UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

HAITI

PROJECT PAPER

COMMUNITY WATER SYSTEMS DEVELOPMENT

AID/LAC/P-181

Project Number: 521-0155

PROJECT AUTHORIZATION

Name of Country : Haiti

Name of Project : Community Water Systems Development

Number of Project : 521-0155

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Community Water Systems Development Project, to be implemented by the Cooperative for American Relief Everywhere (CARE) (Recipient), with planned obligations not to exceed Six Million United States Dollars (U.S. $6,000,000) in grant funds, of which up to Five Million Eight Hundred and Fifty-Six Thousand United States Dollars (U.S. $5,856,000) will be obligated through a Cooperative Agreement with CARE and up to One Hundred Forty-Four Thousand United States Dollars (U.S. $144,000) obligated through a direct A.I.D. contract for a Project Coordinator. The grant funds will be obligated over a four year period from date of Authorization, subject to the availability of funds, to assist in financing the local currency and foreign exchange costs for the project.

2. The project ("Project") consists of a series of activities designed to address potable water, sanitation and related health education needs of rural dwellers located primarily in the Southern Peninsula.

3. The Project Cooperative Agreement with CARE, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with AID regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as AID may deem appropriate:

   a. <u>Source and Origin of Goods and Services</u>

   Except as set forth in section f. below and except for ocean shipping, goods and services financed by A.I.D. under the Cooperative Agreement shall have their source and origin in countries included in A.I.D. Geographic Code 941 or in Haiti, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Agreement, shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of countries included in A.I.D. Geographic Code 941 or of Haiti.

b. Conditions Precedent to Initial Disbursement

Prior to any disbursement or the issuance of any commitment document under the Agreement, the Recipient shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) A detailed, time phased implementation plan for the first year of the project.

(2) Evidence that a full-time project manager, acceptable to A.I.D., has been appointed.

c. Conditions Precedent to Disbursement for Water System Construction or Rehabilitation

Prior to any disbursement or the issuance of any commitment document under the Cooperative Agreement to finance the construction or rehabilitation of any water system, the Recipient shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) A cost estimate for each approved water system and a time schedule for implementation; and

(2) The arrangements with the community for construction and subsequently maintaining the water system.

d. Conditions Precedent to Disbursement for Technical Assistance

Prior to any disbursement or the issuance of any commitment documents under the Cooperative Agreement to finance any technical assistance contract, the Recipient shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D. the scope of work for said contract, information on the training and experience of the proposed contractor, and, subsequently, the draft contract.

e. Covenants

The Recipient shall covenant that, unless A.I.D. otherwise agrees in writing, it will:

(1) Use equipment procured under the Project only for mutually agreed upon water systems rehabilitation or construction and construction of latrines;

(2) Recruit and maintain qualified personnel at all levels to effectively carry out the objectives of the Project; and

(3) Use the Joint Project Implementation Plan System (JPIP) or other mutually agreed upon method to systematically monitor the Project's execution.

f. Waiver

The procurement of approximately 12 motorcycles (100 cc) with a total cost of approximately $22,000, from countries included in A.I.D. Geographic Code 935, is hereby authorized.

Harlan H. Hobgood
Mission Director

JUN 15 1984

Date

Clearances:

DRE : B. Burnett
RCO : F. Obey
C/ENG : J. Gardner
CONT : D. Shannon

TABLE OF CONTENTS

Project Paper Facesheet
Authorization and Waiver
Acronyms

		Page
I.	RECOMMENDATION AND SUMMARY	1
II.	BACKGROUND	3
A.	Economic and Demographic Factors	3
B.	Topography and Climate	3
C.	Incidence of Water-related Diseases	4
D.	U.S. Interests	4
E.	Constraints to Development	4
F.	Conformance w/LAC Regional and USAID/Haiti Strategy	5
G.	Basic Problems to be Addressed	7
H.	Other Donors	8
I.	USAID Experience in Potable Water Systems	9
III.	PROJECT STRATEGY	12
A.	Assistance to Public Sector	12
B.	Other Aspects of Project Strategy	13
C.	Project Impact - Beneficiaries	14
IV.	DETAILED PROJECT DESCRIPTION	15
A.	Goals and Purposes	15
B.	Project Components	15
C.	Project Inputs and Outputs	16
D.	Community Organization Development	17
E.	Sanitation/User Education	20
F.	Training	22
V.	PROJECT ANALYSES	23
A.	Technical Analysis	23
B.	Economic Analysis	30
C.	Social Soundness Analysis	39
D.	Institutional Analysis	47
VI.	PROJECT IMPLEMENTATION ARRANGEMENTS	52
A.	Financial Plan and Project Budget	52
B.	Financing & Contracting Arrangements	57
C.	Implementation Responsibilities/Relationships	58
D.	Implementation Plan	60
E.	Waivers	63
F.	Evaluation and Audit Plan	63
G.	USAID/H Support Capability	64
VII.	CONDITIONS AND NEGOTIATING STATUS	66
VIII.	ANNEXES	

ANNEXES

1. Guidance Cable
2. Initial Environmental Examination
3. Logical Framework
4. Grantee's Application for Assistance
5. Grantee's Procurement Procedures (Available in USAID/Files)
6. Mission Director's 611(E) Certification
7. Statutory Checklist
8. Partial List of PVOs Involved in Potable Water Systems Development
9. GTZ Technical Assistance Project (Available in USAID/Files)
10. Action Plan for Community Organization
11. Training Plan
12. List of Initial Prospective Water Systems Sites
13. Rainfall Data for Haiti
14. List of Additional Prospective Water Systems Sites
15. Typical Gravity-fed Water System
16. India Mark II Handpump
17. Moyno Handpump
18. Solar-Powered Pump
19. CARE Budget

LIST OF ACRONYMS

AOPS	:	Association des Oeuvres Privées de Santé (Association of Private Health Workers)
BID	:	Banque Inter-Américaine de Développement. (Inter-American Development Bank - IDB)
CAEP	:	Comité d'Approvisionnement en Eau Potable (Water Association/Committee)
CAF	:	Centre d'Appui aux Formations (Resource Training Center)
CAMEP	:	Centre Autonome Métropolitain d'Eau Potable (Port-au-Prince Water Authority)
CDSS	:	Country Development Strategy Statement
CIDA	:	Canadian International Development Agency
CONADE	:	Comité National d'Action pour la Décennie Internationale de l'Approvisionnement en Eau (Nation Water Committee)
COP	:	Community Organization Promoter
COS	:	Community Organization Specialist
DSPP	:	Département de la Santé Publique et de la Population (Department of Public Health and Population)
FAC	:	French Development Agency
FAO	:	Food and Agriculture Organization of the U.N.
FENU	:	Fonds d'Equipement des Nations Unies (U.N. Equipment Fund)
GTZ	:	Office Allemand de Coopération Technique (German Technical Cooperation Agency)
IHS	:	Institut Haitien des Statistiques (Haitian Institute of Statistics
KFW	:	Kredit Anshaft Fur Wiederban (German Development Finance Agency)
MARNDR	:	Ministère de l'Agriculture, des Ressources Naturelles et du Développement Rural (Ministry of Agriculture)
OMS	:	Organisation Mondiale de Santé (World Health Organization - WHO)
PAHO	:	Pan American Health Organization
POCHEP	:	Poste Communautaire d'Hygiène et d'Eau Potable (Community Health Post and Water Supply Project)
SNEP	:	Service National en Eau Potable (Natioanl Potable Water Service)
UNICEF	:	U.N. Children's Fund
WASH	:	Water and Sanitation for Health Project

I. RECOMMENDATION AND SUMMARY

A. Recommendation

Pursuant to review and approval of the proposed Community Water Systems Development Project by the USAID/Haiti Project Review Committee it is recommended that the Mission Director approve the Project described herein for a total cost to AID of $6,000,000 in grant funding over a four year period.

B. Summary of Project Rationale

Evidence indicates that provision of a safe and convenient water supply and basic sanitation services to rural communities throughout Haiti is of paramount importance to the well-being of the people in those communities. This project will attempt to rationalize efforts to provide these services and benefits to a large number of communities spread throughout the southern third of the country. Furthermore, it will attempt to institutionalize a decentralized and localized process of water and sanitation systems operations and maintenance. The capability of the National Service for Potable Water (SNEP), a GOH parastatal, to support this process will be strengthened, in collaboration with a project with the German Technical Assistance Agency (GTZ).

The strategy selected for implementation of this Project is one which offers the greatest chance for success for cost-effective construction and long-term maintenance of rural potable water systems in under-served, remote regions of Haiti. Project beneficiaries will also be provided the means and education to maximize benefits from increased access to larger quantities of good quality water, as follows: a) protection from infection due to consumption of safe rather than contaminated water and b) improved personal and household hygiene. Other benefits should include: a) increased capabilities for more productive and steady labor; b) increased alertness and retention of education, by both adults and children; c) better nutrition, given the waste of nutrients resulting from diarrhea; and d) decreased expenditures on both traditional and modern pharmaceutical treatments for water borne diseases.

Communities will also benefit from the community organization aspects of the project, and particularly from the provision of instruction on maintenance of water systems.

C. Summary of Project Description

The goal of the project is to improve the quality of life of the inhabitants of the Southern Peninsula of Haiti. The project purpose is to construct or rehabilitate rural potable water systems and to assist peasant and community groups to operate and maintain these systems, and to otherwise maximize benefits therefrom. To accomplish these, the Project will pursue the following:

1. Construction or rehabilitation of approximately 40 water systems to serve 160,000 persons;

2. Water user education and sanitation training;

3. A pilot latrine construction program;

4. Community organization development; and

5. Strengthening, in collaboration with GTZ, the capability of SNEP to serve as a regulatory agency.

The primary implementing agency for the Project will be the Cooperative for American Relief Everywhere (CARE). CARE will collaborate with AID, SNEP, GTZ, HAVA and other organizations, as necessary, to ensure successful implementation of this Project.

Total 4-year LOP funding, from the Development Assistance (DA) budget will amount to $6 million. $5,856,000 of this will be provided to CARE under a Cooperative Agreement, for the aforesaid purposes. The remaining $144,000 will fund the costs of the AID-contracted Project Coordinator.

Project Paper Development

USAID/Haiti expresses its gratitude to those involved in the preparation of this Project Paper, including the respective USAID/H and CARE Haitian and U.S. staff members, and the members of the WASH team who provided technical inputs.

II. BACKGROUND

A. Economic and Demographic Factors

The Republic of Haiti is the poorest country in the Western Hemisphere and one of the thirty poorest in the world. Average annual per capita income has been estimated at $270.00. However, the income of 75-90% of the population, i.e. the rural and urban poor, is $150 or less per annum. A population density approaching 700 persons per square kilometer of arable land creates serious pressures on that land. Haiti remains a rural country with about 80 percent of the population dependent upon agriculture for their income. Over-exploitation of land and growing population pressures have resulted in deforestation, severe erosion and depletion of the soil. The 1971 census counted a population of 4.3 million, representing a yearly growth rate of 1.6 percent since the 1950 census. In 1983, the population was an estimated 5.7 million. This relatively low rate of growth reflects considerable out-migration --estimated at 0.5 percent of the total population each year by UNFPA (Needs Assessment 1979). The birth rate is 37 and the death rate 14 per thousand, representing a 2.3 percent rate of natural increase. Various health and related statistics illustrate deplorable conditions. The infant mortality rate in 1971-75 was 124 per thousand for the entire country according to the World Fertility Survey and other estimates range up to 150 per thousand--among the highest in the Americas. Maternal mortality, estimated at 32 per 10,000 by the Division d'Hygiene Familiale (1978), is also one of the highest in the region. The National Nutrition Survey found some 60 percent of Haitian children under five suffering some degree of malnutrition, and an estimated 40 percent with second to third degree protein-calorie malnutrition. Average life expectancy is estimated at 53 years. The majority (60% - 70%) of physicians in Haiti are located in Port-au-Prince. Thus only one doctor is available per every 30,000 rural inhabitants to provide medical care. Four out of five Haitians are illiterate, and while 71% of primary school age children are at some time or other enrolled in school in Haiti, very few (8%) who begin grade school in rural areas ever finish those early school years.

B. Topography and climate

The total land area of Haiti is 27,800 sq. kilometers (about the size of Maryland). The country is mountainous having five distinct mountain ranges with many streams and narrow valleys. The elevation varies from sea level to 2,674 meters in the south, with most of the ridges lying above 1,000 meters. Because 65% of Haiti is on slopes of 20 degrees or steeper and the mountain soils are so scant and shallow, less than one third of the land is considered arable. The climate is tropical with the average annual temperature being between 75 and 81 degrees Fahrenheit. Rainfall patterns are uneven with the average varying from about 500 mm per year (1 mm = 0.039 in.) along the southern coast of the north peninsula and the extreme eastern part of the south coast, to about 4,000 mm per year at points on the south

peninsula. Sharp variations in the weather patterns often result in prolonged periods of drought, frequent heavy floods, and occasional severe storms and hurricanes.

C. Incidence of Water-related Diseases

Recent surveys indicate that water-related diseases and diarrhea account for 15%-20% of the total incidence of disease in the country. Furthermore, hospital reports indicate that more than 50% of deaths recorded in the country over the past ten years were caused by or associated with gastro-intestinal diseases. These health hazards caused, inter alia, by lack of potable water and environmental sanitation measures, have an even greater deleterious effect on the physical and mental capabilities of rural dwellers when coupled with nutritional deficiencies.

D. U.S. Interests

U.S. interests in Haiti, which are numerous and varied, are analyzed in the Mission FY 1984 CDSS and the FY 1986 CDSS update. Humanitarian and social concerns will be addressed directly by this project. The human misery associated with the health, income and general quality of life deficiencies existing in the poorest nation in the Hemisphere are in themselves a strong motivating force for many U.S. private groups and the U.S. Government to provide financial and other forms of assistance. The humanitarian and developmental activities throughout Haiti of more than 150 U.S.-based, non-governmental voluntary organizations give testimony to the desire of private American citizens to improve life for Haiti's poor.

Access to a source of safe water fulfills a very basic human need and, coupled with other measures which enhance the quality of life, can impact positively to ease conditions of human degradation.

E. Constraints to Development

There are a number of major constraints to successful implementation of development activities in Haiti, which cut across sectoral lines. These include: a topographical setting (i.e. extreme slopes) not conducive to agriculture; very limited natural resources; frequent natural disasters; a largely uneducated and untrained populace; limited transportation, communications, potable water and electrical infrastructure; weak public institutions; a high population density; and limited employment opportunities, particularly in the rural areas.

Concerted efforts to address these ills have been made over the years by international agencies, externally-based and indigenous private voluntary organizations, community groups and, increasingly, the Government of Haiti. Some progress has been made during the past ten years, particularly in the areas of road, communication, and electrical infrastructure development, and delivery of health services. The development efforts of the GOH have been complicated somewhat in recent years by an austerity program promoted by the

IMF to redress serious balance of payments and central government budgetary problems. While the stabilization plan has been largely adhered to, a resulting shortfall in the GOH's development budget has slowed or weakened the implementation of many development programs.

F. Conformance with LAC Regional and USAID/Haiti Strategy

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; and

3) Strengthening of human resources.

USAID/Haiti is hereby proposing to address, for a significant segment of the rural population, the major problem of 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. Furthermore, 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.

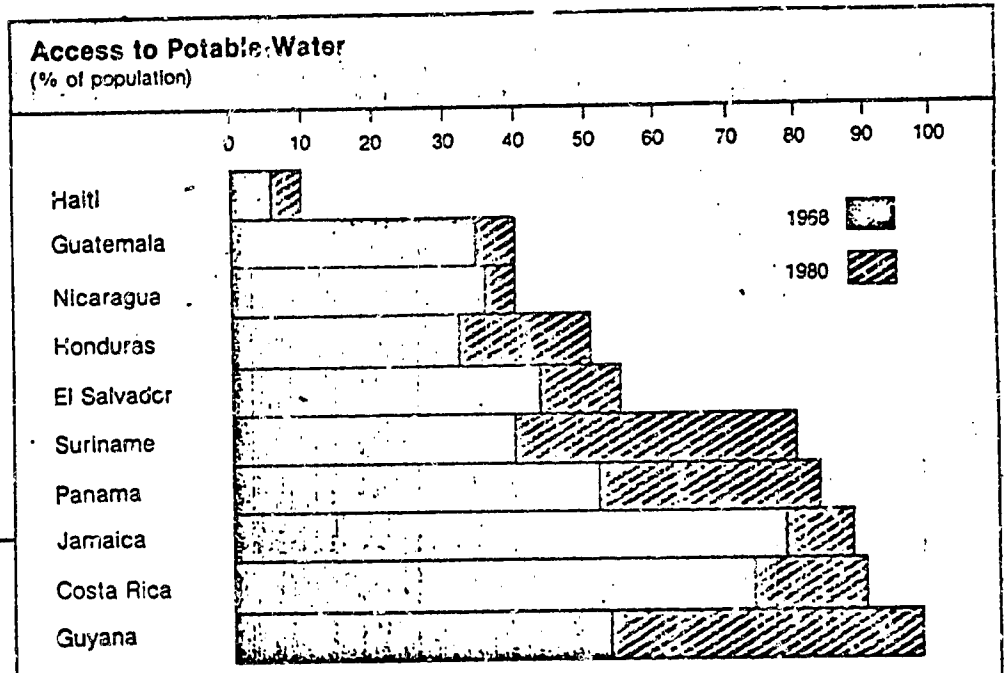
As indicated above, this project will conform with various aspects of the AID country strategy for Haiti, and thus will interact favorably with several on-going and new projects in the Southern Peninsula.

Given the 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 non-governmental organizations. Furthermore, 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

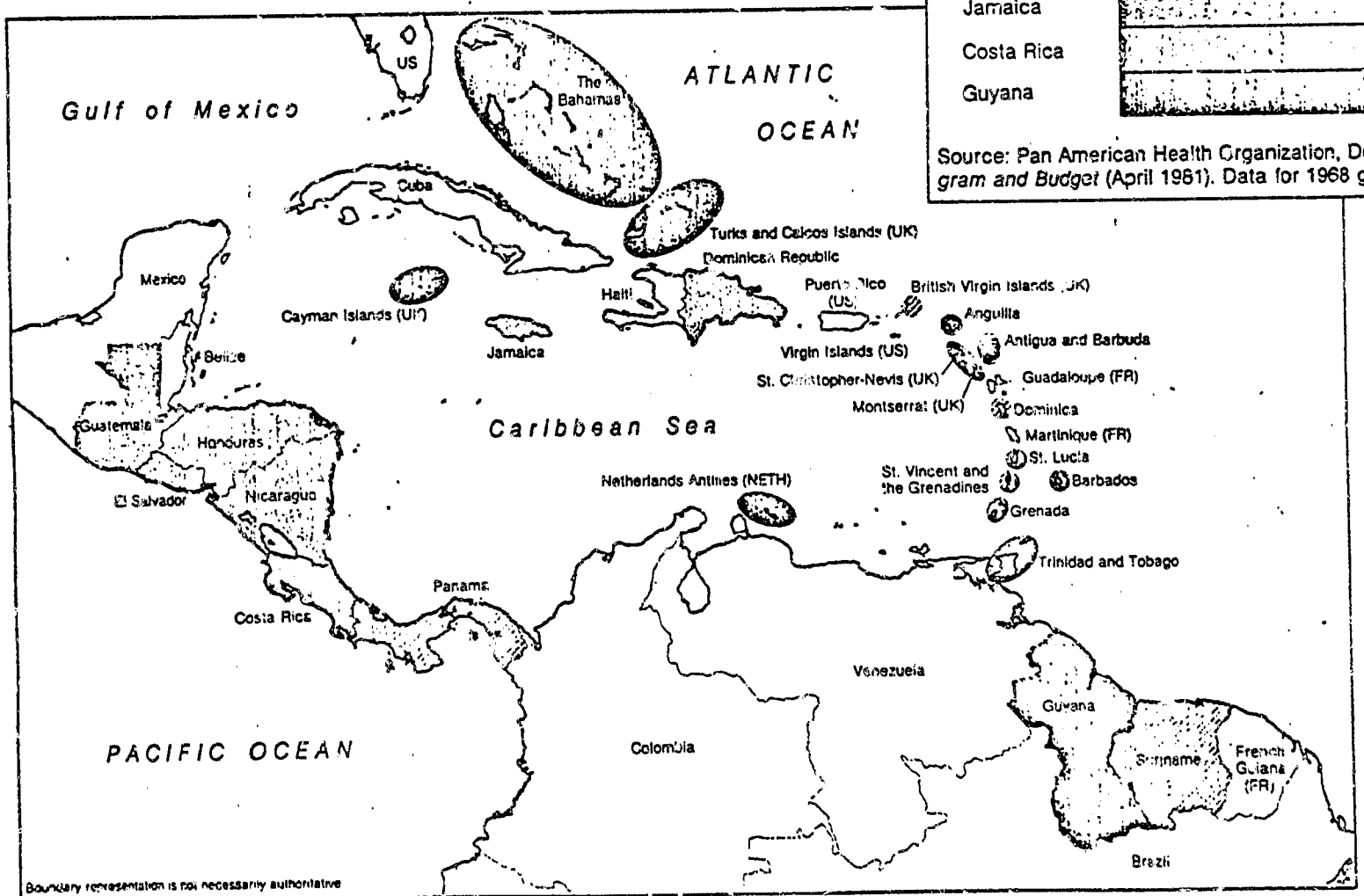
* See Access to Potable Water chart, next page.

Access to Potable Water *

Access to safe drinking water is a necessity for public health and economic improvement. Over 20 years ago the Alliance for Progress launched an effort to provide adequate water supplies and sewage disposal systems throughout Latin America. The need was especially great in Central America and in Haiti and the Dominican Republic. Sanitation programs were sponsored by the U.S. Agency for International Development, the World Bank, the Inter-American Development Bank, the Pan American Health Organization, and other international bodies. Although urban sprawl, due to a heavy increase in migration from rural areas, posed new obstacles, most Caribbean Basin countries are now able to supply safe water for a much larger percentage of—and in some cases for virtually the entire—population.



Source: Pan American Health Organization, Doc No. ES 5 (June 1969); *Proposed Program and Budget* (April 1981). Data for 1968 given only for these countries.



Percentage of Population with Access to Potable Water, 1980 (or most recent year)

- 10–39
- 40–59
- 60–79 (no countries)
- 80–89
- 90–100

to implement new activities of a similar nature. Of all the agencies with which USAID has dealt 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, AID 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 will be implemented in the south/southwest region of the country, where AID 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 make contacts with other PVOs, 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.

G. Basic Problems to be Addressed

The majority of rural communities and villages in Haiti, and particularly those in more remote areas, do not have easy access (i.e. less than 1 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 not at all accessible and/or the community's primary source is contaminated, it is very 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 water borne 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. However, in those areas where contaminated water sources are extant and utilized for consumption purposes, development of a potable water system and concommitant measures for a) on-going maintenance, financed by the users; b) prevention of contamination and c) user education will generate significant long-term benefits.

In the south/southwest of Haiti where most or all of the project's water systems will be built, improper water use and lack of water source protection are major problems. Mosquito borne diseases such as malaria and dengue fever often result from ignorance and related improper practices. The project will give due attention to drainage techniques and reduction of

standing water, to mitigate the occurrence of these diseases. In general, the installation of spring-capping and gravity fed systems will, as opposed to pump technologies, further reduce chances for water borne disease generation. The complementary programs for water user education and sanitation to be introduced under this project will help ensure that on-going preventive measures to meet these health related concerns will persist.

The project proposes to install systems only where 1) a very apparent and measurable need exists and 2) broad community participation in systems financing, construction and maintenance can be reasonably assured.

H. Other Donors

There are several major donor agencies and a multiplicity of smaller organizations active in potable water systems development in rural Haiti. The most significant of these programs are discussed below, and others listed in Annex 8.

