE BASED, ALTHOUGH MANY OF THEM SPEND 3 WEEKS PER MONTH IN THE FIELD AT PROJECT SITES. PROJECT PLANNING AND ADMINISTRATION SYSTEM DESIGN, MATERIALS & CURRICULUM DEVELOPMENT AND MUCH TRAINING IS CONCENTRATED HERE. SNEP ALSO HAS A LOCAL OFFICE FOR PROJECT LIAISON PERSONNEL.

TO DATE, FIVE WATER SUPPLY SYSTEMS HAVE BEEN COMPLETED AT DISTANCES FROM LES CAYES VARYING FROM HALF AN HOUR TO TWO HOURS TRAVEL. FOUR SYSTEMS ARE PRESENTLY UNDER CONSTRUCTION AT DISTANCES VARYING FROM HALF AN HOUR TO FOUR HOURS OF TRAVEL. SIX SYSTEMS ARE IN VARYING DEGREE OF DESIGN/STUDY AT DISTANCES VARYING FROM 15 MINUTES TO A FULL DAY TRAVEL.

GIVEN THE LOGISTICAL/SECRETARIAL SITUATION IN ALL ABOVE MENTIONED OFFICES, REPORT DRAFTING IS PROBABLY BEST DONE IN LES CAYES WHERE A SECRETARY/WORK PROCESSING FACILITIES CAN BE MADE AVAILABLE.

G. MISSION EVALUATION REPORTING FORMAT

- I. EXECUTIVE SUMMARY
 - A. PURPOSE OF EVALUATION
 - B. SUMMARY OF PROJECT DESCRIPTION
 - 1) IMPLEMENTATION HISTORY (PROJECT PURPOSE/LOP AMOUNT DURATION/SEQUENCE)
 - 2) IMPLEMENTATION ARRANGEMENTS (IMPLEMENTING AGENCY/OTHER DONORS)
 - 3) IMPLEMENTATION ACTION (EXTENSION/AMENDMENTS)
 - C. SUMMARY OF RECOMMENDATIONS
 - D. SUMMARY OF MAJOR FINDINGS
 - E. SUMMARY OF MAJOR LESSONS LEARNED
 - F. EVALUATION METHODOLOGY
 - 1) OBJECTIVES & ORGANIZATION OF DATA GATHERING INSTRUMENTS
 - 2) ITINERARY & OTHER LOGISTICAL DETAILS
 - 3) COMPOSITION OF EVALUATION TEAM
 - G. COMMENT ON EVALUATION SCOPE OF WORK

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II. RECOMMENDATIONS

- A. EVALUATION REPORT RECOMMENDATIONS
- B. REVIEW & IMPLEMENTATION STATUS OF PAST EVALUATION RECOMMENDATIONS

III. FINDINGS

- A. PROJECT FINDINGS
- B. LINKAGE BETWEEN PROJECT & MISSION STRATEGY OBJECTIVES
- C. CROSS CUTTING ISSUES (IF APPLICABLE)
 - 1) WOMEN IN DEVELOPMENT
 - 2) SUSTAINABILITY/REPLICABILITY
 - 3) ENVIRONMENTAL IMPACT
 - 4) PRIVATIZATION (PRIVATE SECTOR/PVCS)
 - 5) DEMOCRATIZATION (COMMUNITY MOBILIZATION/ORGANIZATION)

IV. LESSONS LEARNED

V. PROJECT DESCRIPTION

- A. DEVELOPMENT PROBLEM
- B. PROJECT GOAL & PURPOSE
- C. PROJECT OUTPUTS & INPUTS
- D. PROJECT ASSUMPTIONS

VI. TABLES

VII. ANNEXES

- A. EVALUATION SCOPE OF WORK
- B. PROJECT LOGICAL FRAMEWORK
- C. PROJECT IMPLEMENTATION PLANS.