1. The Community Health Posts and Rural Water Supply Project (POCHEP) is funded by the Interamerican Development Bank and European Economic Community (EEC). It is implemented in collaboration with the GOH Ministry of Health (DSPP). The first phase of the project commenced in 1979, designed for construction of 70 systems (primarily gravity-fed) to serve communities with 500 to 2,000 inhabitants each. The estimated per beneficiary cost is $60.00. POCHEP has been plagued with problems since the outset, resulting for all intents and purposes in the dropping of the health component. The water component of the project has worked relatively well, however, and about forty of the systems planned for are to be completed by March 1984, and the remainder during the first half of 1985. Thereafter, POCHEP and the IDB plan to proceed with a second phase, involving the construction of an additional 150 systems over a 3 to 4 year period.

2. The German Development Finance Agency (KFW) is rehabilitating systems originally constructed in St. Marc and Gonaives under the "ten towns program", with World Bank financing and U.N. commodity assistance (FENU). The rehabilitation program will be extended to the eight other towns, and a feasibility study carried out for construction of new systems in seven additional sites.

3. UNICEF has of late been providing technical and limited commodity assistance to SNEP in areas such as formation of mobile maintenance units, design of alternative latrine technology and for a pilot program experimenting with the India Mark II hand pump.

4. Integrated Rural Development Programs which include potable water systems components are being implemented in several areas of the country. The most significant of these is being financed by the World Bank for the Organisation du Nord (ODN). Similar, smaller-scale efforts are being implemented by the GOH in the Artibonite Valley, in the North and in and around Les Cayes, with financing from the IDB (ODVA), French bilateral aid (FAC) and German bilateral assistance (GTZ) programs, respectively.

5. Proposed Programs SNEP has been negotiating with other donors, including the German Technical Assistance Agency (GTZ) for technical and other forms of assistance. The proposed GTZ program, scheduled to commence during the spring of 1985, has a heavy technical assistance focus. The details of the program, and how the strategy of the USAID project has been reformulated to provide for complementarity of effort, are discussed under Project Strategy below.

I. USAID Experience in Potable Water Systems

USAID/Haiti experience in potable water systems began in July 1975 when an agreement was signed with CARE. Since that time, three additional projects have been funded with CARE, one with Church World Service and one with Compassion International. In addition a number of SDA grants (up to $10,000) have been given to private voluntary agencies and community groups for the construction of potable water systems. Also, the Mission has been involved in monitoring a centrally-funded hand-pump program which was implemented by the International Programs Division of the Georgia Institute of Technology under a sub-contract with WASH.

The pertinent data on the major potable water systems development projects are listed below:

(1) Community Water systems Phase I (521-0076)

Implementing Agency:	CARE
Date Agreement Signed:	July 1975
Completion Date:	May 1978
Life of Project Funding:	$120,700 (USAID)
Other Donor:	$57,900 (CARE)

Project Purpose: To provide improved access to potable water for approximately 15,000 rural poor living the Northwest of Haiti.

Project Outputs: Capped 20 springs, improving access to a supply of drinking water.

(2) Water Resources Development/Phase I (521-0080)

Implementing Agency:	CHURCH WORLD SERVICE (CWS)
Date Agreement Signed:	July 1976
Completion Date:	December 1979
Life of Project Funding:	$122,350 (USAID)

Project Purpose: To provide improved access to potable water for the poor on the island of La Gonave

Project Outputs: Construction of 22 water systems. The systems included capped springs, reservoir, public fountains, washing basin and animal watering outlets. Several hand dug wells were constructed and equipped with Dempster hand pumps.

(3) Community Water Systems, Phase II -(521-0112)

Implementing Agency:	CARE
Date Agreement Signed:	August 1978
Completion Date:	June 1980
Life of Project Funding:	$101,000 (USAID)
Other Donor:	$106,100 (CARE)

Project Purpose: To provide improved access to potable water for 23,000 rural poor in the Northwest area of Haiti.

Project Outputs: Constructed 18 potable water systems, of which eight systems consisted of only a capped spring while the remaining ten systems included a capped spring, reservoir distribution line and public fountains.

(4) Water Resources Development, Phase II - (521-0101)

Implementing Agency:	COMPASSION INTERNATIONAL
Date Agreement Signed:	September 1978
Completion Date:	September 1982
Life of Project Funding:	$490,000 (USAID)
Other Donor:	$160,000 (Compassion)

Project Purpose: To improve access to potable water for 26,000 inhabitants of La Gonave island.

Project Outputs: Installed Moyno hand pumps on 24 drilled wells. Constructed one gravity fed water system consisting of a capped spring, reservoir and distribution system to three towns.

(5) Community Water Systems Phase III (521-0147)

Implementing Agency:	CARE
Date Agreement Signed:	March 1981
Completion Date:	December 1983
Life of Project Funding:	$480,000 (USAID)
Other Donor:	$122,375 (CARE)

Project Purpose: To construct six community water systems to improve the quality of life of 30,000 rural inhabitants in the Northwest and Artibonite.

Project Outputs: Gravity systems were installed at St. Louis du Nord, Anse-à-Foleur and at Terre Neuve. Combination photovoltaic-gravity systems were installed at Baie de Henne, Maugé and Bois Maugé. These solar systems are all working extremely well.

(6) CARE Community Water Systems (521-0169) (CBI)

Implementing Agency:	CARE
Date Agreement Signed:	March 1983
Project Completion Date:	December 1984
Life of Project Funding:	$475,000 (USAID)
Other Donor:	$64,000 (CARE)

Project Purpose: To improve the quality of life of approximately 24,000 people in rural Haiti.

Project Outputs: This project is under implementation. A gravity water system will be installed at St. Michel de l'Attalaye and La Lomas and a combination photovoltaic - gravity system will be installed in the Maugé area.

Since its first involvement with potable water systems in 1975, USAID/Haiti has been on a learning curve. Each project provided some lessons and some dos and don'ts which were used to make improvement in later projects. Project elements include technical matters, socio-economic matters, community participation in a management role for the system and a maintenance capability for the system.

Even though water systems are relatively simple, careful design of the system and close supervision during the entire construction phase are absolutely necessary. Since the systems which are built are generally located in isolated areas, it is necessary to have a highly notivated and qualified staff who are willing to spend the necessary time in the field to assure success of the project. This had been a problem with the earlier projects, particularly with the initial CARE funded project. From experience, it has become evident that it is best to have a qualified international sanitary engineer in charge of the project who in turn will supervise one to three highly motivated and qualified local field engineers.

Community participation is essential. Before construction of a system commences, it is necessary to survey the community to ascertain the desirability and requirements for a system and whether community members are willing to finance its long-term maintenance, participate in the actual construction of the system, and to organize a water committee that will manage the system. One or two persons from each community where a water system is installed must be trained in the maintenance of the system. The water committee must have full representation from the entire community with each member having an equal voice to ensure that the needs of the entire town are adequately served and not only those of a selected group.

To obtain the greatest possible benefits from clean water, the users must be educated in the proper sanitary methods to transport and store the water. Thus initial health-related user education prior to system completion or start up is required as is periodic follow-up training.

Lessons learned from AID's experience can be summed up as follow:

1) Keep the water system as simple as possible from a construction design standpoint; i.e., emphasize gravity-fed systems.
2) Community participation is essential in all phases of a system's planning, design, construction, management and long term maintenance.
3) User education in basic health/sanitation principles is required, with the above, to maximize benefits.

III. PROJECT STRATEGY

A. Assistance to Public Sector

A reformulation of the strategy for the design of this project has been necessary since the time of PID approval. Certain new factors have required the redefinition of the role that the public sector (i.e., SNEP) will play in implementing the project, as well as in what assistance will be provided to SNEP directly.

Given the large number of on-going or proposed donor projects in the potable water systems area, the Mission routinely investigated such projects during the intensive review. It was in the area of proposed technical assistance and support to SNEP that probability for duplication of effort became apparent. German Technical Assistance (GTZ) and the World Health Organization (WHO) have been negotiating with SNEP for a project to provide SNEP major technical assistance and logistical support, valued at nearly $1 million, commencing in late 1984/early 1985. Technical services will be financed in the areas of 1) administrative/financial management, 2) systems operations and maintenance and 3) mechanical or electrical engineering. Vehicles, spare parts and a fund for equipment maintenance will be provided for under logistics support. Various sub-project feasibility studies will be funded, as well. Because a preliminary agreement on this proposal had been reached between GTZ and SNEP, and because of other priorities for use of PL-480 Title I generations originally programmed for the AID project, USAID/Haiti has determined, with GTZ concurrence, that GTZ should provide the major share of assistance to strengthen SNEP's capability in the sector over the next three to five years*.

The bulk of resources under the AID Project, therefore, will be concentrated on 1) systems construction, 2) user education/sanitation and 3) institutionalizing a capability within the communities for operation and maintenance of systems constructed. SNEP will be fully involved in site selection and will provide advice and oversight on the range of field activities. The project will provide logistical support (e.g. for staff visits to sites) to SNEP in this regard and will also stage seminars and other types of in-country training for both SNEP staff and others involved in project implementation.

As this dual track approach to rural potable water systems development unfolds, AID, GTZ and SNEP will further explore ways to cooperate. During the course of its project GTZ will, for example, also be designing and carrying out with DSPP and SNEP, a pilot latrine construction program. It is expected that the implementors of the sanitation component of Project 521-0155, therefore, will collaborate with GTZ technicians in the development of latrine technology which has potential for wide acceptance in rural Haiti.

---

* More details of the GTZ technical assistance and logistical support for SNEP are provided in Annex 9.

B. Other Aspects of Project Strategy

The strategy for implementation of this project will otherwise remain similar to that developed in the PID, vis-à-vis:

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 PVO's 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, will carry out the water system construction under the Project.

It is 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 (i.e., construction) agency. A basic premise of the project is that communities will ultimately be responsible for management, operation and maintenance of systems built with major assistance from an external agency. As the latter will be responsible for leaving in place a system with long term viability, it must ensure that the community possesses not only the right skills but also the proper organization. Thus the Community Organization Specialist (COS) and promoters are key actors in the process, along with the various construction and other technical personnel (see Project Description, Community Participation).

2) Gravity-flow systems: Final selection of sites for gravity-flow systems will be of the first priority for the Project. Since these systems are relatively uncomplicated in design, easy to construct and simple to maintain, they will be the system of first choice (see Technical amd Economic Analyses). According to preliminary geological, hydrological, and other technical data, sufficient sources should be available either for capping, rehabilitation, or extension. Alternative technologies, however, will be considered as appropriate, particularly if exploitable, elevated spring-fed sources for gravity systems are not available 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 must be made as fully responsible as possible for the maintenance of their own systems. This commitment is 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 will be minor. Second, community preventative maintenance will 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--will enable a greater freedom of choice for those communities to engage a repair and maintenance contractor. Fifth, since communities have been provided with a subsidized water system, they should be obliged to pay for all repairs. (see Technical Analysis discussion on feasibility of community based maintenance).

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 to be developed under the project must evolve into a longer term effort (see Project Description, Water-User Education).

C. Project Impact - Beneficiaries

The principal direct beneficiaries of the project will be the approximately 160,000 inhabitants of rural communities throughout the south and southwest peninsula, where project activities will be concentrated. Direct measurable benefits will include the savings in labor and time achieved through the provision of a conveniently located supply of potable water. These benefits will significantly affect the lives of women in these communities, as it is they who carry most of the water for household and related uses. Time saved will allow for the additional pursuit of economic activities, e.g. marketing. Furthermore, since much water cartage is done by school age children, more regular school attendance could also result in some areas.

Health benefits which should result at least partially from project interventions include: a) protection from infection due to consumption of safe rather than contaminated water and b) improved personal and household hygiene. Indirect benefits which will flow from better health could include: a) increased capabilities for more productive and steady labor; b) increased alertness and retention of education, by both adults and children; c) better nutrition, given the waste of nutrients during diarrhea; and d) decreased expenditures on both traditional and modern pharmaceutical treatments for water borne diseases (Refer to the Social Soundness Analysis for further discussion of the target group).

The communities per se will also benefit from the community organization/animation aspects of the project, and from user education both for health purposes and for operation and maintenance of water systems. The Government of Haiti and the National Service for Potable Water (SNEP) will benefit from "on-site" technical assistance and training to be provided under the project to strengthen SNEP's capability to regulate and provide technical support services for systems operated and maintained at the community level (see discussion in Project Description of Institution-building outputs vis-à-vis SNEP).

IV. DETAILED PROJECT DESCRIPTION

A. Project Goal and Purpose

The goal of the project is to improve the quality of 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 peasant and community groups in the operation and maintenance of these systems. Water-user education will assist communities in not only maximizing use of the systems but, more importantly, in educating the user in water related sanitation.

AID and the other project staff will also collaborate with the Federal Republic of Germany's Technical Assistance Agency's (GTZ) complementary project for management and technical advisory assistance to the National Potable Water Service (SNEP). The GTZ project, together with the advisory assistance and training provided under this project, will strengthen the institutional capacity of SNEP (a) to promote programs for the installation of community-based rural potable water systems, (b) to assist in the maintenance of such systems and (c) to otherwise function as a regulatory body for rural potable water systems installation and maintenance.

B. Project Components

The primary emphasis of the project is to build upon the efforts and successes of the predecessor AID/CARE potable water projects. This project, however, will be more than a mere extention of the previous small scale efforts which focussed almost exclusively on the construction of water systems. Rather, the project will move beyond the provision of additional quantities of and better quality water to rural areas, and will strongly promote basic principles of sanitation and strengthen decentralized institutions.

The project will include two major components, and another which complements a major other donor project. They are:

(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; however, the final number will depend upon the actual costs of the systems selected for construction/rehabilitation, which is largely a function of the number of people serviced in a given community and their proximity to the water source. The construction/rehabilitation component will be implemented by CARE.

(2) A health and sanitation component which will involve instructional activities in hygiene and sanitation (water-user education) in

all communities selected for systems construction/rehabilitation, and a latrine construction program to be implemented in six pilot communities.

In collaboration with the GTZ program the project will also promote an institution building effort with SNEP to strengthen its capacity to provide technical and managerial assistance for the support of rural potable water systems, in general. A community water resource office or division will be designated within the present SNEP organizational structure to receive technical assistance and eventually assist peasant and community groups to design, construct, rehabilitate, manage and maintain rural water systems. A primary focus of the AID/CARE technical assistance is on the various aspects of community water association capability development. Project advisors will, however, collaborate with GTZ technical and management assistance as is deemed appropriate (to be determined after the GTZ project commences during FY 1985) - see Project Strategy). Through its collaboration with AID and CARE, SNEP personnel will receive on-site and observational training in the design, operation and maintenance of gravity-fed water systems; promotion/organization of community water associations; and water-user education and sanitation.

1. Project Agreements and Major Inputs

AID project inputs, financed through a $5,856 million grant, include 1) the construction/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/SNEP/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 will be provided through a Cooperative Agreement with CARE, which will have the option to provide subgrants 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) will be 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 to be exchanged between AID and the Embassy of the Federal Republic of Germany will outline the nature and extent of the collaboration between the AID-supported project and that of GTZ.

The host country contribution to the Project will consist of a community contribution toward system construction, i.e. of materials and labor and sites for the systems infrastructure. GOH public treasury resources will 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 will for the most part fund additional administrative costs incurred by SNEP through its participation in the Project. These will be attributable primarily to field support required for SNEP engineers and

community organization promoters. PL 480 generations will also fund vehicle operation and maintenance, and the procurement of minor tools and equipment.

2. Major Outputs

As specified above, the project will build or rehabilitate about forty community water systems, to serve approximately 160,000 persons, during the four year life of project. Water associations established will request construction/rehabilitation of these systems and will manage the systems upon completion. Funds will be collected periodically from beneficiaries by the water associations to finance operation and maintenance of systems on a long-term basis. Ongoing maintenance will 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 will have been trained in water system administration and maintenance. However, SNEP will 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, with payment on a performance basis or as agreed upon with the water association.

In cooperation with the Federal Republic of Germany's Technical Assistance Program (GTZ) and through field and classroom training, the technical and managerial capacity of SNEP will be strengthened to achieve the following institutional outputs:

1) Improved planning and administrative capabilities and procedures.

2) Strengthened capability for assisting communities to establish local water authorities or associations.

3) Improved capability to determine location of rural water sources and to evaluate feasibility of various systems for tapping these resources.

4) Established capability to thoroughly review and evaluate system designs proposed by PVOs, local engineers, foreign donors, and others.

5) Improved capability to inspect construction, operation and maintenance of water systems.

6) Improved capability to train community members in the operation, maintenance, and administration of water systems.

3. Community Organization Development

The role of the communities is a key element for the success and replicability of this project. Local responsibility is desirable in itself because it facilitates greater responsiveness and accountability. The community will establish mechanisms to control the water systems to ensure

that resources are collected and used properly, and that operations and maintenance are carried out.

A Community Organizations Specialist (COS) will be hired under the Project to assist in formation of water associations, and to thereafter advise these associations in establishing the aforementioned mechanisms. The COS will also liaise between the construction and user education/sanitation teams to ensure concommitant development of activities. He/She will be assisted by local promoters assigned to each construction team(3), and in certain localities by Peace Corps Volunteers assigned to CARE and/or SNEP.

The initial point of contact for ascertaining which members of the community might be interested in forming water associations will be community councils and similar community groups. Community councils exist throughout rural Haiti. While many councils have been formed through GOH assistance or initiative, they are not formally part of the local governmental apparatus, but do often function as an effective conduit between the peasantry and the GOH or external donor agencies which offer resources or assistance of some kind. Although community councils have frequently been organized in response to specific relief efforts or development projects, some councils remain active on a continuing basis and seek out assistance for community development projects. The councils vary greatly in quality and method of operation and, in theory, are organized to function on a democratic basis, with periodic elections of officers and widespread membership in the locality represented. In practice, there is usually a group of "active" members who control most of the council's activities, most of whom have influence and status based on outside interests or fields of expertise (e.g. teachers, priests/ministers, entrepreneurs). Further discussion of the role of community councils in Haitian peasant society and in this project is found in the Social Soundness Analysis. As indicated, the COS, promoters and PCVs will meet early on with community council members, or members of other such groups, to determine the efficacy of water association development in a given area. An "action plan" for community organization development is outlined in Annex 10. The subject is also discussed in the Training Plan, Annex 11.

A number of approaches for community participation, and methods of contribution in the construction phase have been considered. Local contributions will be in the form of land, materials, capital and labor, the specifics to be worked out for each community by the COS, the construction team leader, and the local water association. Materials such as sand and gravel for concrete will be provided by potential beneficiaries. The proposed initial capital outlay by the beneficiaries has been determined to be feasible based on the experience under the on-going CARE CBI project.

Lack of clear definition of title to land is common in rural Haiti, such that if clear title to land for systems location was required under the project, site selection and/or construction could be significantly delayed. However, each water association will be advised to ensure that, to the maximum extent possible, real estate provided for location of systems is not owned by one individual or family. The purpose of this strategy is, of

course, to mitigate chances for claims of "ownership" of systems by those who may own the land.

The feasibility of mobilizing communities to contribute volunteer labor on a large scale basis is problematic due to: 1) traditions in rural Haiti not conducive toward provision of "free" labor; 2) the high value the peasant places on his/her own labor, i.e. his/her having to eke out a living on a day-to-day basis and 3) inherent suspicions (frequently based on bad experience) toward externally-sponsored projects assistance. CARE, however, will have the responsibility for formulating a scheme with the water association to ensure that sufficient unskilled labor will be provided on a regular basis, to allow for expeditious completion of a system. Payment for unskilled labor will <u>not</u> be provided from project resources/financial inputs. In relatively prosperous communities it may be feasible for water associations to collect enough advance contributions to defray unskilled labor costs. Where such an arrangement is not feasible, CARE will have the option to provide remuneration through its existing Food for Work (FFW), Title II commodity stockpiles (not programmed through this Project). The CARE experience utilizing FFW commodities in this manner under predecessor projects has been by-and-large very satisfactory. Other options may be experimented with, such as combining paid (food or cash raised by the water association) and volunteer labor, perhaps paying workers four days out of the week, with the fifth day of labor provided on a voluntary basis. In principle, however, cash transactions should be minimized, given the temptations and possibility for kickbacks.

Workers will be hired locally when at all feasible. Unskilled labor will be recruited in communities involved, and certain skilled positions, such as masons and plumbers will also be filled on-site wherever possible.

Fee collection will be accomplished by the local water committee treasurer. A minimum of $0.50 will be collected from each family in the locality at the inauguration of the system. A maintenance fund and a local bank account will be thus established, and a schedule of periodic user fees set. Funds will be utilized to finance operations, routine maintenance, a minimum reserve for major maintenance and in certain cases systems upgrading. It is crucial that the benefits of the water schemes accrue directly to those who contributed. The charge for water must be clearly related to the benefit, actual or perceived. In this regard, the water association must develop a plan to provide for collection of fees from the maximum number of potential beneficiaries and, to the extent possible, for mitigating the incidence of benefits accruing to those who will not contribute. The difficulty of enforcing such a scheme must not be underplayed. On the one hand, eliciting of assistance from official law enforcement authorities can lead to abuse. On the other, a strategy involving spot-checking by the care-taker and/or peer pressure will not always result in uniform compliance. The water association and by extension the community must decide on a rational, viable long-term financing plan.

4. Sanitation/User Education

One constant exists in nearly all small rural Haitian communities: sanitation and water supply are poor. Fecal contamination of water is endemic; access to safe water and sanitary disposal of fecal waste, garbage and water is almost non-existent. Moreover, these unsanitary conditions are compounded by poor hygiene, lack of awareness and knowledge of sanitation principles and by the absence of resources and effective leadership. These problems are further compounded by attitudes mitigating change. Thus, in order to be successful, the project must succeed in changing beneficiaries perceptions as well as living environments, thus creating an awareness of methods for achieving better health.

The sanitation component of this project includes instructional activities in hygiene and sanitation, often referred to as "water-user education", as well as the more traditional sanitation activities, i.e. drainage, privy construction, etc. Efforts to improve sanitation, in both the engineering and behavioral sense, are essential to ensure that the greater availability of water does not lead to increased production of mosquitoes, flies, worms and greater frequency of opportunistic infections. It is also important to reinforce villagers' motivation to work for and keep the system operational. In brief, the, sanitation activities to be conducted under this project are aimed at: 1) ensuring that the source and each water outlet have proper drainage, 2) improving personal hygiene and behavior with respect to disposal of fecal and other waste matter, and 3) increasing village awareness of the need for sanitation excreta disposal and place the means at their disposal for low-cost latrine construction.

The basic strategy behind the user education component of the project is to develop modules for communication of basic health and sanitation principles early in the project to potential beneficiaries. These modules will be developed by the User Education/Health Adviser hired by CARE, who will implement the program with the aid of 3 assistants, each assigned to one of the three construction teams. The User Education Team will collaborate with the COS and the Sanitary Engineer to involve local organizations active in health or related fields, to disseminate information. Filmstrips, other methods of classroom instruction and radio spots will be among the methods of information dissemination experimented with.

The Education adviser will also be responsible for devising a strategy for periodical reinforcement of initial instruction, as part of a longer term effort, which should involve existing community-based health agents and workers.

The Education Adviser and the COS will also devise a plan for water committee involvement, to the extent practicable, in instructional activities. To support these efforts the health adviser will supply training/education material, as required, and will monitor water association efforts. The user education component will commence during the initial stages of the project in the community, to capitalize on the higher motivation likely at that time.

To carry out project objectives under the variety of conditions in Haitian communities, user education personnel will enlist the support of local members of the water committee who have an interest and some experience in health/sanitation. This presumes that some water committee members will represent local health centers, clinics or hospitals.

Water user education will be integrated as appropriate into the routine activities of the community. That is, in discussion groups at health or education centers, by individual consultations during home visits, and in classroom presentations. The topic of user education will be introduced in community council meetings and church gatherings, taking advantage of every opportunity to reinforce the sanitation/water user message.

Project activities in sanitation, to include the latrine program (see Technical Analysis), will be carried out by project funded staff working in cooperation with other organizations active in this area. Due to the variety of actors who may be involved, it is not feasible to formally include all parties in the Cooperative Agreement. In lieu of formal agreements, the project staff will coordinate site visits with community leaders, SNEP officials, and local/regional health representatives. Involvement of Peace Corps Volunteers* assigned to Regional SNEP and/or CARE offices, and possibly located at the pilot sanitation sites, should facilitate informal collaboration between the many interested parties. The education/sanitation team itself will be responsible for ensuring that system designs provide for adequate drainage, that water committees are fully aware of the work of the team, and that they assist in scheduling workshops and meetings on latrines, home sanitation and hygiene. In addition, the water committees will be utilized to inform villagers of upcoming activities and secure their support for the same.