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APPENDIX B

Project Logical Framework

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Annex 3

Life of Project:
From FY 84 to FY 88
Total U.S. Funding \$6,000,000
Date Prepared: 4/12/84

Project Title & Number: Community Water Systems Development (521-0155)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																								
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>To improve the quality of life of the inhabitants in the South and Southwest Peninsula of Haiti</p>	<p>Measures of Goal Achievement:</p> <ul style="list-style-type: none"> -Agricultural production increased -Mortality and morbidity rates due to diarrhea decreased. -Incidence of typhoid decreased. -Incidence of other infections caused by intestinal bacteria or parasites decreased. -School absenteeism rate decreased. 	<ul style="list-style-type: none"> -Impact evaluations. -Socio-economic surveys. 	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> -No major epidemics. -No serious drought or other natural disasters. 																																								
<p>Project Purpose:</p> <ul style="list-style-type: none"> -To construct/rehabilitate rural potable water systems. -To assist peasant/community groups operate/maintain water systems. 	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ul style="list-style-type: none"> -Potable water provided to about 160,000 people. -40 Community organizations effectively maintaining water systems. -40 On-going water user-education programs 	<ul style="list-style-type: none"> -Impact evaluations. -Socio-economic surveys. -Reports from implementing institutions 	<p>Assumptions for achieving purpose:</p> <ul style="list-style-type: none"> -CARE/other PVOs implement project effectively. -Community groups maintain high level of motivation and dedication. -Health education influences populace. 																																								
<p>Outputs:</p> <ul style="list-style-type: none"> -Community water systems built/rehabilitated. -Local community groups formed/reinforced. -Water user education program implemented. -Pilot sanitation/latrine program implemented 	<p>Magnitude of Outputs:</p> <ul style="list-style-type: none"> -About 40 water systems constructed/rehabilitated -Local water associations functioning and maintaining 40 water systems. -CARE training local groups' members in maintenance work and water systems management. -Sanitation training provided, latrines constructed in 6 communities. 	<ul style="list-style-type: none"> -TA reports. -CMI, AID, SNEP and PVO records. -Field observations. -JPHIs. 	<p>Assumptions for achieving outputs:</p> <ul style="list-style-type: none"> -No system design impasses. -Enthusiastic response by community groups. -Training influences target group. 																																								
<p>Inputs:</p> <ul style="list-style-type: none"> -Water systems constructed/rehabilitated -Health & Sanitation -Vehicles/equip./minor construction -Technical Assistance -Project Evaluation -Training -SNEP Support Costs -Health & Water Organization Costs -Total 	<table border="1"> <thead> <tr> <th>Implementation Target (Type and Quantity)</th> <th>AID</th> <th>GNH</th> <th>Community</th> </tr> </thead> <tbody> <tr> <td>\$4,000,000</td> <td>-0-</td> <td>-0-</td> <td>\$900,000</td> </tr> <tr> <td>500,000</td> <td>-0-</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>180,000</td> <td>125,000</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>1,000,000</td> <td>-0-</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>70,000</td> <td>-0-</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>150,000</td> <td>-0-</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>-0-</td> <td>75,000</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>100,000</td> <td>-0-</td> <td>-0-</td> <td>-0-</td> </tr> <tr> <td>Total</td> <td>\$6,000,000</td> <td>1,100,000</td> <td>900,000</td> </tr> </tbody> </table>	Implementation Target (Type and Quantity)	AID	GNH	Community	\$4,000,000	-0-	-0-	\$900,000	500,000	-0-	-0-	-0-	180,000	125,000	-0-	-0-	1,000,000	-0-	-0-	-0-	70,000	-0-	-0-	-0-	150,000	-0-	-0-	-0-	-0-	75,000	-0-	-0-	100,000	-0-	-0-	-0-	Total	\$6,000,000	1,100,000	900,000	<ul style="list-style-type: none"> -Project records and reports. -PVO, CMI and USAID records and financial reports. -Observational visits. -PIPs. 	<p>Assumptions for providing inputs:</p> <ul style="list-style-type: none"> -AID and GNH funds available on schedule. -High quality TA and PVO personnel can be located and hired. -No difficulties in importing equipment.
Implementation Target (Type and Quantity)	AID	GNH	Community																																								
\$4,000,000	-0-	-0-	\$900,000																																								
500,000	-0-	-0-	-0-																																								
180,000	125,000	-0-	-0-																																								
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100,000	-0-	-0-	-0-																																								
Total	\$6,000,000	1,100,000	900,000																																								

APPENDIX C

Significant Dates in Project

APPENDIX C

Significant Dates in Project Implementation

1. Cooperative Agreement signed with CARE 21 June 1984
2. Memo of Understanding signed with GOH 15 August 1984
3. Partial orders (Order No. 1) placed for vehicles, motorcycles, and material for water systems. Orders include vehicles for Project, CARE and SNEP 1 July 1984
4. SNEP counterparts assigned to Project January 1985
5. CARE consultant team on board June-September 1984
6. Begin site selection/inventory, data gathering for water systems in prospective communities with emphasis on first 10 communities October 1984 (joint SNEP-CARE)
7. Begin site selection for six pilot communities for water systems and pilot latrine program 4 October 1985 (in Coop Agreement)
8. Vehicles and materials for water systems (Order No. 1) arrive January 1985
9. Place order No. 2 for material for approximately 15 water systems and for balance of vehicles July 1985*
10. Inauguration at Rosier July 1985
11. Inauguration at Maniche September 24, 1986
12. Inauguration at St. Georges September 25, 1986
13. Inauguration at Arniquet November 1986
14. Inauguration at Port-à-Piment December 9, 1986
15. Begin Midterm project evaluation Jan 26, 1986
16. Complete Midterm Project Evaluation February 13, 1987
17. PACD existing June 30, 1988
18. PACD proposed December 31, 1989

APPENDIX D

Midterm Evaluation

APPENDIX D

Midterm Evaluation

Work Plan Itinerary

<u>DATE (1987)</u>	<u>ACTIVITY</u>
SAT. JAN 24	Jacky Smucker Arrives Haiti
SUN. JAN 25	Phil Roark Arrives Haiti
MON. JAN 26	Initial Meetings with USAID and CARE
TUES. JAN 27	Meetings with SNEP and CARE
WED. JAN 28	Travel to Les Cayes, Meet with CARE Staff
THURS. JAN 29	Meetings with CARE and SNEP Staff Field Visit to Arniquet
FRI. JAN 30	Meetings with CARE and SNEP Staff Field Visit to Arniquet
SAT JAN 31	Field Visits to St. Georges & Zanglais
MON. FEB 02	Document Review
TUES. FEB 03	Field Visits to Tiburon & La Cahouane
WED. FEB 04	Field Visits to Port-à-Piment and Rosier
THURS. FEB 05	Preliminary Presentation of Findings to CARE, USAID, and SNEP
FRI. FEB 06	Travel to Port au Prince Field Visit to Laurant
SAT FEB 07	Report Writing
MON. FEB 09	Report Writing
TUES. FEB 10	Report Writing
WED. FEB 11	Preliminary Draft Revisions
THURS. FEB 12	Debriefings with USAID/CARE/SNEP

FRI.	FEB 13	Phil Roark Departs Final Draft Revisions
MON.	FEB 16	Jacky Smucker Departs
TUES.	FEB 17	WASH Debriefing by Roark & Smucker in Washington, D.C.

APPENDIX E

List of People Contacted

APPENDIX E

List of People Contacted

CARE

- Ellis Franklin, Country Director
- Peter Buijs, Project Coordinator, Community Water Systems, Development Project
- Stephen Redding, Project Administrator/Implementation Manager
- Lewis Jasmin, Community Development Advisor
- Anne Rapoza, User Education/Sanitation Advisor
- Gary Philoctete, Engineering Advisor
- Frank Santelli, Engineering Advisor
- William Barron, Peace Corps Volunteer, Systems Research and Development Advisor
- Loking Jean Baptiste, Warehouse Manager

USAID

- David Smith, Engineer, Project Officer
- Robert Gilson, DRE, Program Officer
- Daniel Cesar, DRE, Evaluation Officer
- Charles Brooks, Acting Deputy Director
- John Airhart, Chief Engineer
- Michael White, PHO, Chief