AOPS (Association des Oeuvres Privées de Santé) on behalf of its members has expressed interest in becoming involved in user/health education in the long term As of March 1, 1984, AOPS, an association of experienced health professionals and management personnel, has arranged with 50 member agencies for a package of technical assistance and on-site training for health workers in health education and patient outreach. They also provide assistance to member organizations in the areas of budgeting, planning and operations. AOPS has expressed agreement in principle that some of its participating institutions can and will work with project staff in formulating on-going programs for periodic user education reinforcement.

The Haitian Association of Voluntary Agencies (HAVA) will serve as an information clearing-house under the Project. More specifically, HAVA will act as a conduit for contacts between SNEP, CARE and other PVOs for collaboration on the health/sanitation Project component, and perhaps also on water systems construction. CARE is a member of HAVA and is represented on the HAVA sectoral committees for 1) Health and 2) Water and Sanitation. As a member of the HAVA network, therefore, CARE is in a position to evaluate, with USAID assistance, the

---

* see Community Participation section

effectiveness of other PVO capabilities in certain sectors and sub-project areas.

5. Training

The training component of this project will accomplish the following:

1) Develop community capability to operate and maintain water systems
2) Prepare CARE construction teams
3) Complement the GTZ Technical Assistance/Support to SNEP

To achieve these objectives, the training component will develop a series of training events to be carried out through and for the communities, CARE, and SNEP. The training effort will involve a variety of approaches including structured orientation programs, short technical workshops, on-the-job training, and organized community-level training programs. Training topics will include operation and maintenance, inventory, and spring capping for SNEP; construction methods and techniques for CARE; and basic maintenance, water user and sanitation education and formation of water associations at the community level.

More specifically, orientation programs, short-courses and on the job training have been or will be designed to ensure the effective participation in project implementation, and follow-up activities, of the 1) construction teams, 2) community organization promoters, 3) user education/ health promoters, 4) water association officers/members, 5) plumbers and fountain attendants.

The various training activities will be coordinated by a part-time training specialist*. Project consultants (short-term and long-term) will play a major role in training and will help to plan and conduct workshops, develop training materials, and organize the training activities at the community level.

The Project Coordinator and the CARE training specialist will develop specific training interventions and curricula with Resource Training Center (RTC) specialists, based on the strategy outlined above and as elucidated in the Training Plan (see Annex 11). The RTC, or the Centre d'Appui aux Formations (CAF), specializes in developing and assisting in implementation of non-formal, vocational training programs. The CAF, an autonomous agency under the GOH Department of Education, and financed in part by AID, has designed on-the-job and other practical job training courses for a variety of public and private agencies in Haiti. Among these agencies was POCHEP (see Other Donors), for which CAF developed a curriculum for training of plumbers. Given this and related experience, therefore, it is foreseen that CAF will have a major training role for training under the Project.

---

* to be designated by CARE

V. PROJECT ANALYSES

A. Technical Analysis

1. General-Water Systems Construction

The project will construct or rehabilitate about forty systems serving approximately 160,000 persons. The number of systems and exact sites will be determined during the first two years of this four year project. The number of sites may vary depending upon the population served. Construction methods developed under the previous CARE projects will be applied, with modifications as required. Eleven prospective sites (see Annex 12) have already been identified and investigated preliminarily. The design of gravity systems, however, requires a precise and accurate survey to calculate distances, elevations and the specific location of the pipeline from the water source to the population served, before the final engineering design can begin. This is the first step in determining the feasibility of a specific system once a source has been located, the amount and quality of water analyzed and the prospects for community participation determined. The eleven systems shown in Annex 12 have been determined to have sufficient flow for the population to be served and preliminary surveys indicate that system construction is otherwise technically feasible. A precise cost estimate for each site cannot be made until a full and complete design has been accomplished. Preliminary surveys of community attitudes are underway.

Despite the lack of precise cost estimates, estimates provided herein appear to be valid in that they are based upon the actual costs of the systems constructed under predecessor projects. These costs ranged from $16 to $26 per beneficiary, with the average ranging between $20 to $21. 1/ The per system cost estimate of $25 per beneficiary under this project is based on prior empirical cost data, with a built-in inflation factor, and an additional increase based on increased difficulty of site access expected (affecting the cost of material transport, for instance) in view of the difficult terrain in much of the region.

2. Rainfall, Topography and Geology of Region

Rainfall data for the Southern region, both in terms of monthly variation and mean annual averages is provided in Annex 13. The high central massifs receive the most rainfall. The Les Cayes plain also receives adequate precipitation, with an average of more than 2000 mm per annum (1mm = 0,039 in.). The coastal areas of both the north and the south of the western end of

1/ These are total costs, including direct costs funded by USAID, the implementing agency's contribution, value of Food for Work and the community's contribution.

the peninsula (the Presqu'ile) are well watered, receiving usually more than 1200 mm. The north and south shores similarly receive more than adequate rainfall, except for a stretch east of Aquin which receives less than 1000 mm. Finally, the southern coast east of Marigot is the driest in the southern peninsula, receiving between 500 - 800 mm per year. Heavy rainfall in the higher altitudes tends to feed spring sources with outlets in the lower coastal areas.

The main feature of the geology of the peninsula is the two central land masses separated by the Jacmel-Grand Goave fault. The land masses consist of folded limestone with synclines and anticlines running parallel along the peninsula. Basaltic foundations appear along some of the central valleys.

In general, formations are conducive to the presence of significant quantities of water. Limestone with crystalline or other agglomerate formations can yield water in the inland areas. Along the coasts alluvial sedimented deposits and limestone coral deposits are areas where water can easily be located.

Four general geological formations have been identified in the region and ranked in order of their water-bearing potential:

I. Limestone and conglomerates
II. Mixed alluvial deposits
III. Crystalline limestones
IV. Coral limestone deposits.

This ranking cannot be absolute, given the interplay of a several variables. However, alluvial deposits will, in general, give a more stable, reliable flow. Limestone, subject to dissolution by water and subsequent fissuring, will tend to produce springs of a variable nature.

On the basis of geology alone, the areas around Camp-Perrin and l'Asile should produce abundant springs. The large alluvial plains of Les Cayes, Cavaillon, Aquin and Léogane should produce stable springs, despite low elevations. The coral limestone areas along the coasts can form springs when the foundation uplifts these deposits. Finally, the fractured crystalline limestone of the central massif can also yield spring sources.

One can divide the peninsula into three zones, by altitudes: above 500 meters, 200 - 500 meters, and below 200 meters. The central high zone is generally less accessible, but represents the wettest area of the peninsula. The coastal area (less than 200 m) is where much of the population resides and where many spring sources have already been developed. It is also more accessible than inland areas. Natural spring sources should be abundant in the hillier areas. These, in general, are less accessible but have high potential for spring-fed gravity systems. A substantial proportion of the Southern Peninsula can be thus classified.

In order to further ascertain the availability of spring sources, various other donor lists of potential spring sources were investigated. Those potential sites are listed in Annex 13.

The possibility for tapping mountain river potential has not been eliminated; however, given the abundance of spring sites, the former has been given second priority. River flows have greater possibility of being polluted, but if tapped above the population level have greater potential as sources for gravity systems. The intake structure is different from spring source systems, but otherwise the technologies are essentially the same. There is more difficulty in matching population centers with elevated mountain streams, but if the match occurs the technology is feasible.

Considering factors of rainfall, geology, elevation, accessibility, population density, and sources previously identified, the following listing of areas with the greatest potential for spring source sites has been prioritized accordingly:

I. Asile and Camp-Perrin areas
II. Cayes Plain and Environs
III. St. Jean Peninsula
IV. Alluvial plains (Jacmel, Aquin)
V. North shore, coral limestone plains
VI. South shore, coral limestone plains

Of the first two (I, II), Cayes plain and environs--densely populated, easily accessible, close to GOH regional offices in Cayes, little affected by rural out-migration, and benefitting from other development efforts (e.g., USAID-funded irrigation project)-- appears ideal for water systems development.

3. Systems Configuration - Detailed Description

Springs vary greatly in type and configuration, so flexibility in design is crucial to their proper operation. A well designed protected spring source (captage) must include:

-- An infiltration system with adequate piping, if necessary, leading into the main storage box (Care will be taken not to create a high head of water in the storage box. This could reduce source output). An overflow pipe with proper drainage is also required.

-- A manhole, drainage pipe and valve will be provided for cleaning and repairing the source.

-- Pipe sizes from the captage will be based upon the following criteria, assuming only public fountains.

-- Scarce water supply 20 liters/person/day
-- Abundant water supply 100 liters/person/day

(The larger figure allows for future increased per capita use and/or increased population)

Slightly higher estimates may be considered in light of possible future private connections. If a system has not been designed with a large enough capacity for private connections, and if those connections are made -- legally or illegally -- overall water availability for public fountains may decrease significantly. If sufficiently large systems are built to accommodate limited numbers of private connections in the future (after the end of the Project); and if communities are organized in such a way that a rational and fair system of allocations of private connections is assured, then a reasonable mix of public-private connections can be envisaged.

Reservoirs are required to: (1) store water during times of low usage (night), to be used during high usage periods (daytime); (2) to serve as a break pressure tank and (3) to store water at an elevation to allow easy distribution under pressure. There may be situations where, due to simplicity of systems design and an abundant source flow, that a reservoir will not be required.

All concealed or buried piping will be constructed of PVC; however where pipe cannot be buried, the lines will be of galvanized steel. PVC pipe is preferable to steel pipe as PVC is cheaper and easier to install and because of its smooth surface which greatly reduces the possibility of encrustation. Valves will be located such that every essential component of the system can be isolated for repairs (captage, reservoir, fountain, major pipe branches, etc.).

Public fountains will be constructed as a rule. Each fountain will, typically, have two self-closing outlets and will serve 500 persons. Drainage canals or cisterns will prevent standing water (and health problems often resulting therefrom). A typical gravity-fed water system design is shown in Annex 15.

A fountain attendant, assigned by the water committee, will be trained in basic maintenance and will be provided a small stock of basic tools and spare parts. He will also be responsible for maintaining the area around the fountain. A stipend can be provided to the attendant from funds collected by the committee.

4. Feasibility of Community-based Maintenance

The feasibility of a community-based maintenance scheme has been borne out thus far by experiences under the earlier CARE projects. For example, under the recently completed "phase III" project, CARE constructed six water systems, three gravity flow and three combination, solar pump-gravity flow. To date, only one system i.e., that at St. Louis du Nord, has

required repairs. Installation of this system, completed in July 1982, consisted of capping a spring, construction of a reservoir, laying of 8 1/2 kilometers of main pipe line and distribution lines and construction of 13 public fountains. The main 6" PVC pipeline traversed rugged terrain and crossed the St. Louis du Nord river at 9 locations. At one of these river crossings, forty feet of the 6" PVC pipeline was washed out on three different occasions during high water flows. The last wash out occurred in November 1983. In five days, the two CARE-trained community plumbers, with labor support from the community, reinstalled the 6" PVC line. To prevent future wash out of the line, it was buried at a greater depth in the river bed and covered with concrete. This task was accomplished entirely by the community without any outside technical or financial help. Therefore, if a viable community organization is established, proper training provided and, most important, sufficient motivation is extant, systems maintenance by the community is feasible over the long-term.

5. Alternative Technologies

If adequate spring-fed gravity sources are not available in a given area, the development of related technologies may prove more economical. Because of the extremely high population densities in Haiti and the lack of long-term success of hand pump projects which have not provided for constant maintenance, hand pumps will only be installed on a selective basis under this project. Given the high cost of fuel and lack of maintenance capability in the rural areas, diesel or gasoline engine-driven, pump-based systems are not contemplated. In rare cases where electricity is available, electric motor-driven pumps will be a viable option.

Where conditions otherwise greatly argue for site selection, and where pump technology is most appropriate, the India Mark II or Moyno Pump will be installed; the Mark II for depths up to 150 ft. and the Moyno for deeper wells. CARE will provide a subgrant, in such an instance, to a PVO with experience in hand pump installation in Haiti, such as Convention Baptiste or Compassion International, to supervise this task. (see typical pump designs in Annexes 16 and 17).

In light of the recent successes achieved with the three solar pumping systems constructed under predecessor projects, such systems will be replicated in this project. Solar systems offer long-term economies of scale as they have no controls, batteries or switches to malfunction. There are no operating (fuel) costs, and maintenance requirements are similar (i.e. minimal) to those for electrical motor-powered pumps. Solar powered pumps have proven to be competitive and, in most cases, cheaper than other alternatives, when pumping heads are low (see typical design in Annex 18). In the Les Cayes plain, a high population density area, there are a number of low-level springs suitable for combination photovoltaic-gravity systems.

6. Overview of Latrine Technology

The pilot latrine program will be established by the user education/sanitation adviser in six communities subsequent to development of the user education program "module" or model. Technologies to be considered for experimentation run the gamut of intermediate latrine technologies, between the simple pit latrine and the water flush toilet. Two of the less complex technologies perhaps most appropriate for experimentation with in rural Haiti are:

a) Ventilated, Improved Pit latrine

This type of pit latrine can be constructed either with a slab for squatting or a seat. To control odor and flies, a PVC pipe is placed on that side of the structure receiving most sunlight. The advantage of this system is its simplicity. The disadvantage is that a cleaning operation is required periodically, depending on use frequency, or the latrine must be moved to another location.

b) Pit Latrine with Water Seal Privy

This design attempts to solve the odor - fly problem by introducing a pour flush bowl which creates a water seal between the pit and the privy. Flushing is done independently and little water, on the order of 1-3 liters per usage, is required if the procedure is done properly. This latrine is only an option where a water source is relatively accessible--water carried a measurable distance will not be used for that purpose. The water seal can be broken by negligent use and the water contained therein will evaporate if not regularly replenished.

There are of course more sophisticated options available. The aqua privy uses more water and requires a drainage pit. The compost toilet is dry, but requires careful operation to compost the feces, as well a market for the composted material. Finally, the septic tank and drainage pit represents a relatively costly advanced method that requires an extensive area to drain away the effluent.

The latrine program will not necessarily require a static or single design. Many areas in rural Haiti could benefit by mass production of a good improved pit latrine. Improvements can eventually be built upon the basic system. Experimentation, however, will be concentrated on water seal privies in the six pilot communities, which will have an adequate, easily accessible water supply.

Pilot site selection and other factors will be influenced by variables to be tested. It has been recommended by the WASH sanitation adviser (during PP development) that, based on his area surveys, pilot areas should be in villages near major towns, i.e. at least 2 pilot villages in the area of Les Cayes, 2 near Jacmel where strong PVO community development

programs are underway, and perhaps two in the Jérémie and/or Miragoâne areas. All pilot villages must be potentially suitable sites for spring water development.

Pilot sub-project support will come from certain resources set aside for water systems development, and additional resources for:

1) Water-seal latrine molds for local casting;
2) Imported latrine bowls for testing;
3) Cement, shovels, trowels, hand saws, hammers, nails and other low-technology items (many of which will already be available as part of water system development activities);
4) Support for community education, including leaflets and posters;
5) Transportation, fuel and per diem, when required;
6) Partial subsidization of experimental latrine costs;
7) Partial subsidization of water containers;
8) Carrying out knowledge, attitude and environmental sanitation practices studies in pilot communities, as described below;
9) Specialized training and short-term consultancy services;
10) Pilot subproject review, evaluation and reporting.

Material requirements for pilot sanitation technology will not be great and may not depend entirely upon Project funds. A preliminary offer of materials support has already been extended by UNICEF, including importation of sample latrines.

An illustrative budget for the latrine program is as follows: partial subsidization for household latrines at $3/household in 6 communities containing populations of 4,000 people with an average of 6 people per household amounts to $12,100. An additional partial subsidization of $2 per household for water storage containers has been suggested by the WASH adviser. Social science studies are estimated at $10,000, and their accomplishment may involve cooperation with PAHO which is currently considering a similar research proposal. Funds for media and miscellaneous costs amounting to $6,000 would bring total pilot costs to $40,000 or 13% of total environmental sanitation dollar costs, calculated at $300,000. Remaining funds will be used for sanitation education and to apply successful sanitation technology and processes to other Project sites.

A scheme for ownership and contribution ($100,000 equivalent) toward installation, e.g. by from one to five families, will be designed early in the Project by the Project Coordinator and CARE specialists (including short-term advisers). Important factors to also consider in the design are acceptability of basic concept, costs involved in maintenance, and possibilities for local manufacture.

B. Economic Analysis

1. Introduction

The economic analysis that follows will first assess the cost effectiveness of gravity-fed water systems in Haiti. In order to be cost effective, it must be shown that no other alternative system or means of delivery can achieve the project's objectives at lower cost. A comparison of the per capita costs in rural Haiti reveals that gravity-fed systems are generally the least expensive. However, in some situations, alternative technologies may be more cost effective. The analysis of the project's benefits reveals that while it is extremely difficult to monetarize the benefits, they can be quantified. A scheme for comparing the numerical estimates of water system benefits with cost is then developed. It is suggested that this scheme or a modification thereof be used to rank alternative potential community water system investments.

2. Cost Effectiveness Analysis

Comparative cost estimates for potable water systems in other developing countries suggest that gravity-fed systems and wells with hand pumps are the least costly. For example, the USAID/DR Health Sector II Project Paper (specifically developed based on conditions in the Dominican Republic) finds that the three least cost means of delivering potable water to rural communities are shallow wells with hand pumps, deep wells with hand pumps, and protected springs piped to public fountains (see Table I). Hence, the analysis that follows will compare the cost of wells (hand pumps, photovoltaic pumps) to gravity-fed piped systems in Haiti. However, experience with various types of hand pumps over the years in Haiti suggests that the large number of users per pump, and harsh treatment often resulting therefrom are serious drawbacks to hand pump technology. Recent experience with the Mark II handpump, up to 100 of which have been installed in the Northwest by Convention Baptiste, UNICEF and SNEP, has reportedly resulted in virtually no serious failure in four months of operation, however. A third alternative, wells with photovoltaic pumps, have proven thus far to be a very reliable means of pumping large volumes of water.

Table I: COMPARATIVE COST ESTIMATES FOR SYSTEMS DESIGNED TO PROVIDE POTABLE WATER 1/ 2/

System	Estimated System Cost Range/Unit		Average Number of Users/Unit	Average Direct Cost Range/User	
1. Shallow Well Hand Pump	$ 4.8.45	617.25	60	$ 7.30	$10.28
			30	14.60	20.56
2. Deep Well Hand Pump	733.95	1,428.32	60	12.23	23.80
			30	24.46	47.60
3. Gravity-fed/ Public fountains	3,230.00	8,640.00	150 - 300	21.53	28.80
			75 - 160	43.06	57.60
4. Windmill Pump and Distribution System (2 standposts)	7,254.50		150	48.36	
			75	96.72	
5. Submersible Pump and Distribution System (3 standposts)	14,697.50 3/	19,197.50 3/	200	73.49	95.99
			100	146.98	191.98
6. Submersible Pump and Distribution System (7 standposts)	24,456.50 3/	26,474.00 3/	400	61.14	66.19
			200	122.28	132.38
7. Deep Well Diesel Pump and Distribution System (3 standposts)	18,765.00 3/		200	93.83	
			100	187.66	
8. Deep Well Diesel Pump and Distribution System (7 standposts)	26,328.50 3/	28,346.00 3/	400	65.82	70.87
			200	131.64	141.74

Source: Proposal and Recommendations for the Review of the Bilateral Assistance Subcommittee, Dominican Republic - Health Sector II.

1/ Estimates do not include administrative overhead cost with the exception of direct maintenance costs.

2/ Details of cost of compared systems are available in USAID/DR Capital Development Office.

3/ Figures include maintenance operation and depreciation expenses for 5 years.

The recent USAID/Haiti - CARE experience with water systems was used to obtain cost estimates for gravity fed systems. The Community Water Systems Phase III (521-0147) Project built six gravity-fed water systems in Haiti between 1981 and 1983 (see Table II). Per capita costs in 1984 dollars range from $16.36 to $26.62 and tend to fall as population increases. The average per capita cost of $20.55 appears to be reasonably representative of what future per capita cost (in 1984 dollars) in southern Haiti would be. In addition to this capital cost, maintenance and depreciation costs of 3 percent and 1.5 percent respectively are estimated to cost 93 cents per capita per year.[1] The present value (at 10 percent) of this annual cost, when added to the capital costs of the gravity systems, provides a full cost estimate of $29.80 per capita.

1/ E. Wagner and J. Lanoix, Water Supply for Rural Areas and Small Communities, World Health Organization, Geneva, 1959.

Table II

COST OF GRAVITY AND PHOTOVOLTAIC - GRAVITY COMMUNITY WATER SYSTEMS

Community	Population	Total Cost* (1984 US$)	Per Capita Cost (1984 US$)
Terre Neuve	4,500	111,515	24.78
St. Louis du Nord	8,700	155,312	17.85
Anse-à-Foleur	5,600	117,754	21.03
Baie de Henne**	2,000	53,232	26.62
Maugé**	4,000	76,432	19.11
Bois Maugé**	5,000	81,794	16.36
Total	29,000	596,039	20.55

* Direct Costs funded by USAID, Community contributions, and value of Food-for Work.

** Combination Photovoltaic - Gravity Systems.

Shallow hand dug wells while, at face value, the least expensive alternative are not generally considered technically feasible because of water contamination problems that result from high population densities and human waste disposal practices in rural Haitian communities. Shallow wells are also more susceptible to going dry in droughts. While they are therefore generally not feasible for rural communities, in low population density rural areas they will not be rejected out of hand.

The deep well alternative, which draws water from depths up to 150-200 feet, generally provides a safe and reliable alternative for rural communities. The per capita cost of a producing deep well is highly variable and dependent upon a number of technical parameters, including depth, probability of hitting water, and the number of users. For the purposes of this analysis, it is assumed that the average well would be 200 feet deep, 70 percent of the drilled wells would produce sufficient potable water (2.5 gallons per minute), and each producing well would serve 250 persons. While these appear to be reasonable assumptions, it is clear that given the high variability of Haiti's terrain and hydrology, actual field parameters could differ significantly. For example, while the average depth of Compassion International wells on La Gonave was 223 feet, the Convention Baptist wells in central and northern Haiti have averaged around 100 feet. And while only 50 percent of Compassion's 47 drilled wells are producing water, Compassion is currently projecting a 75 percent success rate on future wells on La Gonave because of the knowledge gained from their previous experience. It is estimated that the Compassion wells on La Gonave serve on average 667 users. While no firm statistics exist, it is also estimated that where wells are the source of water in rural Haiti the average per capita usage is much closer to 10 liters per day. Given the health and other advantages of an increased quantity of potable water, the 20 liter standard is preferred. For the purposes of the per capita cost comparisons, the 250 persons per wells standard will be utilized.

The average well is estimated to cost $4,500 to drill. Six wells would have to be drilled to obtain the required 4 producing wells per 1000 population and would cost $27,000. Equipping the 4 producing wells with AID hand pumps ($300) would bring the total cost to $28,200. The per capita cost would be $28.20. Maintenance and depreciation of the pumps are estimated to be $100 per pump per year (40 cents per capita). Depreciation of the wells is estimated to be 4 percent per year ($ 1.08 per capita). The present value (at 10 percent) of these annual maintenance and depreciation costs may be added to the capital costs of the wells to obtain their full cost of $43 per capita when each well serves 250 persons. Installation of the more durable Mark II or Moyno pumps lowers the above maintenance costs and slows depreciation, however the higher fixed costs for these pumps ($600 for the Mark II and $1,300 for the Moyno) more than offset the long-term savings.

Gravity-fed systems are clearly less expensive ($29.80) than wells when the standard of 250 persons per well is used. Where population density is low and/or the total influence area is smaller (e.g. 200-500

persons), wells could be more cost-effective. As a rule, however, the project will concentrate its activities in areas where, currently, higher densities of population are underserved.