SNEP

- Jean Rene Destin, General Director
- Ludouic Severe, Project Director
- Pierre Sajous, Project Coordinator, Director of O&M
- Evans Emmanuel, Director South Region
- Michael Merisier, Director of Community Water Systems Development Project
- Gunter Traut, GTZ Advisor in Finance and Administration

APPENDIX F

List of Documents Consulted

APPENDIX F

List of Documents Consulted

Community Water Systems Development Project

1. Memorandum of Agreement with GOH. August 15, 1984.
2. Cooperative Agreement with Amendments 1-4. June 21, 1984.
3. CARE Project Status Reports. July 1, 1984 - December 31, 1986.
4. CARE Annual Implementation Plans. 1984-85 and 1985-86.
5. "Losses during pillaging of Les Cayes office." Memo CARE/USAID £223.
6. "Floods in Les Cayes, preliminary report." June, 1986.
7. "Computer aided branched gravity fed pipeline design for small water supplies." CARE. March, 1986.
8. CAEP status. (Comité d'Approvisionnement en Eau Potable)
9. "Phase de transition: Programme d'animation pour gestion." CARE. Undated.
10. "Ateliers pour l'éducation des usagers d'eau." CARE. Undated.
11. "Latrine Pilot Project Review." CARE/USAID memo £309. October, 1986.
12. "Procédé d'installation des latrines sanitaires." Bureau Sanitaire Pan Américain OPS/OMS. Undated.
13. Guidelines for training of CAEPs on the installation and management of private connections.
14. "Proposed revised construction schedule, July, 1986." CARE. June, 1986.
15. "Proposed revised budget plan." CARE. September, 1986.
16. O'Rourke, Shelagh. "Knowledge, Attitudes, Practices in Southern Haiti." CARE. October, 1985.
17. Robkin, Zeke. "Whither Goest Health Education." CARE. May, 1986.
18. A plan for evaluating some health impacts of the USAID/CARE community water systems development project in the Republic of Haiti.

APPENDIX F (cont'd)

19. Title III, Annual Evaluation - sous programme de santé publique.
20. "Selected program memorandums, Design Guidelines." CARE. Undated.
21. "Project Organigramme." CARE. Undated.
22. "Filing Index." CARE. Undated.
23. "Willingness to Pay Study." UNC/CARE. October, 1986.
24. Operation and Maintenance Plans. CARE. January, 1987.
25. "Research and Monitoring." CARE. February 6, 1987.
26. "Rapid Assessment of Community Water Systems Development Project." USAID. May, 1986.
27. WASH. "A Plan for Evaluating Some Health Impacts of USAID/CARE Community Water System Project in Haiti." Field Report No. 154. September, 1985.
28. Project Paper. Community Water Systems Development. USAID/Haiti. Project No. SLI-0155. June 15, 1984.

APPENDIX G

Project Organizational Chart

COMMUNITY WATER SYSTEMS DEVELOPMENT PROJECT

ORGANISATIONAL CHART

1. Overall

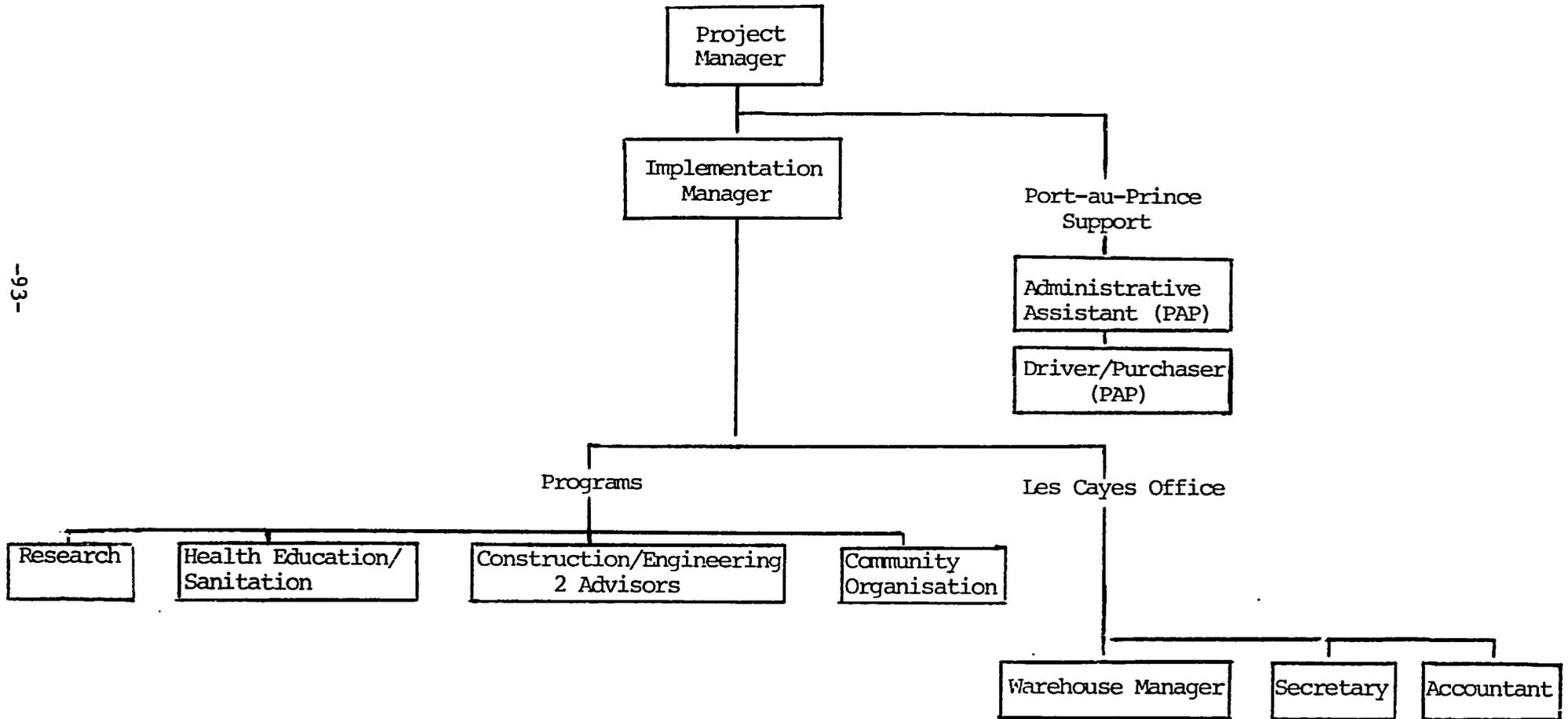


Figure 2

2. Health Program