The benefits of potable water are analyzed in the following section and a method for comparing costs and benefits proposed in the subsequent section.

3. Benefits of Potable Water

By increasing access to adequate amounts of safe water, this project seeks to obtain the following specific benefits for the rural communities served: (1) Improved health resulting from increased availability of safe water for home and personal hygiene; (2) Improved economic status, in that increased water accessibility allows more time to be devoted to education and economically productive activities; (3) The strengthening and development of community water organizations are expected to add to the institutional capabilities of rural communities to find solutions to other community development problems. The measurement of these benefits is discussed in turn.

a. Health Benefits

One of the most difficult effects to identify empirically is the very probable positive impact of improved water supplies on the health status of the population. Numerous studies have however demonstrated a significant reduction in water-borne and water-associated diseases, as well as nutritional deficiencies, due to improved water supply*. The presence of confounding factors, e.g., diet, income, education, and other environmental causalities mitigate against quantification of health and nutritional benefits outside of a particular local context. However, there is general agreement on the factors that tend to enhance the health benefits of potable water, including the quality, quantity, and accessibility of water, water use education, improved sanitation, and other public health measures. While the exact health impacts of these various factors are, therefore, difficult to predict, quantitative indicators may serve as proxies for the presumed health benefits. The project team will attempt to measure indicators for water quality, quantity and accessibility, by assigning values as follows:

1) Water Quality

-- Number of coliforms per liter of water in proposed potable water system source: Safe water = 1, unsafe water = 0.

---

*/(Zaheer et.al., India, 1962; WHO, 1974)

2) Water Quantity

-- Liters per day per capita available from proposed potable water system. Assuming the marginal benefits of potable water decline with unit elasticity, the following values may be utilized:

Liters	Value
20	1.00
30	1.46
40	1.67
50	1.83
60 or more	1.96

3) Water Accessibility

-- Reduction in time needed to obtain water as a result of proposed water system, e.g.

Travel Time Saved		Value
0	5 min.	1.0
1	15 min.	1.2
2	30 min.	1.4
3	45 min.	1.6
4	60 min.	1.8
5	60 min. or more	2.0

This should be the average over the year if there are significant seasonal variations in the current source of water.

The criteria for selection process is discussed more at length in section 4. below.

b. Improved Economic Status

While health benefits are frequently the main rationale for potable water projects, improved water accessibility also provides benefits relating to savings in time and reduced opportunity costs. In rural Haiti household transportation of water is usually assigned to children or women. Estimating the monetary value of these benefits without being able to do likewise for the major health benefits is of limited use. However, the economic value of improved water accessibility may be proxied by the reduction in distance required and the presence of a community school. These have already been captured in the health benefit indicators above.

c. Community Water Organization Development

Community water associations will be established during project implementation. These organizations will be essential for the mobilization of community resources and commitment to a sound and viable water

system. Community responsibility for maintenance and depreciation costs through these community organizations is critical. The community water associations may also be of value in the overall institutional and social development of rural communities. As in the case of health and economic benefits, these benefits may be proxied by several indices, eg.

1) -- Community Demand for Water
Existence of genuine sense of need for a potable water system by villagers as evidenced by a written petition from a community council or like organization indicating need and community resource commitments, including local materials, land, and labor (eg. 10 percent of construction costs). (Acceptable Petition on file = 1, not available = 0)

2) -- Commitment to establish Water Association and maintain system as evidenced by a plan and subsequent actions to organize association and raise community resources over first year of project, to cover a set percentage of construction costs and estimated annual maintenance and depreciation costs. The plan will provide for the subsequent periodical collection of revenues equal to the estimated maintenance and depreciation costs (eg. 4.5 percent of capital costs, or 93 cents per person per year). (Required community resources available in kind and bank account according to agreed upon plan = 1, otherwise = 0).

4. Sub-Project Selection Criteria

The process of selecting communities will include an assessment of the benefits relative to costs of the sub-project. Community requests for assistance should contain enough basic information for commencement of an initial screening process. Project team members will visit the proposed site to study the physical situation and hold discussions with the community organizations and local citizens. Based on this visit and the sub-project ranking scheme discussed below, a joint decision concerning sub-projects will be taken, with the concurrence of USAID/Haiti and SNEP required for the final selection of each site.

Basic data required to compare sub-project benefits with costs will be gathered for a number of communities*. The communities will then be rank ordered in terms of relative measure of benefits to rough costs. The ranking formula will be as follows:

Index of Benefits to Costs =
(Pop density x Demand x Commitment x Quality x Quantity x Access) divided by Cost.

---

* This process and the ranking scheme will be carried out on a phased basis, e.g. ten communities selected during each phase, to preclude significant construction delays.

Where

Pop density	= Population in system influence area
Demand	= Community Demand = 1 or 0
Commitment	= Community Commitment = 1 or 0
Quality	= Water Source Quality = 1 or 0
Quantity	= Per capita water quantity = 1.0 to 2.06
Access	= Time Saved by System = 1.0 to 2.0
Cost	= Total system cost.

Without the requisite community demand and commitment and a source of safe quality water, the benefits of the project would be marginal at best. Hence a zero value for any of these criteria basically excludes a community from further consideration. If these factors are available, then they each equal 1 and the second "phase" of the selection process involves a formula for Index of Benefits to Costs equaling:

(Pop Density x Quantity x Access) divided by Cost.

Most of the benefits are accounted for by per capita water quantity and access improvement, both of which are highly related to health and economic benefits. Given the presumed benefit relationship associated with water quantity, the issue of water quantity verus cost may now be more soundly addressed. While each increment of water adds to total benefits, each increment of water ostensibly generates fewer benefits than the previous increment. For example, the index of benefits increases 46 percent, from 1 to 1.46, as per capita potable water availability increases from 20 liters per day to 30 liters. Hence, only if the proposed water system could deliver 30 liters for less than 46 percent increase in cost it should be preferred to a system delivering 20 liters per capita per day, and so forth as per the scale listed under 2) Water Quantity above.

The access value ranges from 1.0 to 2.0 depending upon whether access for, at least, a majority of potential beneficiaries in that influence area has been improved by less than 5 minutes to more than an hour. This implies that the overall benefits of a water system are 100 percent greater in a situation where access has been improved by more than an hour compared to one where access has not been significantly improved. This may be adjusted if thought to be under or over valued by changing the range of the access values. Likewise, the range on the other components of the index may be readily adjusted to reflect their relative impacts on the benefits. The costs of the sub-projects should include all costs, including community contributions and variable costs associated with organizing community organizations.

The project will attempt to maximize potable water benefits per dollar invested. In seeking sub-projects, the project will seek communities which evidence a strong demand for water. While the potential source of water is important, community benefits relative to costs will most probably be maximized where a commitment to maintain the system exists. This implies the willingness and ability to generate water association revenues that will cover annual maintenance and depreciation.

If due attention is given by the Project team to the above factors and the criteria for selection process adhered to, the socio-economic feasibility of the project seems assured.

C. Social Soundness Analysis

1. Summary of sociological characteristics to be examined

The objective of this analysis is to highlight the main demographic and sociological characteristics which are likely to impact on the project, i.e. those which affect selection of sites, organization of community participation, and user education/sanitation activities. Analysis of these characteristics will make it possible to better evaluate needs.

Further, it is essential that the Project team have information at its disposal, in advance, to assist in determining where higher probabilities exist for maximizing the positive social effects of the Project on beneficiaries.

The analysis concentrates on the following characteristics of the south and southern peninsula:

1) demographic characteristics
2) socio-economic characteristics
3) community organization
4) attitudes and practices concerning water and sanitation.

2. Demographic Characteristics

In 1982, the Southern Peninsula contained approximately 1,621,000 inhabitants, 90.5% of whom are in rural areas. Except for the northwest it is the least "urbanized area" of the country.

Departments	Total Population		Urban population		Rural Population	
	(1000)	growth rate	(1000)	growth rate	(1000)	growth rate
Grande Anse	490	1.6	52	1.9	438	0.9
South	503	0.9	59	2.0	444	0.7
Southeast	368	0.6	26	1.6	342	0.7
West (Léogane)	260	0.7	16	1.2	244	0.6
Total	1,621		153		1,468	

Of the 48 "urban" settlements of the Southern Peninsula, only 6 have more than 5,000 people and 31 have less than 2,000 people. Five percent of the inhabitants live in the 3 towns of more than 10,000 people.

Distribution of urban settlements by size and by departments:

	South	Southeast	Grande Anse	Léogane
+ 30,000	1	-	-	-
15 - 30,000	-	-	1	-
10 - 15,000	-	1	-	-
6 - 10,000	-	-	-	1
5 - 6,000	-	-	1	1
4 - 5,000	-	-	2	-
3 - 4,000	1	-	1	-
2 - 3,000	4	2	-	-
1 - 2,000	5	5	10	-
- 1,000	6	2	3	-
Total	17	10	18	2

Communes showing the highest rates of emigration (period from (1950-1982) ar as follows, with the measure of strong emigration = rate of annual demographic growth equal to or below 1%.

Commune	Urban population: rate of annual growth 1950-1982
Bonbon	0.6
Baraderes	0.9
Camp Perrin	-2.2
Port-Salut	-0.5
St. Louis du Sud	-0.7
Cavaillon	-0.3
Coteaux	-2.0
Port-a-Piment	0.6
Marigot	0.4
Cayes Jacmel	0.9
Grand Gosier	-1.2
Grand Goave	0.7

According to the most recent regional demarcation, this zone corresponds to regions 4 (the South) and 3 (the West). The results of the 1982 Census make it possible to provide the demographic characteristics of different communes of this zone.

The Southern Peninsula

The project zone includes all the Southern Peninsula. It covers 4 departments:

the Grande-Anse
the South
the Southeast
the West (District of Léogane only)

Before 1971, the Grande Anse and the South were one department. The Southwest department had been created in 1971 from the traditional Western Department.

Distribution of the population by densities

Inhabitants per Km^2	Commune (Urban & Rural Population)
+300	Grand Goave - Port-Salut/Arniquet
250 - 300	Cayes-Maniche, Coteaux/Roche Bateaux - l'Asile
200 - 250	Léogane - Petit Goave, Jacmel, La Vallée, Cayes - Jacmel - Bainet, Camp Perrin, Cavaillon, Port à Piment, Jérmie - Moron, Miragoane
150 - 200	Torbeck - St. Louis du Sud, Anglais, Abricots, Dame Marie/Chambellan, Petite Rivière de Nippes - Petit Trou de Nippes
100 - 150	Cotes de Fer, Grand Gosier - Thiotte, Chardonnières - Bonbon, Anse à Veau - Barradères
50 - 100	Belle Anse - Anse à Pitre - Chantal - Aquin, Anse d'Hainault, Corail - Baumont, Roseaux - Pestel

The effects of emigration on the regions of departure reveal at least two different impacts:

1. Emigration deprives the departure zones of active residents,

2. It provides external revenues and, sometimes, investments intended for social action (example: La Vallée de Jacmel, in the Southeast department where a hospital was built with funds from Haitian expatriates residing in the U.S.A.).

Distribution of the Population in Haiti

The distribution of the population is characterized:

-- by the strong predominance of Port-au-Prince which contains at least 14% of the total population, 50% of the urban population, and which grows at a rate of over 5.0% per year.

-- by a low rate of urbanization, except for the metropolitan areas. The provincial localities are only rarely poles of attraction. No urban growth rate surpasses 3% in the departments. In 1982, 3 towns had more than 10,000 inhabitants in the Southern Peninsula:

Les Cayes	34,100 people
Jérémie	18,500 people
Jacmel	13,700 people

-- by a significant rural population (74% of the total population) marked by an increasing exodus (annual average growth = 1.0% per year) and by very high population density (464 rural inhabitants per cultivated km^2) scattered in small settlements.

The table below shows gross densities. Compared to the cultivated areas, the densities are much higher: 437 per square Km. in the South, 611 per sq. Km. in the Southeast, 578 per sq. Km. in the Grande Anse.

Densities by cultivated areas

Léogane	600
Jacmel	853
Jérémie	650
Miragoane	499

Rural population

Communes having received a migratory increase = average annual growth equal to or above 1.9%.

Chardonnieres	2.1
Les Anglais	2.0
Tiburon	3.1
Chambellan	3.0
Irois	2.9
L'Asile	2.5

3. Socio-economic characteristics of the Southern Peninsula

The Southern Peninsula is part of one of the most mountainous regions of Haiti (of those areas above 800 m of altitude, covering 4,000 to 5,000 km^2, half are situated in the Peninsula). The contrast between plain and mountains is also evident in social structures, differing widely from mountains to hills to plains.

A study made by Paul Moral in the 1950s is still an excellent introduction to the rural society. "The political life of the countryside is invariably dominated by a small aristocracy of weathy farmers, having control of the local trade interests, the support of the established authorities or the patronage of the "hougan" (voodoo priest)... The bulk of the farmers participate only slightly in public affairs... The working of the meetings, informative gatherings, electoral campaigns are taking place without the knowledge of the majority of the inhabitants and involve only prominent people (the notables) and their clientele of pennyless farmers (i.e. those over whom they have control)."[1]

1. Paul Moral, Le Payson Haitien, Etude sur la vie rurale en Haiti, 1961, Reedition Fardin, 1978.

The rural societies of the Southern Peninsula still make up a "large peasantry of small landowners, scattered over the food-producing and coffee areas."[2] The parcelling out of property, resulting from successorial distribution, except for plains like those of Les Cayes, remains the characteristic of the rural countryside. The larger majority of farmers cultivate small scattered parcels under 1/2 hectare. Of 3926 farms in Northeast Jacmel, counted by Moral, 70% had less than one "carreau" of land, and half of them had only household gardens.

The prosperous period at the beginning of the century gave rise to the young "business bourgeoisie" (the major coffee markets of the country were found in the southern region). This "business bourgeoisie" still exists, represented by food speculators. Presently, regional government civil servants form another social sub-class, represented on the local level to one extent or another by teachers, extension agents, health agents, all of whom have been integrated into a social structure upon which they depend economically and by which they hope to progress.

Therefore, small localities are characterized by a group which sets itself apart from the peasant masses: the representatives of administrative and political structures, Haitian and foreign priests and speculators.

3. Community Organization

There are, however, community-based indigenous organizations which very often do represent the interests of the community at large. There has been for some time, for example, an active community council movement in rural Haiti. Community Councils are not indigenous organizations in the strict sense of the word, but have been formed largely through the sponsorship of GOH or quasi-public agencies. In many instances, they constitute an organized local response to the requests of development agencies that communities form "councils" in order to implement projects. Recent years have also seen the formation of smaller groupements which have in some instances been formed as a countermovement against the community councils in regions where the latter have come to be dominated by powerful local interests at odds with those of the community at large.

Oftentimes, groupements are formed by groups of peasants who join together to carry out income-generating activities on a collective basis. These are known as peasant groupements and, unlike the community councils, are based on an indigenous pattern of collective behavior in Haiti, the "koumbite". Small groups of peasants are organized by a PVO or community leader (e.g. priest) to pursue a common objective often requiring some investment but which will result in income to its members. The type of activity undertaken is determined by the membership of the groupement, and the

2. Ibid.

activity is managed by the group itself. USAID/Haiti has supported groupement movements in rural Haiti, through, for example, OPGs to CRS and Save the Children. As mentioned earlier, the recent CARE experience, under the Phase III and CBI projects, in formation of active, capable water committees has been quite good. The proposed project will build on the CARE experience and on indigenous traditions in community development in the attempt to organize viable, long-term water associations.

4. Attitudes and practices concerning water and sanitation

a. Factors pertaining to water collection

Water is a precious commodity in Haiti in that "good" or potable water is often inaccessible and costly (especially in urban areas). In rural areas "good" or "clean" water is frequently found only in springs often 3 kms or more from residential areas. Sources of spring water are often considered sacred under the voodoo religion. The "inhabitation" of springs by voodoo spirits is, therefore, another indication of the importance of spring water. Occasionally, communities are reluctant to specify where spring sour are located for fear that spirits may be "disturbed" by strangers.

Water collection in rural areas is most often accomplished by family members or children who transport water in 5 gallon plastic buckets, plastic wash basins, 1 gallon plastic milk or oil containers or in hollowed out gourds, the size of the receptacle often depending on the age of the person and how much weight he/she can carry. It is a major activity in family life for women, young children (it is not unsual to see boys and girls as young as 5 or 6 carrying a "bidon" of water) and adolescent girls who are not in school. Children, who attend school, frequently have water carrying responsibilities before and after school hours. Because the distance that one must walk in carrying water is often far, and because the quantity of water that one is able to carry is limited, several trips must often be made each day to the water source (either spring, river, or well). Water collection is by and large accomplished during the early morning or late afternoon hours to avoid the heat of the day. For various reasons, animals are rarely used in the transport of water.

Transported water is used typically for drinking, cooking and washing of kitchen utensils. Bathing, washing clothes and the watering of animals takes place at the river or spring because of the larger quantities of water necessary for these activities.

There is widespread general belief that clear water is clean water. Thus most people prefer to drink spring water and may walk farther than for other sources to draw it. Running water is, in general, also favorably viewed. Stagnant water is viewed as having more of a chance of contamination. However, the bottom line usually is convenience and if another water source is more easily accessible, water will be drawn from it even if considered "dirty". If excessively dirty, a piece of "raquette", a type of cactus leaf, is added to the water to cause sedimentation and thus it is rendered "clean".

Likewise, the possibility for contamination of water in transport and storage is not widely recognized. Water is often carried in open receptacles and leaves are deposited to lessen chances of spillover. Hygiene practices pertaining to the transport of water differ, with practices varying from cleaning the receptacles with soap before filling to simple rinsing of the container with water, the most common practice. Buckets are sometimes scrubbed with a muddy sand mixture, often present next to the stand pipe, rinsed and then filled with water. Frequently, users will rinse their containers and wash with or drink the drain off--considering this water, particularly if from a spring, "clean".

Rural dwellers tend to bathe and wash clothing relatively often, even if water utilized is considered unclean. Clothes are frequently dried on the ground or on rocks, despite chances for contamination.

b. Excreta Disposal

Latrines, while considered to enhance the quality of life, are not perceived by the average villager to be a necessity, financial constraints being a primary consideration. Latrines, and particularly pit latrines, are quite common in some rural communities, non-existent in others. There have been intensive latrine construcion programs in some areas, usually carried out by missionary groups or other NGOs. Typically, such organizations will contribute the material for the slab and seat, with the beneficiary being responsible for construction. The dry pit latrine has become standard in many areas of the country. Backyard family pit latrines are the most commonly encountered latrine system, and frequently utilized by more than one family, as are "single" family latrines. Communal latrines are the rule in market and other areas where people tend to congregate. A frequent problem with multi-family or communal latrines is lack of responsibility for cleaning, a somewhat onerous task. In the case of communal latrines, a worker is often hired by the mayor to provide cleaning services; in the case of multifamily latrines the responsibility most frequently rotates between families.

Where no type of latrine system is a available, an area is often designated for defecation, e.g. in a field or river. Cleaning anal orifices is frequently accomplished with leaves or stones. Precautions are rarely taken to cover the feces and hand-washing afterwards is by-and-large not practiced.

5. Effect of Project on Target Group

The above is intended to illustrate the rather primitive conditions which exist in rural Haiti, as regards potable water and sanitation services. While providing immediate short-term benefits, a purely "infrastructure" approach to addressing these problems may not ensure long-term viability of the water systems participating communities, particularly as concerns the expected health/sanitation benefits. Therefore, it is imperative that effective user education modules be established early

in the project life. The initial education program will eventually be reinforced by on-going health education to be developed by the project user education team and implemented with the assistance of the water associations and members of the AOPS network, where feasible. If due attention is given therefore to the development and implementation of the "social service" components of this project, which must include significant local input, along with the construction and systems operations and maintenance aspects, the positive long-term social (e.g. health and education) impact on participating communities seems assured.

D. Institutional Analysis

1. The Water Sector in Haiti

Water supply in Haiti is governed by two government institutions: CAMEP, created in 1964 and responsible for the Port-au-Prince metropolitan area and SNEP, created in 1977 and responsible for the rest of the country. These two institutions are charged, by law, with the planning, design, execution and maintenance of all water supply systems in the country.

They are assisted by various technical institutions within the GOH, most notably the Bureau of Water Resources, created in 1979 within the Ministry of Agriculture, Natural Resources, and Rural Development (MARDNR), and established to conduct research and provide information concerning the availability and location of water resources in the country. Other institutions, such as the Geodetic Service and Haitian Institute of Statistics provide specific information concerning topography, demography, and other factors relating to the planning of water systems.

Both agencies--CAMEP and SNEP--have been assisted in the process of water supply by a number of international and bi-lateral aid agencies which have provided both financing and technical assistance. Such agencies have included, among others, USAID, the World Bank, IDB, FAC, GTZ, UNICEF, and WHO.

In addition, many PVOs--including larger ones such as CARE and Convention Baptiste, and perhaps as many as 100 smaller ones--are in the field providing water to rural communities, and indeed provide much of the effective services in rural Haiti.

The Ministry of Plan, through an interministerial committee--CONADE-- made up of various GOH agency representatives-- is responsible* for both the establishment of national priorities concerning water supply and the incorporation of information generated by CAMEP and SNEP into the National Development Plan. In principle, it is responsible for coordination of the many activities carried out in the water sector, although it does this from a planning rather than administrative perspective. By law,

---

* Proposal not yet voted on by the legislature

SNEP is responsible for administrative coordination of activities for rural potable water systems development and monitoring.

A discussion follows of the institutional capabilities and shortcomings of the major GOH cooperating institution, SNEP, and thereafter those of the major implementing agency for the project, CARE.

2. SNEP

By law, SNEP has the authority to plan, design, implement, and maintain all water systems in Haiti outside the greater Port-au-Prince (PAP) metropolitan area. In fact, it does so only partially. In a recent project to develop water systems for 10 major towns (see Other Donors), the World Bank provided funding, and private Haitian firms were contracted for all study, design, and construction activities. Furthermore, the German Government (KFW) has recently entered into contractual agreements with SNEP to provide maintenance services to two of these 10 towns with probable extension to the rest at a later date. The (KFW), under the terms of the same agreement, will plan and design systems for 7 more smaller towns in the country.

However, it must be noted that SNEP has had primary responsibility for both planning and construction in a number of efforts: In the 14 systems financed by FENU, SNEP managed planning and execution; similarly, in the approximately 10 systems to be financed by UNICEF, SNEP will be responsible for both planning and execution. Also, SNEP participated in planning and execution for the approximately 40 ODN projects in the North.

As has been mentioned above, a significant number of PVOs operate outside of the effective jurisdiction of SNEP, and they have often selected sites, planned, designed and executed water systems without SNEP's awareness.

There are a number of reasons for SNEP's partial involvement in the water supply sector. First, although the GOH has provided SNEP with capital cost and recurrent expense budgets, both are insufficient for the extensive development needed to provide even a modicum of water to Haiti's small towns and rural areas. It has been estimated[1/] that to adequately serve all populations of 5000+ inhabitants by 1990, it would cost $18,000,000. To adequately serve all other rural areas by 1990 would cost an estimated $52,000,000. Therefore the total amount necessary to serve populations in SNEP's domain would be approximately $70,000,000.

By comparison, SNEP's capital cost budget for FY '83-84' is $768,800. If that figure is multiplied by 9 (9 years from 1981, the year of the OMS estimates), the total investment expected by SNEP would be approximately $7,000,000--1/10 of the amount required.

1/ Niyungeko, T., ORIENTATION DE LA PLANIFICATION SECTORIELLE, Tome 1, OMS/GTZ, July 1981, pps. 112-113.

Furthermore, GOH contributions for both capital and recurrent costs have been declining at a rate of 17 percent per year. Recurrent cost deficits, as a result, have been increasing. Figures for FY '81-'82 indicate a deficit of $176,000[1].

Calculations based on the populations of the 10 Towns Project and conservative estimates of rates of private home connections (primary source of revenues to SNEP)--i.e. About 5,000 households [2]--and the going rate of administrative recovery for SNEP (40 percent), revenues of only $72,000 per year can be expected from the 10 Towns within the next four years. Even if SNEP were to dramatically increase the rate of household connections in the 10 Towns and in other towns where construction is underway, it is doubtful whether sufficient revenues could be generated to support even modest capital investments. In fact, with the growing number of projects underway, and with problems growing proportionately, (a recent KFW report on the 10 Towns indicated persistent, frequent, and ofter serious maintenance problems), it is unlikely that household connections will generate even the revenues needed for administrative costs.

As a result of such financial contraints, SNEP has had to turn over much of its work to others. With small operating budgets, none of the operational sections--Planification, Projects, and Operations and Management--have been able to sufficiently carry out tasks assigned to them by decree.

Another reason for limited SNEP involvement in water supply, related to the first, is the fact that the GOH, under constant financial pressure in all sectors, has encouraged international, bi-lateral, and private (largely PVO) agencies to undertake investments in the water supply sub-sector.

A third reason for SNEP's limited involvment in water supply has been its institutional lack of experience. Created only in 1977, it has not had the time to develop professionally, to gain experience in project development and execution, nor administratively.

Fourthly--and largely as a result of the above three reasons--SNEP has been unable to fully staff and train its organization.

3. CARE

CARE has been active in Haiti since the early 1960's, when it was invited by the GOH to begin School Feeding activities.

In 1975, CARE began its work in rural water supply, and through its AID funded Phase I, II, and III activities, 48 natural springs have been capped and now provide water to approximately 70,000 rural people living in

---

1/ SNEP figures.
2/ SNEP figures

Haiti's North and Northwest. Although certain problems, primarily concerning staff constraints hindered expeditious implementation of Phase I, such problems were mitigated in Phase II with the recruitment of an international engineer. At the completion of Phase II, CARE accomplished all planned work for less than the budget provided by USAID. The remaining funds were used to correct design errors in Phase I and to carry out minor repairs at some Phase I sites.

An evaluation of Phase II (dated June 24, 1980) stated: "In view of the outstanding performance (of the international CARE Project Engineer) in accomplishing project objectives in spite of initial delays, as well as the continuing need to exploit all feasible sources of potable water in the Northwest, and the importance of maintaining the present momentum of the project, approval of the extension is recommended".

Phase III represented a significant change in technical design from those of Phases I and II. Six sites were chosen and community water systems constructed in communities of up to 9,000 inhabitants. These towns, located in the northern Artibonite and northern coast of Haiti, are comprised of a total of approximately 30,000 people. Community organization and participation were emphasized in Phase III, with local communities given responsibility for providing labor for construction and for providing on-going maintenance of the systems.

The process by which CARE has promoted formation of community water committees/associations is described as follows: In all towns where a water system was constructed during Phase III, a minimum of three meetings were held by the CARE promoters with the community before organization of the water association or Comité d'Approvisionnement en Eau Potable (CAEP) and election of officers. The first meeting was held with local authorities, community action councils, religious leaders, public health and education personnel, and other interested parties. The establishment of a CAEP and the association's functions and responsibilities is one of the major topics for this initial gathering. Shortly thereafter a second meeting is held with parties who are still interested, to provide an explanation on the technical aspects of the water supply system, and the financial, labor and material contributions expected from the community, for the construction and maintenance of the system. CAEP responsibilities include organizing of community labor teams, selection of persons to receive plumber training, collection and control of funds for maintenance of the system, and selection of sites for location of reservoir, break tanks and public fountains. Election of officers is accomplished at a subsequent CAEP meeting.

CARE's management, financial and administrative procedures have received formal approval of USAID.

Because of CARE's long history in Haiti, its experience not only in rural water supply but in community and cooperative development, its excellent rating with USAID, and its reputation of being one of the best-

managed PVOs in the country, USAID views CARE as the obvious choice to be the implementing agency for the installation of rural water systems under the project.

Institutional arrangements pertaining to implementation of this Project are viable if CARE 1) selects properly trained and motivated personnel for the project team; 2) further develops its community organization methodology and 3) ensures that sufficient community motivation exists where sites are selected.

While the success of the project does not hinge on SNEP's participation, the long-term viability of maintenance efforts and possibilities for replication of the Project will be enhanced if SNEP actively participates in the project and otherwise develops institutionally. The latter will occur if the GTZ assistance proves effective, SNEP personnel are properly motivated and GOH budgetary support is increased to allow SNEP to function as an effective regulatory agency.

VI. PROJECT IMPLEMENTATION ARRANGEMENTS

A. Financial Plan and Project Budget

1. Project Funding

The total cost of the four year Community Water Systems Development Project is estimated at $8,000,000 of which (a) $6,000,000 will be grant financed by AID from the Development Assistance budget (ARDN) and (b) $2,000,000 will be provided by the host country, of which $600,000 will come from PL-480, Title III accounts, $500,000 from GOH Public Treasury resources and $900,000 will be provided on an in-kind basis by the participating communities.

The AID grant will provide for water system construction and rehabilitation, technical assistance*, training, vehicles and their maintenance, project evaluation, and support costs for the water user education and sanitation components. The GOH will provide counterpart funds for vehicle operation and maintenance, minor equipment, salaries of SNEP personnel and additional budgetary support for SNEP administration. Local communities will provide material contributions for construction, land and labor.

Per capita cost estimates for system construction/rehabilitation are based on empirical cost data gathered from the CARE potable water projects. Once specific water systems have been selected for construction or rehabilitation, a detailed cost estimate will be prepared.

2. Budget Summary

Table A presents the costs of the project by line item and source.

3. Technical Assistance Configuration

Table B presents the types of advisory assistance provided and the duration of services

4. Technical Assistance Cost Estimate

Table C delineates the type and duration of the technical assistance and the cost per discipline.

5. Summary of Project Expenditures by Fiscal Year

Table D presents the costs per annum by line item and source.

---

* for all components

Table A

BUDGET SUMMARY

(in $000)

	AID	HOST COUNTRY		
		PL 480	Public Treasury	Local Comm. Contribution
I. Water System Construction/Rehabilitation*				
40 systems , average 4000 beneficiaries per system, average $25 per beneficiary 40 x 4000 x $25	$4,000			$440
II. Institution Building				
Technical Assistance**	1,000			
Training	150			
Vehicles (6 vehicles & 12 motorcycles)***	100			
Vehicle Operation and Maintenance	80	45		
Minor Equipment (Tools, etc)		80		
SNEP Administration (incl. 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 (eg. AOPS)****	100			
VI. Project Evaluations (2)	70			
TOTAL	$6,000	600	500	900
Project Total (all Sources)	$8,000			

* See Annex 19- CARE Budget

** Includes TA costs for all components

*** 4 vehicles & 6 motorcycles for TA team
2 vehicles & 6 motorcycles for SNEP participants

**** Establishment of long-term program

Table B

TECHNICAL ASSISTANCE

CONFIGURATION

I. AID Direct Contract	
Project Coordinator	48 person/months
II. Advisory Assistance to CARE	
A. Community Water Association Component	
Community Organization Specialist	42 " "
Community Organization Promoters (3)	126 " "
Construction/Operations/Maintenance Advisor	36 " "
B. User Education Component	
Water User/Sanitation Advisor	42 " "
Health Sanitation Promotors (3)	126 " "
C. Short Term Experts*	31 " "
TOTAL	451 person/months

* The provision for short-term TA is flexible. This expertise will be drawn upon as needed in the early formative periods of the Community Water Associations to build up their capability. The experts will also help in the establishment of the latrine/sanitation and water user program. If it becomes apparent that these short-term advisors (and the other advisors as well) are not required for the time and to the extent budgeted, funds remaining will be allocated to other Project components.

Table C

TECHNICAL ASSISTANCE COST ESTIMATE

	Person Months	Average* Salary	Amount
I. AID Direct Contract			
Project Coordinator	48	$3,000	$144,000
II. Consultant Team**			
A. Community Water Association Assistance			
Community Organization Specialist	42	4,000	168,000
Community Organization Promoters (3LN)	126	1,000	126,000
Const./Operations/Maintenance Advisor	36	4,000	144,000
B. Health			
User Education/Sanitation Advisor	42	4,000	168,000
Health/Education Specialists (3LN)	126	1,000	126,000
C. Short Term Specialists	31	4,000	124,000
TOTAL	451		$1,000,000

* Burdened Rate

** Assigned to CARE

Table D. Summary of Project Expenditures by Fiscal Year

(U.S. $000)

	FY 84		FY 85		FY 86		FY 87		FY 88		LOP	
	AID	HC	AID	HC	AID	HC	AID	HC	AID	HC	AID	HC
Construction/Rehabilitation	360	22	1,300	121	1,240	121	660	121	440	55	4,000	440
Technical Assistance*	50	-0-	275	-0-	275	-0-	250	-0-	150	-0-	1,000	-0-
Training	10	-0-	40	-0-	40	-0-	40	-0-	20	-0-	150	-0-
Vehicles	100	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	100	-0-
Vehicle Oper. & Maint.	10	-0-	19	12	19	13	20	14	12	6	80	45
Minor Equipment	-0-	-0-	-0-	50	-0-	30	-0-	-0-	-0-	-0-	-0-	80
SNEP Administration	-0-	-0-	-0-	300	-0-	250	-0-	250	-0-	175	-0-	975
Com. Water Assoc. Dev.	-0-	8	-0-	50	-0-	45	-0-	45	-0-	12	-0-	160
Water User Education support	10	10	50	60	50	60	50	50	40	20	200	200
Sanitation Support	10	5	75	30	75	30	85	25	55	10	300	100
Com. Based Health Organ.	-0-	-0-	30	-0-	30	-0-	25	-0-	15	-0-	100	-0-
Project Evaluations	-0-	-0-	-0-	-0-	35	-0-	-0-	-0-	35	-0-	70	-0-
TOTAL	550	45	1,789	623	1,764	549	1,130	505	767	278	6,000	2,000

* Includes T.A. for Project Coordinator, User Education/Sanitation, etc.

B. Financing and Contracting Arrangements

A Cooperative Agreement (C.A.) will be entered into with CARE which has the major responsibility for project implementation (see below). Financing will be accomplished through Federal Reserve Letters of Credit (FRLC), based on the terms and conditions of the C.A.

An existing AID direct contract with an experienced water systems engineer will be renegotiated for him to serve as the Project Coordinator. This contract will provide for procurement of one vehicle and its maintenance and operational costs for four years.

A Memorandum of Agreement (MOA) will be signed with the GOH (SNEP and PLAN), committing Title I/III resources to SNEP over the life of the project, commencing in FY 1985. The MOA will specify SNEP's responsibilities, to include 1) approval of site selection*; 2) designation of a liais on office (water resources division) and 3) monitoring of project activities for a) construction, b) maintenance, c) user-education and d) community organization.

To facilitate procurement, two four wheel drive vehicles and six motorcycles will be procured for SNEP under the Cooperative Agreement with CARE. All training (in-country) which SNEP receives will also be funded through the C.A. with CARE.

Under the terms of the C.A., CARE will have authority to hire or contract for all long and short-term technical assistance required to implement the project. However, AID reserves the right to approve selection of all key personnel assigned to the Project. AID (Project Coordinator) will also provide advice and assistance to CARE for the identification of short-term T.A. (e.g. for training and latrine technology). The decision will rest with CARE as to the specific kinds of short-term expertise required over the LOP. (See "Implementation Responsibilities" for a discussion of relationships between the various parties involved in the Project).

As indicated in the Detailed Project Description, CARE will work through the HAVA network to determine which other PVOs have the capability and willingness to better implement, than CARE, a component of a subproject in a given area. Where such a situation becomes apparent, during the first 1-2 years of the Project, CARE and the appropriate USAID staff will negotiate sub-grants to certain PVOs. Sub-grants are most likely for continuation of user/health education programs established, and where well/pump water systems are in order. AID must approve any sub-grants proposed. The Regional Contract Officer will review the terms of any sub-grants, or sub-contracts for discrete tasks, proposed.

* See Description in Economic Analysis

C. Implementation Responsibilities/Relationships

As delineated in Section V. B above, CARE will have the major responsibility for project implementation. The terms and conditions will be spelled out in the Cooperative Agreement. A Condition Precedent to initial disbursement will specify that CARE submit a plan to AID for implementation of the various components of the Project for which it is responsible. This plan will delineate relationships between the various staff members/contractors.

A summary of other relationships is as follows: CARE will designate a senior civil/sanitary engineer to manage its team in the field. However, because of the variety of actors which will be involved (particularly if other PVOs receive sub-grants), the AID-contracted Project Coordinator will work closely with CARE in project planning, coordination of activities and monitoring. CARE will implement the Project according to the guidelines established in the Project Paper and the C.A., and under the general supervision of the Project Coordinator and the AID Project Officer (Chief, ENG Division). Backstopping services will also be provided, as appropriate, by the USAID Divisions for Public Health and Agriculture.

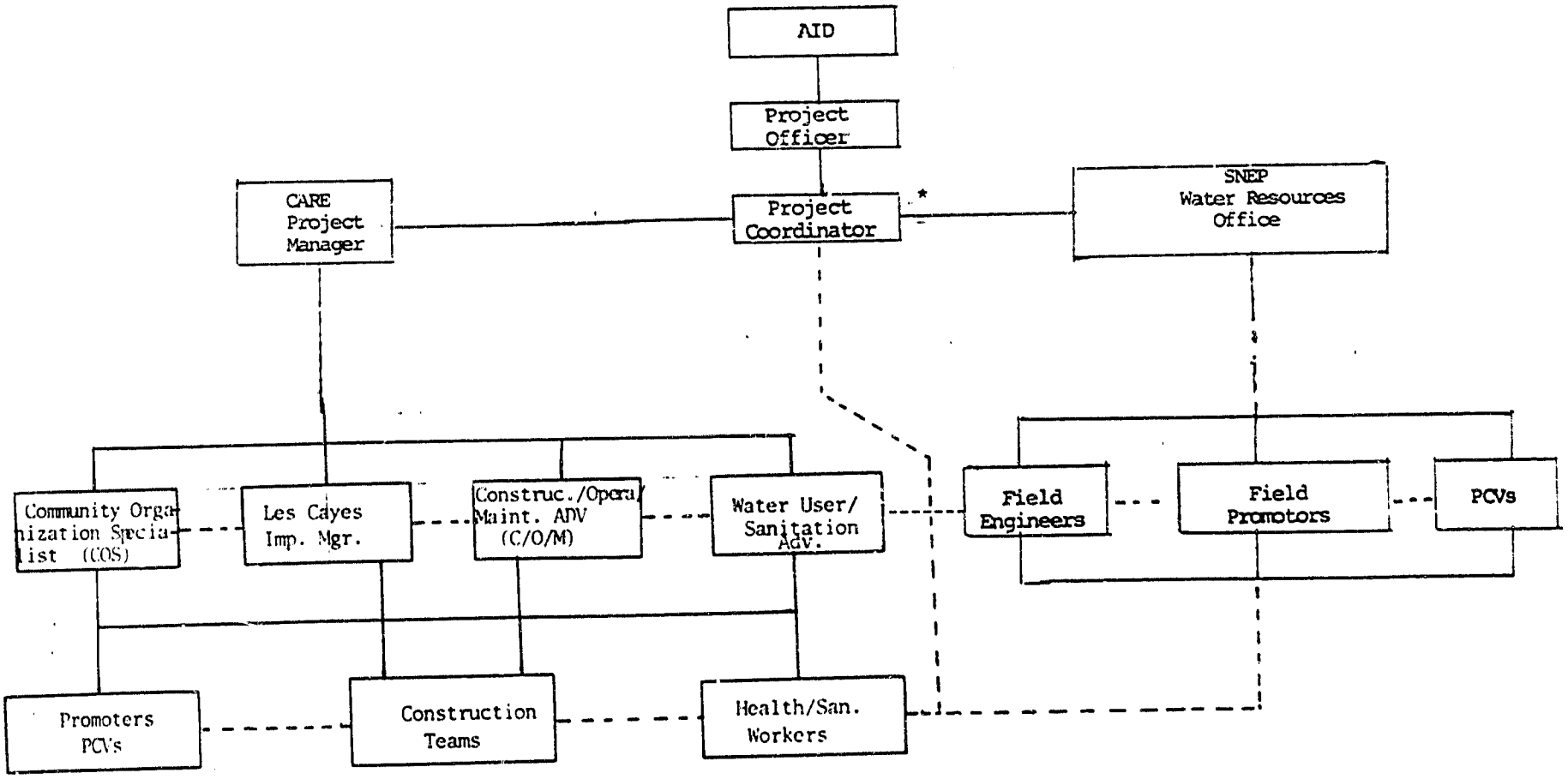
The Project Coordinator will also be the first line of liaison with SNEP, and its water resources division. His responsibilities in this regard will include negotiating with SNEP for approval of sites selected and periodically apprising that agency on the pace of project implementation. The Coordinator will also collaborate, as he sees fit, with the GTZ technical assistance team, subsequent to the commencement of its project with SNEP. Finally, he will have primary responsibility, with the user education/ sanitation adviser, for development and implementation with CARE of the pilot latrine program, and will work closely with the appropriate long and short term advisers in this regard.

CARE will have first line supervisory responsibility for any sub-grants negotiated. The Project Coordinator and Project Officer will assist in the negotiation for sub-grants, and the former will mediate if any problems/disagreements should arise thereafter between CARE and the respective PVO.

SNEP's role includes 1) final approval of sites selected; 2) providing advice and counsel on construction methods, user education/ sanitation and community organization; and 3) assisting in long-term systems maintenance, as requested by the communities.

Peace Corps volunteers which may be assigned to SNEP will be under its jurisdiction, as any PCVs assigned to CARE will be responsible to the CARE project manager.

PROJECT ORGANIZATION CHART



* Solid line denotes direct, not supervisory,relationship

D. Project Implementation Plan and Schedule

1.	Cooperative Agreement signed with CARE	June 21, 1984
2.	Memo of Understanding signed with GOH	June 21, 1984
3.	Begin recruiting and in-house training of second construction team	June 25, 1984
4.	Partial orders (Order No. 1) placed for vehicles, motorcycles, and material for water systems. Orders include vehicles for Project, CARE and SNEP	June 30, 1984
5.	SNEP counterparts assigned to Project	June 30, 1984
6.	CARE consultant team on board	June-Sept 1984
7.	Begin in-house training of SNEP & CARE promoters	July 1, 1984
8.	Assign 2nd construction team to field for on-the-job training	July 15, 1984
9.	Begin site selection/inventory, data gathering for water systems in prospective communities with emphasis on first 10 communities	Aug. 1, 1984
10.	Begin site selection for six pilot communities for water systems and pilot latrine program	Aug. 1, 1984
11.	Complete in-house training of SNEP and CARE promoters. Assign to field teams for on-the-job training	Aug. 30, 1984
12.	Begin recruiting and in-house training of third construction team	Nov. 1, 1984
13.	Vehicles and materials for water systems (Order No. 1) arrive	Nov. 1, 1984
14.	Place order No. 2 for material for approximately 15 water systems and for balance of vehicles	Nov. 1, 1984
15.	Complete recruitment and in-house training of third construction team. Assign to field team for on-the-job training	Dec. 1, 1984
16.	Begin One-week workshop for promoters	May 1, 1985
17.	Materials and vehicles purchased on order No. 2 arrive	May 1, 1985
18.	Complete site selection of six pilot communities for latrine program and start construction	July 31, 1985
19.	Place order No. 3 for material for approximately 15 water systems	Nov. 1, 1985
20.	Materials purchased on order No. 3 arrive	May 1, 1986
21.	Begin Second one-week workshop for promoters	May 1, 1986
22.	Begin Midterm project evaluation	June 1, 1986
23.	Complete midterm project evaluation	July 1, 1986
24.	Complete site selection/inventory and data gathering for water systems in prospective communities	July 1, 1986

25.	Place order No. 4 for balance of materials for water systems	Oct. 1, 1986
26.	Materials purchased on Order No. 4 arrive	April 1, 1987
27.	Complete latrine program in six pilot communities	Oct. 1, 1987
28.	Complete construction of all water systems	April 1, 1988
29.	Begin final Project Evaluation	April 1, 1988
30.	Complete Project	June 14, 1988

Note : The complete plan for construction/rehabilitation, community organization, user education/sanitation and training of local plumbers is given on the next page.

The Implementation Schedule will be reviewed quarterly and adjusted, when and if required, by CARE, with the concurrence of AID.

Schedule for the construction/rehabilitation, community organization, user education/sanitation and training of local plumbers for the 40 water systems is given below:

Construction/Rehabilitation Schedule of Water Systems

Date	Number of Systems Start	Number of Systems Finish
09/01/84	1	
11/01/84	2	
02/01/85	2	
04/01/85	2	2
08/01/85*		2
10/01/85	3	2
12/01/85		1
01/01/86	3	
03/01/86	3	3
04/01/86		3
06/01/86	3	
07/01/86		3
09/01/86		3
10/01/86	3	
12/01/86	3	3
03/01/87	3	
04/01/87		3
06/01/87	3	3
09/01/87	3	3
10/01/87**	3	3
12/01/87		3
04/01/88		3
Totals	40	40

* Begin latrine construction
** Complete latrine program

E. Waivers

The authorization of this Project Paper will also signify the approval for procurement of twelve 100 cc light weight motorcycles from Code 935 source and origin. See Table A, Project Budget.

A procurement source waiver from Geographic Code 000 (U.S. only) to Geographic Code 935 (Free World including Host Country) is required to allow procurement of motorcycles to be utilized for site visits.

The light weight motorcycles required (trail bikes) are not available from the Code 000 source/origin. Therefore, widening eligibility by waiving the Code 000 source/origin requirement, to include Free World Code 935 countries, will allow procurement to be accomplished, through AID HB 11, Chapter 3 procurement procedures. The Mission cites Section 2.6.2.3. of Chapter 3 of AID Handbook 11 as authority for the waiver. The motorcycles will be procured, under this $6 million project, at an estimated cost of $22,000.

Authorization of this Project Paper approves a waiver of AID Geographic Code 000 source and origin requirements to allow procurement of the required motorcycles from countries under AID Geographic Code 935.

F. Evaluation and Audit Plan and Schedule

Two evaluations will be undertaken during the life of the Project--one at the end of the second year of operation and the second at the end of the fourth year. An ex-post impact evaluation is also proposed and should occur about one year after the 1988 PACD. An Inspector General (IG) Audit will also be requested after the first evaluation. The audit will review the appropriateness of disbursements and expenditures and assess the adequacy of financial management systems.

The first evaluation will assess the efficiency and effectiveness of project implementation including:

1) Effectiveness of the Implementing Agencies
   - Organizational and budget authorities (CP)
   - Adequacy of staffing
   - Adequacy of management information and control systems.

2) Appropriateness and timeliness of procurement
   - Technical assistance
   - Equipment
   - Other inputs

3) Organization and performance of construction teams
   - Number and composition of construction teams
   - Person months of labor employed
   - Adequacy of supervision
   - Number of water systems installed and the per capita cost thereof.

4) Collection and adequacy of data for community selection where water systems will be installed.

5) Adequacy and effectiveness of on-site and off-site training programs and water user education - person hours training by personnel category.

6) Adequacy and effectiveness of equipment utilization and maintenance.

7) Preliminary impact assessment on communities where water systems have been installed.

The second evaluation (4th year) will assess the same performance factors as the first, plus assess follow-through on recommendations made after first evaluation.

G. USAID/Haiti Support Capability

The Mission is fully able to support the project with existing staff. Monitoring of the project will be provided by the Engineering Division (ENG). ENG will receive assistance from the Division for Development Resources and Program Evaluation (DRE), the Controller's Office and the Regional Contracting Officer, as required. Additional technical back stopping will be provided by the office of Public Health and the Agricultural Development Office (ADO). The Project Committee (see below), composed of representatives from these divisions, will participate in selection of communities where water systems will be installed, site inspection, major decision-making, project meetings and coordination with GOH. Also, the Project committee will receive implementing agency (CARE) and GOH reports, review and approve payments, participate in the selection of the TA consultants, maintain liaison with SNEP and other GOH groups, and otherwise ensure that progress is maintained toward project objectives.