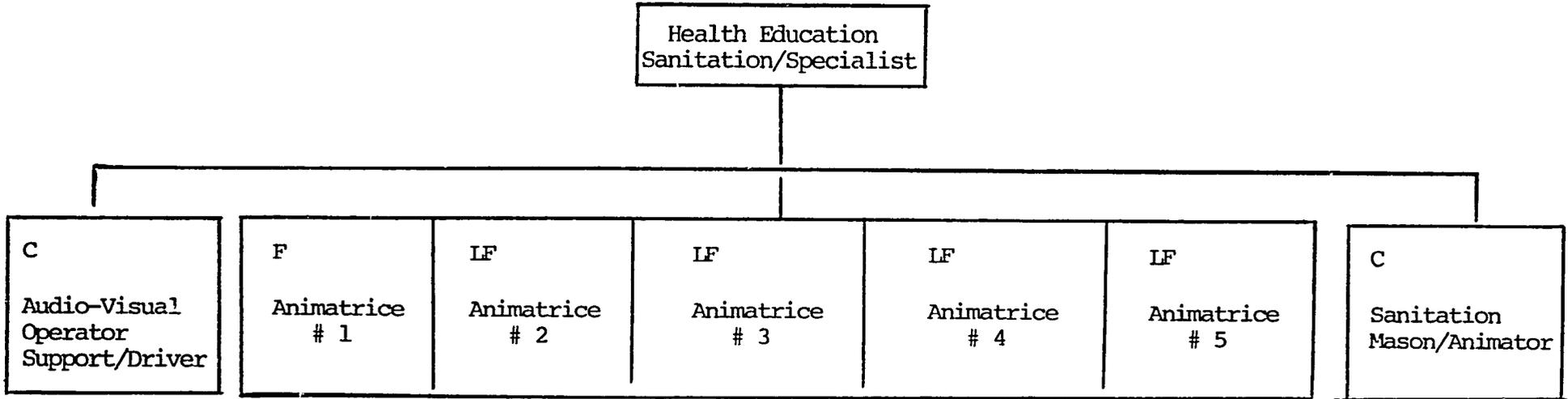


Figure 3

3. Construction
Program

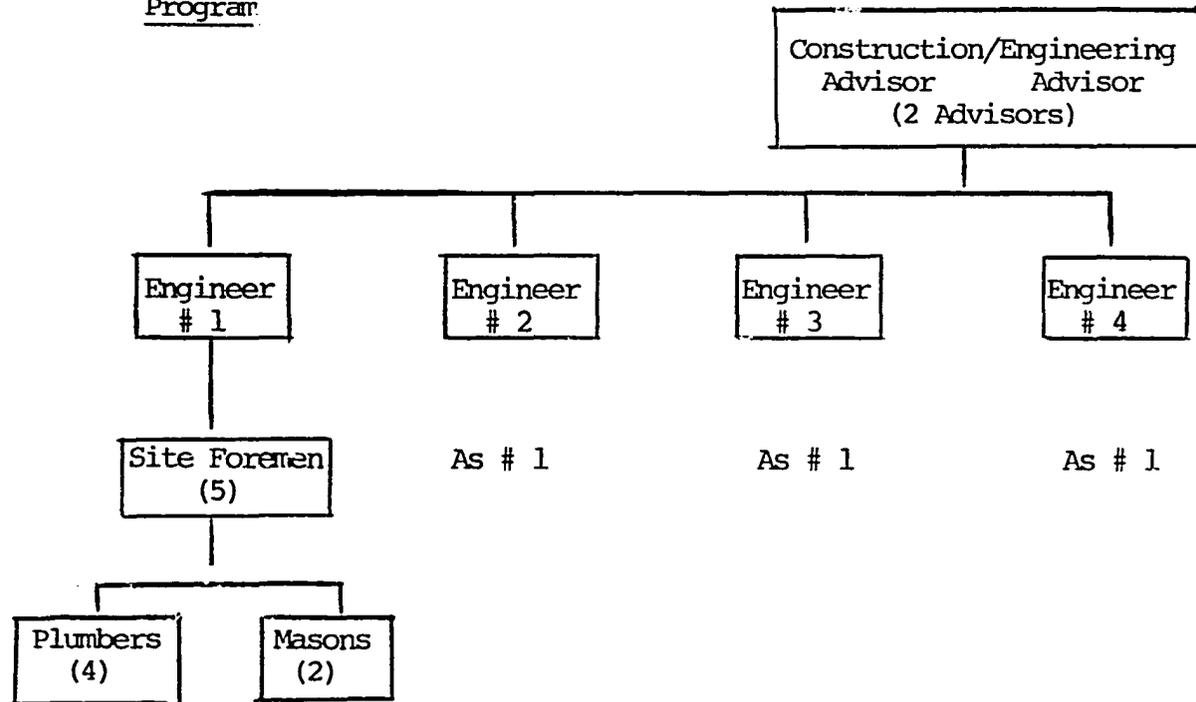


Figure 4

4. Community Organisation Program

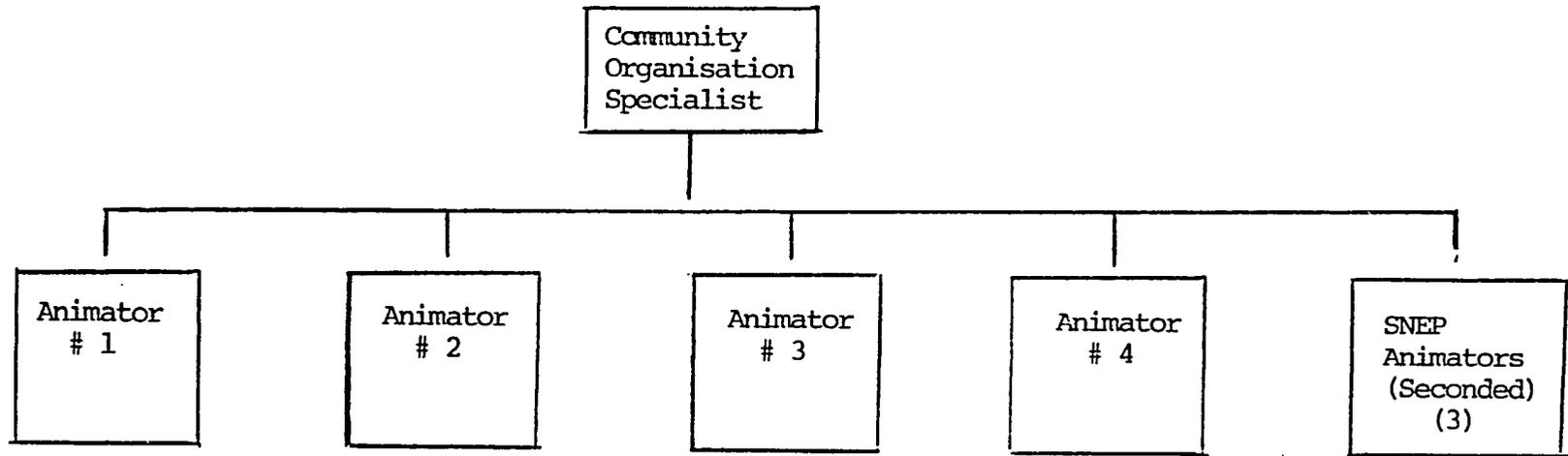