Initially, the AID Project Committee will consist of the following personnel:

ENG Project Officer, James Gardner
ENG Project Coordinator, Frank Temmel
DRE, David Adams
PHO, Chris McDermott
ADO, John Lewis
CONT, Don Shannon
RCO, Fred Obey.

VII. CONDITIONS AND NEGOTIATING STATUS

Prior to any disbursement, or the issuance of any commitment documents under the Cooperative Agreement, the CARE shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

A. Source and Origin of Goods and Services

Except as set forth in section F. below and except for ocean shipping, goods and services financed by A.I.D. under the Cooperative Agreement shall have their source and origin in countries included in A.I.D. Geographic Code 941 or in Haiti, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Agreement shall, except as A.I.D. may otherwise agree in writing and except as concerns procurement of motorcycles, be financed only on flag vessels of countries included in A.I.D. Geographic Code 941 or of Haiti.

B. Conditions Precedent to Initial Disbursement

Prior to any disbursement, or the issuance of any commitment document under the Agreement, the CARE shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(1) A detailed, time-phased implementation plan for the first year of the Project and

(2) Evidence that a full-time CARE project manager, acceptable to A.I.D., has been appointed.

C. Conditions Precedent to Disbursement for Water System Construction

Prior to any disbursement, or the issuance of any commitment document under the Cooperative Agreement, to finance the construction of any water system, the CARE shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(1) A cost estimate for each approved water system and a time schedule for implementation and

(2) The arrangements with the community for constructing and subsequently maintaining the water system.

D. Condition Precedent to Disbursement for Technical Assistance

Prior to any disbursement or the issuance of any commitment documents under the Cooperative Agreement to finance any technical assistance contract, the Recipient shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D. the scope of work for said contract, information on the training and experience of the proposed contractor, and, subsequently, the draft contract.

E. Covenants

The CARE shall covenant that, unless A.I.D. otherwise agrees in writing, it will:

(1) Use equipment procured under the Project only for mutually agreed upon water systems rehabilitation or construction, and construction of latrines;

(2) Recruit and maintain sufficient qualified personnel at all levels required to carry out the objectives of the Project effectively; and

(3) Use the Joint Project Implementation Plan system (JPIP) or other mutually agreed upon method to systematically monitor the Project.

ANNEXES

FOR

COMMUNITY WATER

SYSTEMS DEVELOPMENT PROJECT

VII. ANNEXES

1. Guidance Cable
2. Initial Environmental Examination
3. Logical Framework
4. Grantee's Application for Assistance
5. Grantee's Procurement Procedures (available in USAID/Haiti files)
6. Mission Director's 611 (E) Certification
7. Statutory Checklist
8. Partial List of PVO's Involved in Potable Water Systems Development
9. GTZ Technical Assistance Project (available in USAID/Haiti files)
10. Action Plan for Community Organization
11. Training Plan
12. List of Initial Prospective Water Systems Sites
13. Rainfall Data for Haiti
14. List of Additional Prospective Water Systems Sites
15. Typical Gravity-fed Water System
16. India Mark II Handpump
17. Moyno Handpump
18. Solar-Powered Pump
19. CARE Budget

TELEGRAM

AUG 2 2 1983

AMERICAN EMBASSY, PORT-AU-PRINCE

State 236860

UNCLASSIFIED

Classification

ACTION TAKEN

DATE:

INITIALS:

ACTION COPY

OFFICIAL FILE

ACTION: AID 2

INFO: AMB 1, DCM 1, POL, ECON 1, COMM, CONS, ADM, PER, B&F, GSO, ICA, AID, DAO, MSG, CRO, DO, CHRON

NNNNVV ES6075RA404
PP RUESPR
DE RUEHC #6860 2320924
ZNR UUUUU ZZH
P 2002317 AUG 83
FM SECSTATE WASHDC
TO AMEMBASSY PORT AU PRINCE PRIORITY 1254
BT
UNCLAS STATE 236860

AIDAC

E.O. 12356: N/A

SUBJ: HAITI COMMUNITY WATER SYSTEMS DEVELOPMENT (521-0159) PID

1. THE DAEC MET ON AUGUST 1, 1983 TO DISCUSS THE SUBJECT PID. THE MISSION IS TO BE COMPLIMENTED ON PREPARATION OF A CONCISE AND INFORMATIVE DOCUMENT, MAINTAINING THE HIGH STANDARD OF QUALITY IN PROJECT DOCUMENTATION SUBMITTED TO USAID/W. DEVELOPMENT OF THE PP IS AUTHORIZED SUBJECT TO THE GUIDANCE SET FORTH BELOW:

2. INSTITUTIONAL ARRANGEMENTS. THE DAEC DISCUSSED THE PROPOSED DIVISION OF LABOR BETWEEN SNEP AND THE PVOS AND RECOMMENDED THAT THIS BE CLOSELY EXAMINED DURING THE INTENSIVE REVIEW TO TAKE ACCOUNT OF (I) THE MISSION'S INSTITUTIONAL OBJECTIVES IN THE SECTOR; AND (II) THE LIMITED SUCCESS OF PRIOR INSTITUTION-BUILDING EFFORTS WITH SNEP. PARTICULAR ATTENTION SHOULD BE PAID TO DESIGNING EFFECTIVE COORDINATION MECHANISM BETWEEN SNEP AND PARTICULARLY PVOS TO ASSURE WORK IS BEING CARRIED OUT BY RESPONSIBLE AGENCIES AND TO KEEP ALL PARTIES INFORMED ON PROGRAM ACTIVITIES.

3. CONTRACTING PROCESS: A NUMBER OF QUESTIONS WERE RAISED AS TO THE METHOD BY WHICH PVO MONIES WOULD BE OBLIGATED. IT HAS BEEN PROPOSED THAT ONE LEAD PVO WOULD OBTAIN AN INITIAL GRANT, AND THAT IT WOULD BE RESPONSIBLE FOR SUB-CONTRACTING TO OTHER PVO'S, CONTRACTORS, ETC. GC/LAC RAISED A NUMBER OF QUESTIONS CONCERNING THIS PROPOSAL. FIRST, IS THE APPROPRIATE INSTRUMENT FOR FUNDING OF PVO CONSTRUCTION ACTIVITIES A COOPERATIVE AGREEMENT (WHICH IS REALLY A FORM OF GRANT) OR CONTRACT? SECOND, IF IT IS A CONTRACT, THEN THE PROCESS SHOULD FOLLOW COMPETITIVE PROCEDURES. DURING INTENSIVE REVIEW, THE MISSION SHOULD DISCUSS THIS QUESTION WITH THE RLA AND/OR THE REGIONAL CONTRACTING OFFICER AND DESIGN APPROPRIATE ARRANGEMENTS PRIOR TO PP APPROVAL.

4. PROJECT EVALUATION: IT WAS NOTED THAT PROJECTS WITH MULTIPLE OBJECTIVES OFTEN ENCOUNTER PROBLEMS WITH EVALUATION. FOR INSTANCE, IN ORDER BASE-LINE INFORMATION AVAILABLE TO PERFORM SOCIO-ECONOMIC AND HEALTH EVALUATIONS, AS WELL AS EVALUATION OF EFFECTS ON SCHOOL ENROLLMENT AND IMPROVED PRODUCTIVITY. THE NEED FOR BASE-LINE SURVEYS AND CONSIDERATION OF AN EVALUATIVE FRAMEWORK SHOULD, THEREFORE, BE TAKEN UP DURING INTENSIVE REVIEW REFLECTING BOTH PROJECT RATIONALE AND PRACTICAL CONSIDERATIONS OF COST AND DATA AVAILABILITY.

5. TA PERSONNEL: DUE TO THE DIFFICULTY IN FINDING QUALIFIED TECHNICAL AND INSTITUTIONAL EXPERTS WITH ADEQUATE CAPABILITY IN FRENCH, THE MISSION SHOULD CONSIDER THE NEED FOR A WAIVER FOR CONTRACTING OF NON-CODE 941 PERSONNEL. IF IT IS THOUGHT TO BE NECESSARY, AID/W WILLING TO BE OF ASSISTANCE IN LOCATING PERSONNEL.

DATE REC'D

USAID ROUTER

OFFICE	ACT	INFO
DIR		
D/DIR		
A/DIR		
CONT		
DRE		
ENG		
EXO		
GSO		
ISS		
OEA		
OPED		
PHO		
PVD		
RCS		
RDO		
RF		
CF		

ACTION TAKEN

Date:

By:

Rec: 8/24/83

p. 2

UNCLASSIFIED Stat 236860

6. DESIGN OF TA: PAHO/WHO EFFORTS TO PROVIDE TA TO SNEP WERE DISCUSSED. GIVEN THE PREVIOUS RESULTS OF THESE EFFORTS, AND THE HIGH-RISK ASSOCIATED WITH LARGE AMOUNTS OF TA AIME AT INSTITUTIONAL CUMLDING< THE INTENSIVE REVIEW SHOULD CAREFULLY CONSIDER THE DESIGN OF THIS COMPONENT TO ENSURE MAXIMUM QUALITY OF ASSISTANCE PROVIDED, ACCOUNTABILITY AND OVERSIGHT.

7. IEE DETERMINATION. THE NEGATIVE IEE DETERMINATION IS APPROVED, SUBJECT TO THE FOLLOWING CONDITIONS:
1, THE RECOMMENDATIONS IN THE IEE, ESPECIALLY WITH REGARD TO SITE SELECTION CRITERIA, SHOULD BE REFLECTED IN THE PP

AS AN INTEGRAL PART OF PROJECT DESIGN. 2, SINCE DR. TALBOT WILL BE INVOLVED IN PREPARATION OF THE PP, ADDITIONAL TDY EXPERTISE IN ENVIRONMENTAL ASSESSMENT SHOULD NOT BE NECESSARY FOR THE PP. HOWEVER, THE PROJECT'S SHORT-TERM TA COMPONENT SHOULD BE AMENDED DURING PP DEVELOPMENT TO ADD EXPERTISE IN ENVIRONMENTAL ASSESSMENT, SO THAT THE RECOMMENDATIONS OF THE IEE WILL BE FOLLOWED DURING IMPLEMENTATION.

8. FIELD AUTHORIZATION. PURSUANT TO AID DELEGATION OF AUTHORITY NO. 133, AA/LAC HEREBY DELEGATES TO THE MISSION DIRECTOR USAID/HAITI THE AUTHORITY TO APPROVE THIS PROJECT AND TO AUTHORIZE FUNDING THEREOF.

9. SEPTEL FOLLOWS WITH RECOMMENDATIONS FROM VIC WEHMAN (WASH PROJECT) ON COMPOSITION AND FUNDING OF PP DESIGN TEAM.
LAM
BT
#6860

ANNEX 2

INITIAL ENVIRONMENTAL EXAMINATION

Project Location	:	Haiti
Project Title	:	Community Water Systems Development (521-0155)
Funding	:	FY 1984, $6 Million Grant
Life of Project	:	FY 1984 - FY 1988
IEE Prepared by	:	James J. Talbot, REMS/C

FOR

James J. Talbot 7/7/83

Signature Date

CHIEF ENGINEER

Environmental Action Recommended: Negative Determination

Concurrence:

Harlan H. Hobgood 7/8/83

Harlan H. Hobgood Date

INITIAL ENVIRONMENTAL EXAMINATION

Project Location	:	Haiti
Project Title	:	Community Water Systems Development (AID 521-0155)
Funding	:	FY 84, $6 Million Grant
Life of Project	:	Fy 1984-1988
IEE Prepared by	:	James J. Talbot, REMS/C

James J. Talbot
Signature

6/4/83
Date

Environmental Action Recommended Negative Determination

Concurrence:

Harlan H. Hobgood

Date

PROJECT DESCRIPTION

The proposed project will provide grant-financed assistance for (1) the construction/rehabilitation, operation and maintenance of rural potable water systems and (2) the strenghthening of the National Potable Water Service of Haiti (SNEP) in their program areas of potable water systems development, operation and maintenance. Selected rural communities in the South and Southwest peninsula are the target groups, with approximately 60 such water systems budgeted for development over the four year LOP. Project costs will be funded by USAID/Haiti ($6M), PL-480 local currency generations ($3.9M), GOH Public Treasury ($0.5M), and local community donations of land, materials and labor ($0.75M). Local funds will attempt to cover all or most of the O&M costs; the Project Paper (PP) will elaborate a plan regarding achievement of this goal. A major objective of the proposed project, therefore, is to develop local capacity through a community water association to administer, manage, operate and maintain the given potable water system.

In general, spring-fed and gravity flow systems will be selected and designed based on certain eligibility requirements such as presence of potable water source, demonstrated demand, community committment and other factors to be elaborated in the PP. Standard, simplified design specifications will be used for capping springs and building other infrastructure components. Spring capping usually involves the following construction: site containment vessel for regulation of flow and protection of the water sourcefor contamination; water storage reservoir; delivery pipe systems from reservoir to demand area; standpipes or other communal delivery points. Construction/rehabilitation will be supervised and performed by two or more PVO's with SNEP phased in over the LOP.

Health education will also be emphasized through the project and communities will be sensitized to the various aspects of environmental health and sanitation associated with proposed water delivery systems. In target sites with higher population densities, or where appropriate, sanitary excreta disposal facilities will be constructed on a pilot/trial basis. The rational with this component is to reduce fecal-oral disease problems associated with such water system implantation. By improving water availability, quantity and quality, improved health and additional savings in labor and time will be gained by safe and conveniently located potable water supply systems.

ENVIRONMENTAL SETTING

To understand water supply in the Southern peninsula is to understand the complex geology of the region and precipitation and vegetation patterns throughout the southern peninsula. Three major and several minor physiographic regions comprise the proposed project area; majors ones include: Massif de la Hotte, the Rochelois Plateau, and the Plateau of Jacmel Valley. In the westernmost reach of the peninsula is found the Massif de la Hotte, a range about 185 km by 35 km separate from the La Selle chain by a breach in the southern peninsula mountain chain roughly between Grand Goave and

Jacmel. This range is essentially karst topography composed of basaltic rocks and and cretaceous and eocone limestone. The second major province the Rocheloís Plateau a subdivision of the La Hotte, is located roughly in the middle of Peninsula. It abounds with sinkholes, which are elongated depressions formed by disolution of underlying limestone and subsequent collapse of the surface. Bauxite was abundante in this region, but it is now virtually exhausted. The Plateau of the Jacmel Valley, the easternmost segment of the target region and composed of paleocene detrital formations visible as extensive outcroppings, has areas of impermeable basements over which have formed several lakes. Since this area was the first segment of the southern peninsula to be uplifted, it has had more time to undergo erosion & depositional processes than the western and central reaches of the peninsula.

Water sources such as gravity and artesian springs are commonly encountered in consolidated rocks such as standstones and limestones where intergranular spaces are not clogged by cement and rocks are fractured, when dislocated limestone rests on an impermeable base, where chalky limestones and/or impure clays are not far from the surface, or in other geologic conditions that result in natural points where groundwater appears on the surface. Several uniques features also stand out. Groundwater conditions affect hillslope stability in some places posing a landslide hazard in certain locations. Such stability features must be considered in site selection of springs to capped during the project. Large areas, particularly southeast of Jeremie, exhibit limestone with subterranean drainage systems resulting in surface water scarcity. Water quality can subsequently be affected by fractured/fissured rocks which permit silt and bacteria to move with groundwater contaminated from upstream/uphill sources. Fault zones such as the Jacmel-Fauche Depression and others collect water along their lines and channel freshwater underground and out to the sea. Springs may be hard to locate in these areas.

With the exception of the region from Cote de Fer to Aquin and a small coastal strip in and around Port-au-Prince, precipitation exceeds evapotranspiration in most of the southern peninsula. Thus, an abandance of water is usually available for crop production depending on its local seasonal nature and soil characteristics. Three broad ecological life zones stand out: moist, wet and rain forest. Subtropical moist forest occupies much of the southern peninsula, some on shallow, others on deeper soils over limestone rock. When shallow soils are present in this zone the vegetation takes on the appearrance of aspects of the dry forest life zone. However, the presence of mango trees and the royal Palm indicate higher rainfall than dry forest. At higher elevations (800-2000m) premontane moist forest is found. Subtropical wet forest is the second most extensive life zone in the southern peninsula and is found mostly in the westernmost areas begining with the Massif de la Hotte. Many of the agricultural crops of the moist life zone as well as fruit trees extend into this wetter area. For example, coffee on decent clays over limestone abounds on the slope areas and foothills of the peninsula; cacao is another indicator of this zone. At higher elevations again, premontane wet forest replaces its lowland equivalent with a different flora. Subtropical rainforest, the most unique life zone in all of Hispaniola, is found in the Massif between Beaumont and Riviere Glace and is traversed by the Cayes-Jeremie road. This region receives heavy orographic rainfall from the northeast as well as rainfall derived from easterly winds which are deflected north by the La Hotte range standing at the western end of Cayes plain. It appears that most of the original forest is cut over and that people are trying to farm this very difficult and very wet (3-4 meters rainfall per year) zone. Road access has contributed to the decline of this fragile ecosystem.

Deforestation associated with agricultural development is a major cause of stream sedimentation throughout the southern peninsula, even though many areas of the Massif de la Hotte have sufficient vegetative cover (due to the high rainfall and favorable plant growth conditions) or particularly permeable soils to reduce surface runoff down theslopes. Thus, surface waters represent a spectum of quality from clean, clear flowing streams such as Rivieres Voldrogue and Glace to highly sediment-laden ones such as the Grand Anse and du Charlier. Water quantity, the sum total of groundwater, surface and geologic interflow, is favorably high in this region due to the high amount of annual orographic and other rainfall inputs. Individual water basin balances, however, should be carefully examined since peculiar geologic features sometimes cause surface waters to submerge only to reappear many kilometers away. In addition, removal of natural soil holding vegetation and consequent damage to more level irrigated lands by depositing of silt and gravel carried by flash floods is a widespread and chronic problem in the peninsula.

SCOPING OF ENVIRONMENTAL ISSUES

Without details regarding site locations, degree of development proposed, numbers of people in the target groups and ressources to be applied, it is problematic to address environmental impacts in any terms other than generic. For the sake of this analysis, a general discussion of the issues will be conducted to "red flag" environmental effects. Mitigative measures and guidelines for environmental protection will be proposed in another section of the IEE. Since social and environmental issues are intimately linked in projects of this sort, social aspects are addressed herein.

Source/Sink Protection

Water borne disease pose health problems around springs where people and animals congregate: water becomes easily contaminated, mosquitos carrying malaria or dengue fever can breed in puddled areas at or adjacent to waterholes. Protection of the source of water, however, involves not only protection of the immediate spring area but of the surrounding area that may serve as the springs catchment. Thus, capped springs, closed reservoirs and delivery systems, if properly designed, can help eliminate the fecal-oral disease chain and insect-vector problems at the source. And, protection of the vegetative cover in and around the source area will help prevent excessive runoff thereby allowing percolation of rainwater into the underground aquifers that supply such springs.

Protection of the sink is equally important. Where water is diverted and delivered to a communal point for human/animal consumption is referred to as the sink area. In many cases it can become another site for contamination without proper drainage and reduction of standing water.

Upstream/Downstream Conflicts

Capped springs, especially if they are large, may end up supplying one particular area and diverting water from a much larger area than under the traditional spring

usage. Such actions would deplete water resources for downstrean users. In some limestone formations, contaminated materials commonly enter water-bearing zones through sinkholes (very common in the southern peninsula) and may be carried along with the groundwater for long distances. If material from contaminated sources gain access to very permeable soils, the water may be contaminated for long periods of time and for long distances. Because of such geologic peculiarities, upstream communities may inadvertently contaminate groundwater that ends up kilometeres away in a capped spring. Such intra-sectoral conflicts must be considered in water system siting.

Risk Associated with Flow Variations and Source Contamination

Variation in the amounts of water yielded at different seasons/months of the year may indicate the spring is a poor risk. If flow is constant all year and can supply the projected community needs of 20-50 l/d/person, it is probably a reliable source. Because of factors mentioned in the previous section, some degree of water quality testing is required during the site selection process. Bacteriological examinations in particularly and some agreement on minimum acceptable standards are necessary to reduce risks in improper site site selection.

Problems in Achieving Environmental Quality Objectives

Given the financial resources to be applied to this project, can certain environmental quality objectives be achieved, and if so, how will a mechanism be developed to ensure implementation at the field level. Such objectives include:

- Source protection, including mini-watershed management

- Sink protection, including resolution of animal watering conflicts, removal of exessive water from sink areas, prevention of further contamination by use of latrines, public showers, etc.

- Protection of downstream water uses/users.

Achieving such objectives is more than paying lip service to the IEE.

Resolution of Water Source Use Conflicts

It often goes unmentioned in Haiti, but the Haitian practice of dividing water areas into bathing and drinking components (animal included) requires a special strategy in the proposed project. Showers for bathing and standpipes for animals may be necessary. Hygiene problems are compouned by this practice and socio-cultural changes may be required,

Education Needs

Education in environmental health and water supply protection is required. Extensive experience in Africa has demonstrated that few, if any, benefits are derived from

improvement in village water supplies without additional investments linked to education and other complementary programs. Education, however, should be targeted to the cause/effect relationships, for example, between water and diarrhea or between mosquitos-disease-open water, or between value of vegetative cover and reduced surface run off. The mother-child interface is critical here since mothers are the socializers and teachers of personal hygiene and sanitation practices. On the other hand, the fecal-oral reinfection route must be broken, especially if latrines are built, by providing water for handwashing. Education components play a vital role here.

Changing the water supply mode will necessitate community changes to use and maintain the system in the manner it was designed. Integrating such infrastructure adjustments with the abovementioned environmental quality objectives must be achieved through a comprehensive education program.

Environmental education is necessary to foster an understanding of water systems, especially the role of forest cover in rainfall interception, basin water balance concepts, and sources of fecal-oral disease problems. A clear presentation of how such an education program will be prepared in the context of this project should be eleborated in the PP.

RECOMMENDED ENVIRONMENTAL PROTECTION STRATEGY

Due to the variable nature of each mini-catchment area (soils, climate, cropping potential, etc) special effort should be placed in addressing site-specific local needs. A generalist approach would be practicable in teaching concepts of protection of water sources, environmental health and sanitation, and infrastructure building. Use of site-specific baseline data such as groundwater quality, soil permeability, incidence of fecal-oral disease and malaria and dengue fever, would be required to effectively manage the water supply system. The proposed project could foster some changes with adverse effects if environmental protection measures are not applied. Given the basic unknowns in this project -- sites, existing degradation in target areas, spring flow variations and stability over time, and ability of human communities to absorb change -- REMS/C recommends that a number of environmental protection measures be adopted and integrated into the project through some formal mechanism, perhaps in the project agreements that will be signed by the PVO's, GOH and USAID/Haiti.

Systems Design Approach

The key work here is system, thus implying a unique aggregation of many different elements, states and processes. Comprehensive development of water supply systems addresses input/output variables and the processes of change in natural and human subsystems initiated by the proposed project activities. For example, in an ideal sense water balance models are useful in technical refinements of the management system for water supply enhancement, but insufficient data in Haiti on spring location duration of flow, water quantity and quality, groundwater behavior and a multitude of other factors precludes such modeling and analysis. Instead, simplified approaches must (1) identify end points of development that will avoid long-term degradation of local carrying capacity, (2) design community programs that are responsive to needs as well as environmental quality objectives, and (3) execute projects accordingly paying close attention to changes in the linkages among the various subsystems such as plant protective cover on slopes near springs, groundwater flow, drainage conditions, disease-vectors, human perceptions and use of the new system.

Project systems design follows a stepwise approach:

1. Needs identification/estimation;
2. Water availability determination as a function of probability;
3. Risk assessment, i.e. those risks acceptable given the identified changes in community patterns associated with the project;
4. Reservoir size design for the chosen probability; capacity determined by withdrawal demand during long dry periods; some attempt to answer: Does storage capacity accommodate fluctuations in spring discharge and human demands on the system ?
5. Source protection: water balance approach desirable; environmental sanitation associated with the capped spring itself; water basin protection by adequate provision of vegetative cover and restriction of grazing or agricultural activities in vicinity of spring.

6. Sink protection: community action-environmental sanitation measures.
7. Assessment of effects outside immediate target area, e.g. diversion of downstream uses.

Also, because the cost of capping springs is site dependent (yields and demand vary) reconnaissance work is recommended. Spring inventories and some basic water quality testing (bacteriological, hardness, etc.) would be advisable. Safe yield of an aquifer is the amount of water that can be removed or used without lowering its piezometric water level. This is dependent on infiltration input, seasonal fluctuations of safe yield, and permeability of the geologic zones through which water percolates. Basic data in this area may be useful in predicting long term stability of the infrastructure proposed in a particular locality.

Small Watershed Management and Source Protection

Source protection comprises two basic elements: infrastructure safeguards and control of environmental degradation. Because springs are open to the environment, they are susceptible to direct contamination. Capping and containing the flow in a regulated manner introduces new twists that require attention in project design and execution. The following measures should be considered:

1. Diversion of surface drainage not associated with the spring, e.g. from rainfall, from the site of the capped spring.
2. Construction of a fence to prevent livestock entry
3. Provision for access to the reservoir or tank for maintenance (prevent removal of the cover with a locking device).
4. Monitoring of water quality with periodic checks for contamination.

Deforestation of hillsides can result in greater water runoff from the area near the spring i.e. not slowing water infiltration into an aquifer or groundwater if more vegetation were present to intercept rainfall. Less water can theoretically be available in the project site from such uncontrolled practices as deforestation. Examination of this phenomenon on a site-by-site basis is necessary to assess the need for reforestation measures or control of cutting or some other appropriate management practice which would enhance water supply. Springs can eventually dry up if adequate source protection measures are not taken into account.

Some suggested activities would facilitate protection of the water collection areas in each locality:

1. linkage with the Agroforestry Outreach Project for farmers in the immediate vicinity to reforest/plant trees for use as cash crops;

2. Community outplanting in severely degraded public lands using trees that would be useful to the community; community acceptance would be necessary since tree maintenance and exclusion of livestock would be necessary in the early years of the planting.

3. Promotion of plant cover by restricting activities in more critical areas such as steep slopes, thin soils; the idea is to encourage the local community to set up its own "designated management areas".

4. Community education about source protection.

Comprehensive Water Supply/Use/Maintenance Education Program

Experience from Africa indicates that providing villages with water supplies does not ensure a measurable reduction in water-related disease unless other health and environmental measures such as education, source protection, etc., are implemented along with the supply infrastructure. Such a comprehensive program should be developed initially in the PP.

Social Soundness Analysis

In addition to the normal components addressed thorugh the social soundness analysis, the PP should include the following concerns:

1. Local community perceptions of environmental quality objectives associated with water supply development and how such will be measured, evaluated and used in project execution;

2. Projected impacts on women and children of improved water supply and sanitation, focusing on such items as (i) interfaces of proposed project with other health sector programs in the community, (ii) attitudes toward human excreta and diarrheal infection, (iii) sociocultural variations among villages and sexes, (iv) access of women to health education and other training, (v) increased time available for activities other than water gathering.

3. What percentage of people walk within 2-3 kilometers (or some other arbitrary distance dependent on terrain, etc.) of traditional sources versus will walking distances actually be reduced given the location of the new water supply communal distribution point. Why ? Data from worldwide sources indicates that for diarrheal disease, a more convenient water supply outlet, closer to the user is generally associated with lower infection rates. A further area of inquiry that has been problematic in other water project is: how does one get people to give up traditional sources in favor of a newer safer one ?

EVALUATION OF PROPOSED PROJECT

The proposed "Community Water and Environmental Sanitation Systems Project" contains several principal activities aimed at strengthening institutions and improving water safety and use in rural communities. These objectives will be accomplished by infrastructure construction/rehabilitation associated with water supply systems from capped springs, integration of SNEP with local community water associations in technical and managerial areas, use of health and environmental sanitation education and technical components. The use of PVO's with much hand-on experience is a positive feature of this project. Negative effects downstreams of project sites will also be minimized. For example, at proposed sites for spring capping overflows will maintain traditional flow patterns thus ensuring water availability to downstream users.

The LAC Regional Strategy Plan identified watershed management as one of five strategy elements to be programmed into Mission projects. AID resources allocations to this subsector may need to expand given the lack of other donor responee to problems of deforestation in the southern peninsula. Thus, the "Source protection" aspects of this project are a minimum requirement for sustainability of the water supply infrastructure in thelong term.

Based on the information present in the PID and in this analysis, the activities proposed by USAID/Haiti will improve overall management of selected water resources and a Negative Determination is recommended. However, in order to strengthen the project and the GOH's ability to integrate water supply management into an overall natural resources management framework, even if one doesn't exist on paper in Haiti, selected environmental protection components are recommended for the proposed project. These must be included in the Project Agreement so that their implementation will be realized. Such components should be implemented by SNEP and the PVO's selected for the project. PP preparation will further require a watershed management specialist to assist in evaluation and development of source protection measures associated with water supply enhancement.

Annex 3

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

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
Program or Sector Goal: The broader objective to which this project contributes: To improve the quality of life of the inhabitants in the South and Southwest Peninsula of Haiti	**Measures of Goal Achievement:** -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.	-Impact evaluations. -Socio-economic surveys.	**Assumptions for achieving goal targets:** -No major epidemics. -No serious drought or other natural disasters.
Project Purpose: -To construct/rehabilitate rural potable water systems. -To assist peasant/community groups operate/maintain water systems.	**Conditions that will indicate purpose has been achieved: End of project status.** -Potable water provided to about 160,000 people. -40 Community organizations effectively maintaining water systems. -40 On-going water user-education programs	-Impact evaluations. -Socio-economic surveys. -Reports from implementing institutions	**Assumptions for achieving purpose:** -CARE/other PVOs implement project effectively. -Community groups maintain high level of motivation and dedication. -Health education influences populace.
Outputs: -Community water systems built/rehabilitated. -Local community groups formed/reinforced. -Water user education program implemented. - Pilot sanitation/latrine program implemented	**Magnitude of Outputs:** -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.	-TA reports. -GOH, AID, SNEP and PVO records. -Field observations. -JPIPs.	**Assumptions for achieving outputs:** -No system design impasses. -Enthusiastic response by community groups. -Training influences target group.
Inputs:	**Implementation Target (Type and Quantity)**	-Project records and reports. -PVO, GOH and USAID records and financial reports. -Observational visits. -JPIPs.	**Assumptions for providing inputs:** -AID and GOH funds available on schedule. -High quality TA and PVO personnel can be located and hired. -No difficulties in importing equipment.

Inputs	AID	GOH	Community
-Water systems constructed/rehabilitated	$4,000,000	-0-	$900,000
-Health & Sanitation	500,000	-0-	-0-
-Vehicles/equip./minor construction	180,000	125,000	-0-
-Technical Assistance	1,000,000	-0-	-0-
-Project Evaluation	70,000	-0-	-0-
-Training	150,000	-0-	-0-
-SNEP Support Costs	-0-	975,000	-0-
-Health & Water Organization Costs	100,000		-0-
-Total	$6,000,000	1,100,000	900,000

June 1, 1984

Mr. Harlan Hobgood
Director
USAID/Haiti
Port-au-Prince

Dear Harlan,

As you are aware, CARE has been working in collaboration with your staff on the preparation of a project paper for COMMUNITY WATER SYSTEM DEVELOPMENT. It is our hope that a cooperative agreement grant to finance the implementation of this water project for approximately 40 communities located in the southern peninsula can be funded by USAID. The project paper has been finalized and the cooperative agreement, likewise, will be finalized shortly.

The Executive Director of CARE, Dr. Philip Johnston, will be in Port-au-Prince for the American Counsel of Foreign Voluntary Agencies meeting in mid June; I think that this would be an appropriate occasion for Dr. Johnston to sign the project documents with you and if appropriate, with Ambassador McManaway. Therefore, if you are in agreement, it would facilitate matters if you could finalize the existing documentation in the next week or 10 days so that my headquarters in New York can review it prior to the actual signing ceremony.

Only approximately 14% of Haiti's population has access to clean water and most of these people are located in urban areas. The people living in rural Haiti often obtain the water needed for household use from contaminated sources. This is a leading cause of many of the intestinal disorders which result in one third of all infant and child deaths before the age of five. CARE proposes to work closely with the population of 40 communities located on Haiti's southern peninsula and construct water systems that will provide the inhabitants with access to clean water. The general method of construction will be to "cap" a spring at a source higher than the village and then pipe the water into the village where it will flow from fountains located in close proximity to their homes.

CARE will assign fully qualified engineers and a health educator as well as all the necessary support personnel to insure that each system is completed as per the accepted international standards for clean water supply.

.../...

At the same time, water committees will be created in each community and local personnel trained so that normal maintenance and control can be carried out. The individual water committees will be responsible for the operation of each village water system.

It is important to note that during the implementation of this project approximately 240,000 man/days of employment will be generated.

It is estimated that CARE will require a funding level of approximately $6 million to implement the project over a 4 year period.

The requested AID grant will finance the needed material and equipment, expatriate management, technical consultants, vehicles, and administrative costs.

We look forward to your early approval.

Sincerely,

Lawrence C. Holzman
Director
CARE-Haiti

LCH/jw

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO HAITI

For U.S. MAIL:
USAID / HAITI
Department of State
Washington, D.C. 20520
For INTERNATIONAL MAIL:
USAID / HAITI
P.O. Box 1634
Port-au-Prince, Haiti, W.I.

CERTIFICATION PURSUANT TO SECTION 611 (E) OF THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Harlan H. Hobgood, the Principal Officer of the Agency for International Development in Haiti, having reviewed the Project Paper and having taken into account, among other factors, the maintenance and utilization of projects in Haiti previously financed or assisted by the United States, do hereby certify that in my judgment the Cooperative for American Relief Everywhere (CARE) and the National Service for Potable Water (SNEP) have both the financial capability and human resources capability to effectively maintain and utilize the proposed Community Water Systems Development Project.

Harlan H. Hobgood
Director

5C(1) - COUNTRY CHECKLIST

Listed below are statutory criteria applicable generally to FAA funds, and criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBLITY

1. FAA Sec. 481. Has it been determined that the government of the recipient country has failed to take adequate steps to prevent narcotic drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully? — No.

2. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government? — N.A.

3.	FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	N.A.
4.	FAA Sec. 532(c), 620(a), 620(f), 620D; FY 1982 Appropriation Act Secs. 512 and 513. Is recipient country a Communist country? Will assistance be provided to Angola, Cambodia, Cuba, Laos, Vietnam, Syria, Libya, Iraq, or South Yemen? Will assistance be provided to Afghanistan or Mozambique without a waiver?	No.
5.	ISDCA of 1981 Secs. 724, 727 and 730. For specific restrictions on assistance to Nicaragua, see Sec. 724 of the ISDCA of 1981. For specific restrictions on assistance to El Salvador, see Secs. 727 and 730 of the ISDCA of 1981.	N.A.
6.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property?	No.

87

7.	FAA Sec. 620(l). Has the country failed to enter into an agreement with OPIC?	No.
8.	FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. (a) Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters?	No.
	(b) If so, has any deduction required by the Fishermen's Protective Act been made?	N.A.
9.	FAA Sec. 620(q); FY 1982 Appropriation Act Sec. 517. (a) Has the government of the recipient country been in default for more than six months on interest or principal of any AID loan to the country? (b) Has the country been in default for more than one year on interest or principal on any U.S. loan under a program for which the appropriation bill appropriates funds?	No. No.
10.	FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the amount of foreign exchange or other resources which the country has spent on military equipment? (Reference may be made to the annual "Taking into	This is a development assistance grant.

Consideration" memo: "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)

11. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?

No.

12. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? (Reference may be made to the Taking into Consideration memo.)

Haiti is not in arrears.

13. FAA Sec. 620A; FY 1982 Appropriation Act Sec. 520. Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed an act of international terrorism? Has the country aided or

No.

abetted, by granting sanctuary from prosecution to, any individual or group which has committed a war crime?

14. FAA Sec. 666. Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA? — No.

15. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it transferred a nuclear explosive device to a non-nuclear weapon state, or if such a state, either received or detonated a nuclear explosive device, after August 3, 1977? (FAA Sec. 620E permits a special waiver of Sec. 669 for Pakistan.) — No.

16. ISDCA of 1981 Sec. 720. Was the country represented at the Meeting of Ministers of Foreign Affairs and Heads of Delegations of the Non-Aligned Countries to the 36th General Session of the General Assembly of the U.N. of Sept. 25 and 28, 1981, and failed — N.A.

to disassociate itself from the communique issued? If so, has the President taken it into account? (Reference may be made to the Taking into Consideration memo.)

17. ISDCA of 1981 Sec. 721. See special requirements for assistance to Haiti.

Special requirements have been met.

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria.

a. FAA Sec. 116. Has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy?

No.

2. Economic Support Fund Country Criteria

a. FAA Sec. 502B. Has it been determined that the country has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, has the country made such significant improvements in its human rights record that furnishing such assistance is in the national interest?

No.

b. ISDCA of 1981, Sec. 726(b). If ESF is to be furnished to Argentina, has the President certified that (1) the Govt. of Argentina has made significant progress in human rights; and (2) that the provision of such assistance is in the national interests of the U.S.? N.A.

c. ISDCA of 1981, Sec. 726(b). If ESF assistance is to be furnished to Chile, has the President certified that (1) the Govt. of Chile has made significant progress in human rights; (2) it is in the national interest of the U.S.; and (3) the Govt. of Chile is not aiding international terrorism and has taken steps to bring to justice those indicted in connection with the murder of Orlando Letelier? N.A.

5C(2) PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only: B.1. applies to all projects funded with Development Assistance Funds, B.2. applies to projects funded with Development Assistance loans, and B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 1982 Appropriation Act Sec. 523; FAA Sec. 634A; Sec. 653(b).

(a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?

The Project is described in the FY 1985 Congressional Presentation.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,00, will there be

Yes

(a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance? — N.A.

4. FAA Sec. 611(b); FY 1982 Appropriation Act Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973? (See AID Handbook 3 for new guidelines.) — Yes.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project? — Yes.

6.	FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	No.
7.	FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	a. N.A. b. Yes c. Yes d. N.A. e. N.A. f. N.A.
8.	FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	Technical assistance services and equipment will be procured through and for U.S. based Private Voluntary Organizations.

a5

9.	FAA Sec. 612(b), 636(h); FY 1982 Appropriation Act Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	About 20% of the project total costs will be provided by GOH and local communities.
10.	FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	No.
11.	FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes.
12.	FY 1982 Appropriation Act Sec. 521. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	N.A.
13.	FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16? Does	Yes.

the project or program take into consideration the problem of the destruction of tropical forests?

14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)? — N.A.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and

a. Significantly.

b. Significantly.

otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

c. Significantly.

d. Indirectly.

e. N.A.

b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?

Yes.

c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?

Yes.

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activitiy with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?

Haiti is a "relatively least developed country".

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than $100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character."	Yes. Haiti is a RLDC
f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	Yes.
g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage	The Project will foster development of community-based associations which will manage self-financing water systems.

institutional development; and supports civil education and training in skills required for effective participation in governmental processes esential to self-government.

2. Development Assistance Project Criteria (Loans Only) — N.A.

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

c. ISDCA of 1981, Sec. 724 (c) and (d). If for Nicaragua, does the loan agreement require that the funds be used to the maximum extent possible for the private sector? Does the project provide for monitoring under FAA Sec. 624(g)?

3. Economic Support Fund Project Criteria — N.A.

a. FAA Sec. 531(a). Will this assistance promote economic or political

stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?

c. FAA Sec. 534. Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives?

d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

5C(3) - STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?	Yes.
2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes.
3. FAA Sec. 604(d). If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?	Yes.
4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If offshore procurement of agricultural commodity or product is to be	N.A.

financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.)

5. FAA Sec. 604(g). Will construction or engineering services be procured from firms of countries otherwise eligible under Code 941, but which have attained a competitive capability in international markets in one or these areas? — No.

6. FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates? — No.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? If the facilities of other — Yes.

Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available? — Yes.

9. FY 1982 Appropriation Act Sec. 504. If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States? — Yes.

B. Construction

1. FAA Sec. 601(d). If capital (e.g., construction) project, will U.S. engineering and professional services to be used? — Yes.

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable? — Yes.

3. FAA Sec. 620(k). If for construction of productive enterprise, will agggregate value of assistance to be furnished by the U.S. not exceed $100 million (except for productive enterprises in Egypt that were described in the CP)? N.A.

C. Other Restrictions

1. FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? N.A.

2. FAA SEc. 301(d). If fund is established solely by U.S. contributions and administed by an internatioal organization, does Comptroller General have audit rights? N.A.

3. FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries? Yes.

4. Will arrangements preclude use of financing: N.A.

a. FAA Sec. 104(f); FY 1982 Appropriation Act Sec. 525: (1) To pay for performance of abortions as a method of family

planning or to motivate or coerce persons to practice abortions; (2) to pay for performance of involuntary sterilization as method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization; (3) to pay for any biomedical research which relates, in whole or part, to methods or the performance of abortions or involuntary sterilizations as a means of family planning; (4) to lobby for abortion?

b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property? — Yes.

c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs? — Yes.

d. FAA Sec. 662. For CIA activities? — Yes.

e. FAA Sec. 636(i). For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained? — Yes.

f. FY 1982 Appropriation Act, Sec. 503. To pay pensions, annuities, retirement pay, or — Yes.

adjusted service compensation for military personnel?

g. FY 1982 Appropriation Act, Sec. 505. To pay U.N. assessments, arrearages or dues? — Yes.

h. FY 1982 Appropriation Act, Sec. 506. To carry out provisions of FAA section 209(d) (Transfer of FAA funds to multilateral organizations for lending)? — Yes.

i. FY 1982 Appropriation Act, Sec. 510. To finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields? — Yes.

j. FY 1982 Appropriation Act, Sec. 511. Will assistance be provided for the purpose of aiding the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights? — No.

k. FY 1982 Appropriation Act, Sec. 515. To be used for publicity or propaganda purposes within U.S. not authorized by Congress? — Yes.

PARTIAL LIST OF DONOR AGENCIES

POTABLE WATER SYSTEMS DEVELOPMENT

Action Missionnaire Globale

Blue Ridge Christian Home

Catholique Relief Services

Church World Service

Compassion International

Convention Baptiste D'Haiti

Foster Parents Plan

Free Methodist Church

Haiti Gospel Mission

Oriental Mission Society

Save the Children Alliance

Seventh Day Adventists

Union Evangélique Baptiste d'Haiti

Water for Life

West Indies Self Help (WISH)

World Hunger Relief

ACTION PLAN FOR COMMUNITY DEVELOPMENT

ACTIVITIES DESCRIPTION	GOALS OR JUSTIFICATION
I. Preparation	
a) promoters' training in methods and in technical aspects of community participation (CP).	- necessary even if promoters are already trained in C.P. methods
b) motivation of the whole Project Team (including technicians) in C.P. component	- identification of existing structures, on-going activities, typical problems in the project zone
II. First Meeting with the Communities	
a) first meeting with the local authorities, CAC, religious leaders, extension agents...	- importance of first meetings in establishing relations between Team and community
III. Water Association (CAEP) Creation	
a) explaining CAEP's role; CAEP members' tasks b) explaining technical aspects of the water supply system c) training CAEP members d) election of officers e) establishing rules	
IV. Community Motivation	
community motivation must be conducted by promoter trained in audio-visual techniques, and by user/health educator	- useful even if the community seems already motivated (differences between leaders' attitudes and other residents' attitudes)

V. Attitudes Survey

Observational/sociological surveys to be conducted by Health Educator and COS. Surveys will be reviewed by other CARE and AID staff and analyz ed with CAEP

- COS and health educator as well as Committee members must have insight into the social environment
- surveys are a means to sensitize CAEP members and beneficiaries
- it is useful to measure some parameters for the project monitoring and evaluation

VI. System Building

a) CAEP helps organize labor teams,
b) determination of community counterpart contribution;
c) CAEP collect dues,
d) recruiting workers from community by CAEP and project team

VII. Project Monitoring

- operation and maintenance are under the responsibility of CAEP
- COS and the health educator responsible for spot supervision (periodic visits)
- CARE, SNEP and CAEP's respective tasks must be defined as regards to maintenance

ANNEX 11

TRAINING PLAN

A further delineation of project training requirements and strategies is as follows:

1. Community Organization/Construction

As the agency responsible for the installation of the water and related systems, CARE has two major training requirements: training of PCV and new hire local community organization promoters (COPS) and the training of two new construction teams. All new-hires will be sensitized to needs and conditions in rural Haiti (see further discussion below).

Training of Promoters

The COS and the local promoters will receive a 2-3 week in-house orientation program focussing, at first on CARE's procedures and individual job-requirements and later on field specific activities, including the various steps required for the formation of water associations.

Training of Construction Team

The new construction teams will each consist of seven persons, including a field engineer. Also additional personnel will be hired to supplement the existing construction team. All new personnel will be given a 3-4 day orientation program developed and given by CARE. Promoters will also attend the orientation, the objectives of which will include the following:

- Discuss goals and objectives of the Project
- Explain the various Project components (water associations, user education, etc.)
- Define each person's role and responsibility
- Build a sense of team-work

- Discuss methods and techniques of constructing water systems (primarily gravity-fed)
- Clarify the roles of AID, CARE, SNEP and the community
- Present the entire implementation plan
- Visit a site completed under the CBI project.

SNEP engineers and the new CARE teams will receive on-the-job training with an experienced team in the methods of construction of captages, laying of pipe, construction of break pressure tanks, reservoirs and public fountains.

2. Community-based Training

This project has been designed to include a strong community participation component in an effort to develop within the community the ability to maintain the system and maximize the social benefits. There are three primary training needs at the community level:

a. The training of local plumbers and caretakers to operate and maintain the system

b. The creation of a water association to assist in mobilizing the community for systems construction and to take responsibility for the system after it is in place.

c. Dissemination of the user-education message.

1) Local Plumbers

Both SNEP and CARE have adopted the practice of training local plumbers using an on-the-job training (OJT) approach during the construction phase. Through direct collaboration with the CARE construction team, the plumber acquires many of the necessary skills required to maintain a system over the long term.

The use of local plumbers to do routine maintenance tasks is consistent with the project's objective to make the community responsible for the system. The OJT approach has also worked well as a model for training local plumbers. In the selection of plumbers the water committee usually chooses individuals with strong community ties, who are unlikely to leave once they are trained. Where possible, plumbers are selected who already have some basic technical skills. At a minimum, some familiarity with the use of basic tools and some interest in repair and maintenance is required.

A review of gravity systems requirements indicates that the primary maintenance tasks are the following:

- Repair the captage if there is leakage
- Clean and disinfect the captage when necessary
- Check the external drainage of the captage to ensure that surface flow is not entering
- Inspect the break pressure tank to see if sediment is present
- Clean and disinfect the reservoir
- Inspect the pipeline for leaks, expecially at the joints
- Replace broken pipe when necessary
- Monitor pipes, especially galvanized steel for a build-up of
- deposits in the interior of the pipe
- Repair or replace valves
- Check to ensure adequate drainage around the public fountains
- Repair or replace faucets

Although the frequency and difficulty of carrying out these tasks will vary, the list is substantial enough to warrant careful attention to the training of the local plumbers. Site visits during the preparation of the PP indicated a range of ability by the local plumbers to perform the tasks. This variation could be due to several factors including the selection of the plumber and the quality of his training.

Another aspect of the OJT method of training plumbers must be considered: the importance of ensuring that the plumber can perform all relevant tasks required after system construction.

In view of the importance of the training of plumbers and the variability in results thus far under previous projects, a more systematic approach is recommended to improve the OJT approach currently in use. Three new elements are suggested:

1. A detailed task analysis by the Resource Training Center (RTC) of a plumber's responsibilities.

2. Based on the task analysis RTC should develop the following materials:

   a) A short (two week) program no longer than 2-3 hours per day to be delivered by the CARE plumber on site at the start of the construction phase.

   b) A checklist of the tasks the plumber must be able to perform at the end of the construction.