Figure 5

5. Warehouse
Section

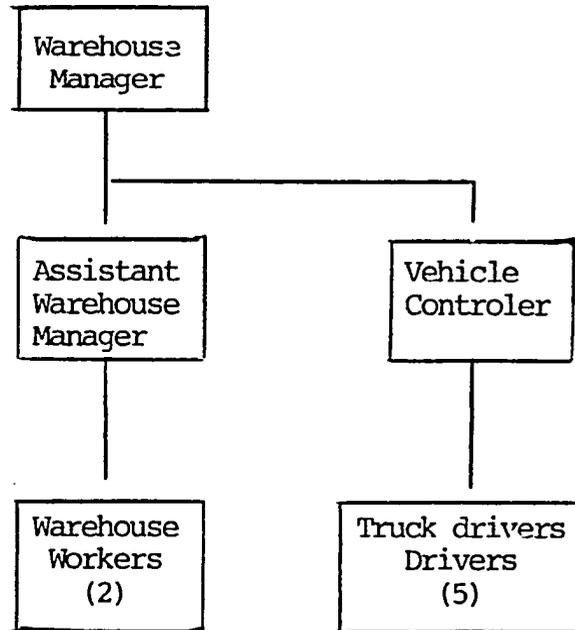


Figure 6

6. Accountant
Section (Les Cayes)

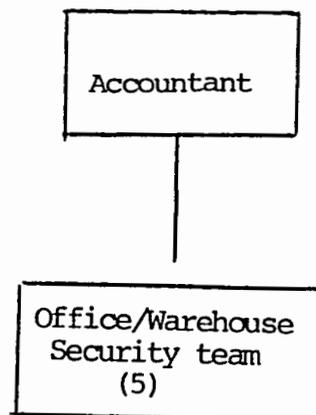


Figure 7

7. Secretarial (Les Cayes)