3. RTC should thereafter provide a short orientation (1-2 days) to the CARE plumber on how to use the materials cited above.

The task analysis is a standard procedure for determining just what an individual is required to do. It will assure that all the tasks that the plumber must perform are defined.

The short training program cited above is designed to provide an overview of the construction process, familiarize the plumber with the necessary tools, go over the tasks that will be required of him, and explain his responsibilities during construction. It is suggested that this training program be conducted for a minimum of two candidates and that the best one be selected at the end. If this process is followed, the water committee and candidates must be aware on what basis the selection will be made.

The training materials for this program should be developed by RTC and each CARE plumber should be trained by RTC on how to use these materials.

A one to two day orientation could be held at RTC around the same time as the CARE orientation for the construction teams.

The steps recommended above will systematize the plumber training and assure a reasonable measure of quality control.

2) Water Associations

The responsibility for organizing and training the water associations will lie with the COS in cooperation with CARE and SNEP. During the Phase III project, the CARE promoter assisted communities in forming water committees and in the definition and implementation of tasks.

Site visits during the preparation of this Project Paper were made to communities that had worked with both SNEP and CARE promoters. In all cases the water committees seemed to have carried out their functions very well during the construction phase. They had organized unskilled labor, participated in location of the public fountains, and collected small fees from the community. However, the committees seemed to be less prepared to take on the responsibility for the water system after its completion . There was a lack of clarification of management and educational roles. No committees appeared to have an organized program for user education or any links to health workers in the community. Some committees were unclear on their relationship to SNEP, especially in regards to maintenance. Thus clarifying the committee's role is essential given the central role it has in managing, maintaining and operating the system over the long term.

The training implication is that clearly equal, if not more, attention must be paid to preparing the committee for responsibilities after construction. The following measures, therefore, are suggested:

- Hiring of sufficient local promoters, i.e. a minimum of one promoter per construction team.

- During orientation of promoters, emphasis must be placed on importance of preparation of the water committee for its roles during and after system construction.

- During the promoter workshop to be held after all the promoters have been hired, skills must be provided for effective communication to committees of their post-construction responsibilities.

The current approach to training water associations involves periodic site visits. The CARE promoter indicated that he visited communities as often as thirty times from the beginning of a project to inauguration of a system, this over a period of six months to a year. This approach should of course be continued. Once the system is constructed the promoter must continue to collaborate with the committee to ensure its capability to carry out its maintenance and management responsibilities. Those visits should take place monthly during the first three months following construction and every three months thereafter.

3) Water user education

The implementation of water user education activities, including training, is discussed in the project description section of this paper. The basic approach is summarized as follows:

An assessment of the knowledge on the subject and skills of members of the water association.

An assessment of the existing health education activities which may exist in the community or influence area.

Design of the training program.

Delivery of the training

Monitoring of the results.

The health educator will base the assessment and design of the program on the major aspects of environmental sanitation, as detailed in "water user education" subsection under Detailed Project Description.

Each community will thus have, in effect, a customized training program in user education. This approach keeps the training activities in the community, allows flexibility in meeting individual community needs and builds a close working relationship among the involved parties.

The Project Coordinator will determine, based on the advice of various CARE team members, during the early stages of implementation, what other short-term training requirements should be met. Additional training, not funded or only partially funded by the project, may be arranged through the Water and Sanitation for Health (WASH) Project out of AID/W.

Initial sites for consideration (and Comments thereon)

1. Laborde

This would be a major project serving 25,000 to 30,000 people with 30 to 40 km of total pipeline. A source should be available above Camp Perrin and a suitable one will be located in early April. This project would require more than one year for completion.

2. Fond Deron

Due to the presence of a variety of community groups, this project has potential for good community participation.

3. Cayes-Jacmel

The reconstruction of this system is an urgent need. Community organization will be greatly facilitated by the presence of Foster Parents Plan in the area.

4. Morrisseau

This community can be served by Source Corail or the source used for Aquin. The two alternatives should be compared and evaluated. The terrain near source Corail may make pipe installation very difficult.

5. Morne St. George

The dry season flow of the source must be verified prior to actual consideration of the site.

6. Lamandou

The extension of an existing system to serve this area would be relatively uncomplicated.

7. Habitation Bossier

The adequacy of the source must be determined.

8. Ducis Extension

This may involve an extension of the existing (preferred option), or a parallel, pipeline.

9. Petit Trou de Nippes

Rehabilitation and extension of non-functioning system, to serve about 8,000 people, is possible.

10. Maniche

Two low-lying excellent springs provide water for communities of Maniche, Melon and Durie; a total of 23,000 in the environs. To provide water to these communities, a combination photovoltaic-gravity system may be required.

11. Labiche

Source Colette, with an estimated flow of 10 l/s, is a low-lying spring. A photovoltaic-gravity system could provide water to the community of 2,000.

NATIONS UNIES
Projet HAI 79-001

REPUBLIQUE D'HAITI

FIGURE 3

PRECIPITATIONS et RUISSELLEMENTS

0 10 20 30 40 50 km
ECHELLE 1/1.000.000

A. RUISSELLEMENTS MESURES SUR UNE PERIODE COMMUNE DE 17 ANS (Oct.1923 - Sept 1940)*

N° sur carte	STATION DE JAUGEAGES	RIVIERE	N° BASSIN VERSANT	ALTITUDE STATION (m)	SUPERFICIE BV Station (km2)	PLUIE MOY ANNUELLE (mm)	DEBIT MOYEN ANNUEL m3/s	DEBIT MOYEN ANNUEL mm	DEBIT SPECIF (l/s km2)	RUISSELLEMENT (%)
1	ROCHE HALEINE	LIMBE	4	50	177	2 033	4 35	1 172	37 1	57 6
2	PONT PAROIS	Gde RIVIERE DU NORD	2	2	600	1 687	8 18	432	13 7	25 6
3	CHABERT	TROU DU NORD	1c	15	110	1 461	0 98	281	8 9	19 2
4	OUANAMINTHE	MASSACRE	1a	35	400	1 678	5 41	426	13 5	25 4
5	GROS MORNE	TROIS RIVIERES	6	198	271	1 775	6 32	735	23 3	41 4
6	MIREBALAIS	ARTIBONITE	11a	95	7 463	1 782	87 64	370	11 7	20 8
7	VERRETTES	BOIS	11b	90	60	1 208	2 44	1 283	40 7	98 0
8	PASSE FINE	LA THEME	11b	100	299	1 416	4 60	482	15 3	34 0
9	PONT PETION	FER A CHEVAL	11ab	155	482	1 985	11 77	769	24 4	38 7
10	HINCHE	GUAYAMOUC	11a1,2	38	1 877	1 570	24 25	407	12 9	25 9
11	SAINT RAPHAEL	BOUYAHA	11a2	372	135	1 628	3 60	839	26 6	51 6
12	PONT BENOIT	ESTERE	10	20	133	1 766	4 01	949	30 1	53 1
13	BUISSONNIERE	MOMANCE	15b	70	238	1 883	5 69	754	23 9	40 0
14	BASSIN GENERAL	GRISE	13a	220	276	1 898	4 13	470	14 9	24 8
15	LA GORGE	BLANCHE	13b	240	170	1 866	2 06	382	12 1	20 5
16	MESSAYE	TORCELLE	12d	55	79	1 189	1 17	467	14 8	39 3
17	BASSIN PROBY	COURJOLLES	12c	90	83	1 140	1 26	479	15 2	42 0
18	JACMEL	Gde RIVIERE DE JACMEL	17	3	506	1 628	5 27	328	10 4	20 1
19	CAMP PERRIN	Gde RAVINE DU SUD	21	200	65	3 368	4 93	2 390	75 8	81 0
20	CAVAILLON	CAVAILLON	20	20	311	2 405	9 50	962	30 5	40 0
21	NIPPES	Gde RIVIERE DE NIPPES	27	20	454	1 079	4 78	331	10 5	19 7
22	LES CAYES	ISLET	21	10	93	2 416	2 75	930	29 5	38 5
23	PASSE RANJA	GRANDE ANSE	24	40	550	2 894	25 91	1 485	47 1	51 3

B. RUISSELLEMENTS MESURES SUR DES PERIODES VARIABLES ENTRE 1923 ET 1966*

24	PONT CHRISTOPHE	(8 ans) LIMBE	4	28	252	1 950	6,85	857	27 2	44 0
25	GRISON GARDE	(9 ") GALLOIS	3	30	23	1 600	0 45	640	20 1	40 0
26	PASSE JOLY	(9 ") ENNERY	9	148	122	1 200	0 75	194	6 2	16 2
27	PLAISANCE	(8 ") TROIS RIVIERES	6	338	51	1 800	0 95	587	18 6	32 6
28	PONT TOUSSAINT	(7 ") MONTROUIS	12b	20	166	1 350	1 77	336	10 7	24 9
29	PONT SONDE	(19 ") ARTIBONITE	11	18	8 695	1 750	102 60	372	11 8	21 3
30	CORBAY I	(5 ") SAINT MARC	12a	72	94	1 380	0 39	131	4 2	9 5
31	CORBAY II	(5 ") CORBAY	12a	78	78	1 380	0 21	85	2 7	6 2
32	ARCAHAIE	(13 ") MATHEUX	12c	130	68	1 200	1 46	677	21 5	56 .
33	MARIGOT	(4 ") PLANTILS	16d	18	130	1 800	2 29	556	17 6	30 9
34	TORBECK	(7 ") RAVINE DU SUD	21	89	89	2 400	2 43	861	27 3	36 9
35	PONT OLIVIER	(5 ") MIRAGOANE	28	50	152	1 850	0.79	165	5 2	8 9

(17) Station de jaugeage et son numéro sur les tableaux A et B

Autres stations de jaugeage (mesures intermittentes)

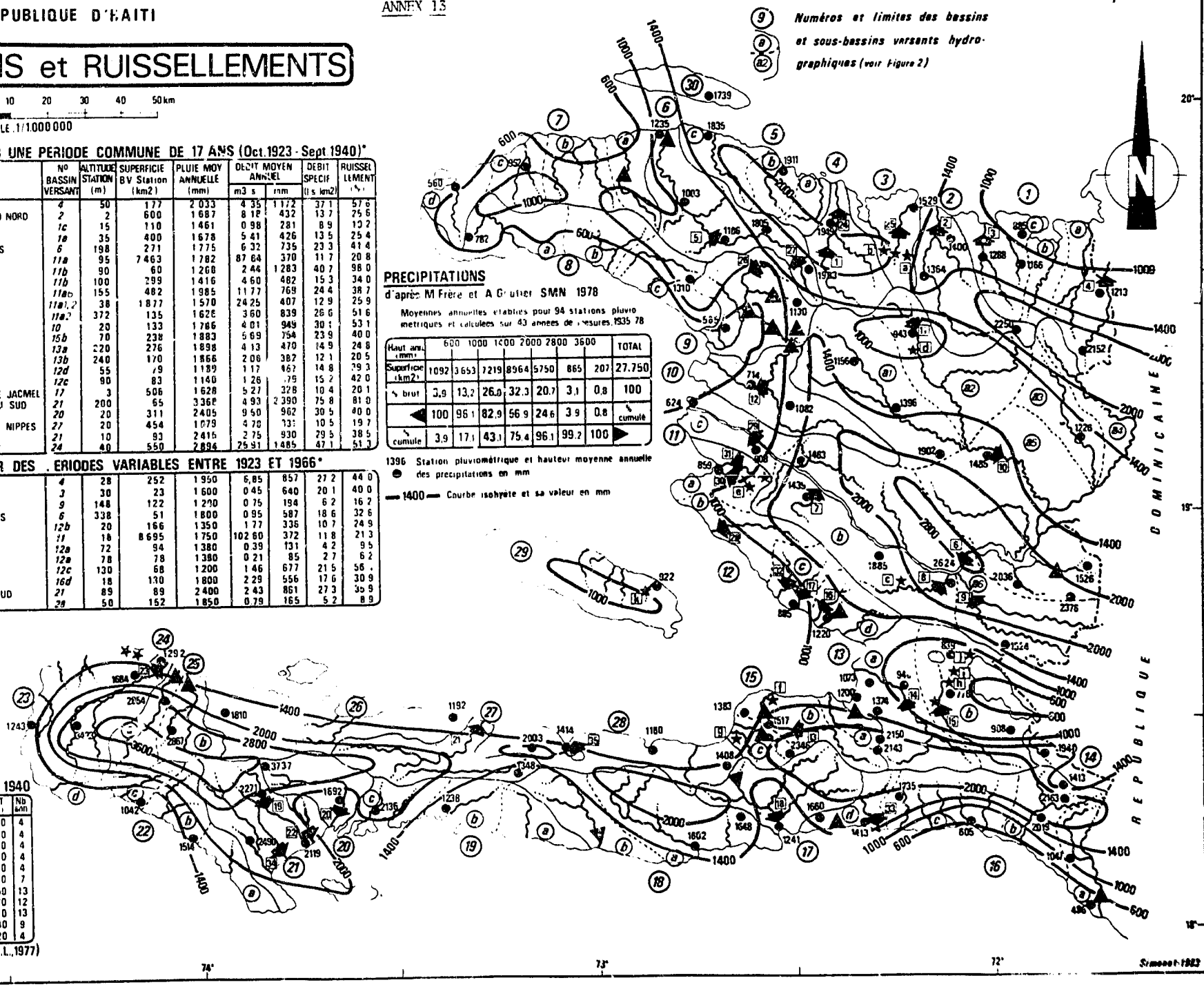
a Source jaugée et son numéro sur le tableau ci dessous

Rivieres

*SOURCES JAUGEES ENTRE 1925 ET 1940

N° Carte	DENOMINATION	N° bassin versant	ALTITUDE (m)	DEBIT (l/s)	Nb ans
a	PASSE [illegible]	3	90	60	4
b	EGLISE	[illegible]	105	80	4
c	SAUT D'EAU	11b	420	340	4
d	MERLINQUE	11a	378	110	4
e	LA FORTUNE	12a	125	240	4
f	DES PERES	15b	11	190	7
g	MADAME VERGUIER	15c	2	150	13
h	DESPUZEAU	13b	42	670	12
i	PALMISTE CLAIR	13b	45	110	13
j	MANNEVILLE	13b	15	540	9
k	ANSE A GALETS	29	370	20	4

* d'après Projet I.R.H., HAITI/ACDI (L.G.L., 1977)



Partial List of Potential Sites

South

	Commune	Rural Section	Localité	Source name	Flow l/s
1.	Chantal	7e Canon	Golmin	Golmin	6.0
2.	Torbeck	4e Moreau	La Hatte	Bellevue	20
3.	Port à Piment	1ere Paricot	Guillaume	Tete Source	8.4
4.	Tiburon	4e Loby	Tiburon	Jupiter	5.6
5.	Chardonnière	2e Déjoie	Fière Ville	Ti Source	2.
6.	Chardonnière	2e Déjoie	Dussape	Fière Ville	6.
7.	Cavaillon	1e Boileau	Grand Place	Chaunette	-
8.	St. Louis du Sud	4e Zanglais	St. Georges	Jacquet	11.2
9.	Miragoane	4e Pemerle	Jovange	Jovange	10.
10.	Petit Trou de Nippes	5e aux pains	Aux pains	Ca-Jaques	8.2
11.	Petit Trou	5e aux pains	Gauthier-Civil	Gauthier	3.6
12.	Aquin				
13.	Cavaillon	12e Boulmier	Boulmier	Ti Jean	3.15
14.	St. Louis du Sud	4e St. Georges	St Pierre	Ti Baiser	4

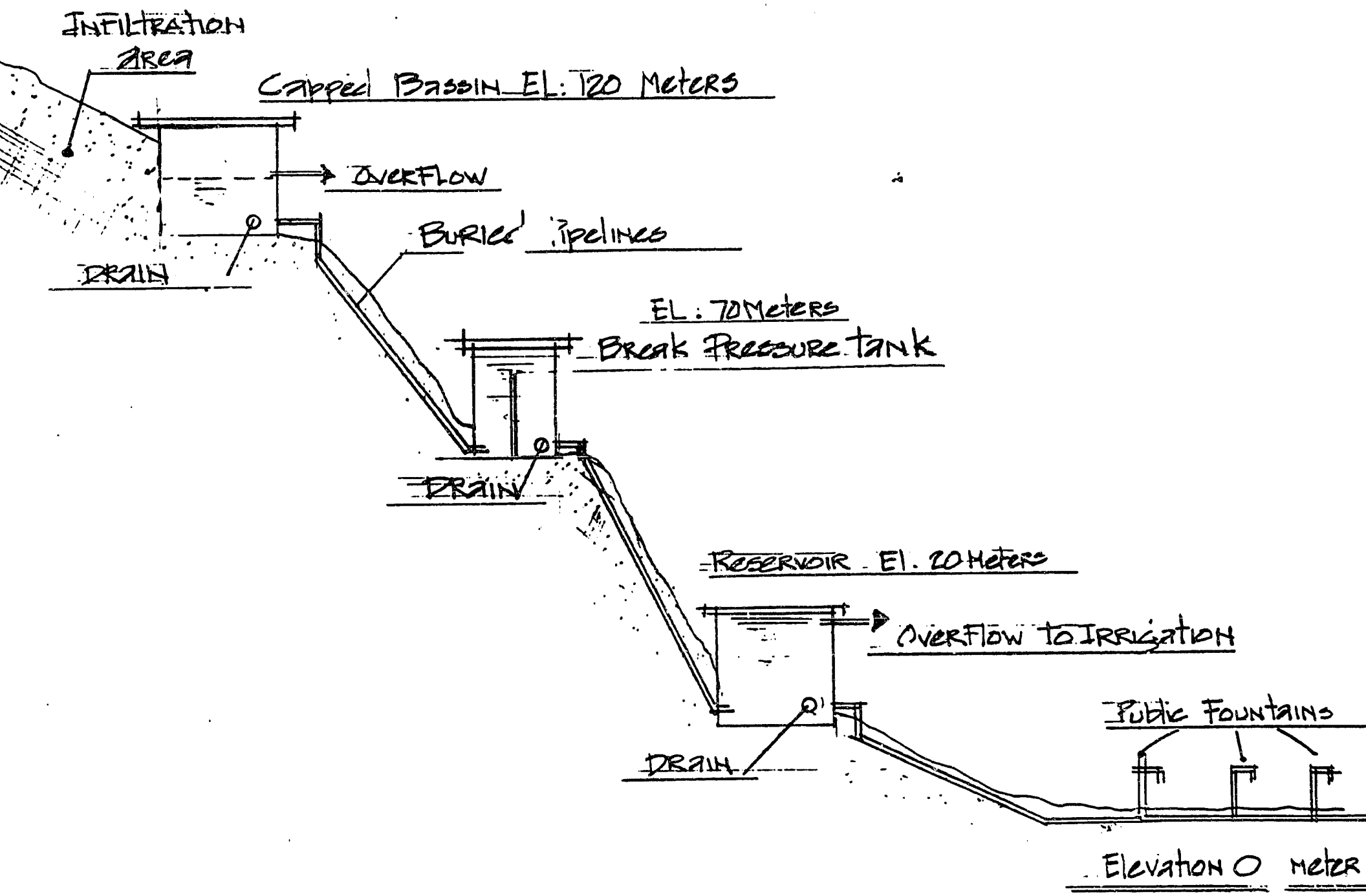
Grand Anse

1.	Roseaux	2e Fond Cochon	Alerte	Nan Alerte	11.6
2.	Roseaux	2e Fond Cochon	Zabricot	Zabricot	8
3.	Roseaux	2e Fond Cochon	Francique	Francique	2
4.	Roseaux	2e Fond Cochon	Pourcine	Zorange	8.53
5.	Pestel	5e Fond Deron	Fond Deron	Morne Diable	3
6.	Pte Rivière de Nippes	2e Chaulette	Chaulette	Chaulette	20
7.	Anse à Veau	7e Sault Baril	Sault Baril	Nan Sault	60
8.	Jérémie	3e Guinaudée	Gatineau	Mouche André	3.92
9.	Pte Rivière de Nippes	1e Fond des Lianes	Abraham	Belle Roche	2.1
10.	" " " "	3e Sillègue	Sillègue	Tête Source	9.8
11.	Anse à Veaux		Tournade	Valade	
12.	" "		Gros Marin	Camba	

South-East

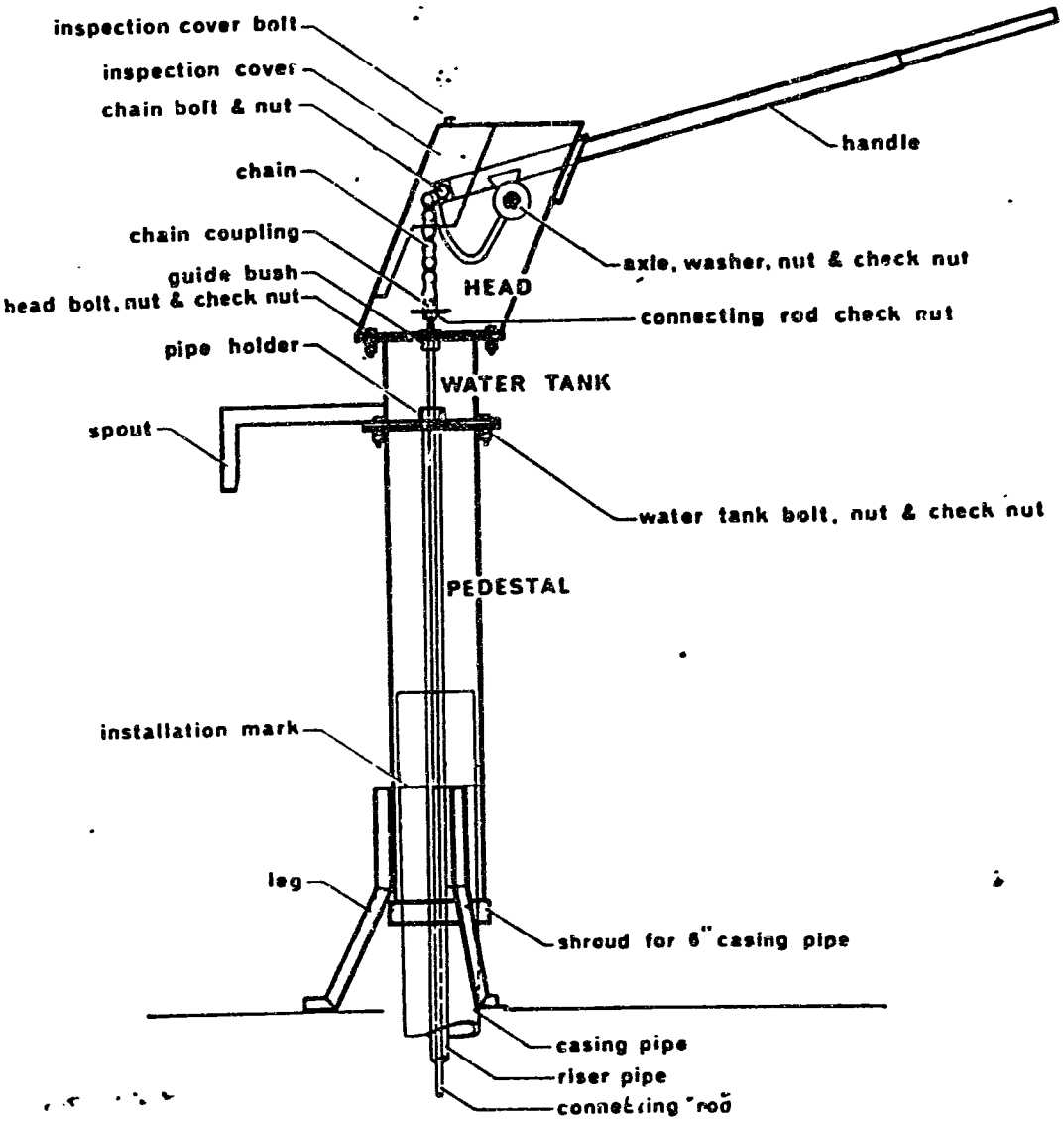
1.	Cayes-Jacmel	1e Ravine Normand	Mahotière	Lexy	2.4

ANNEX 15. TYPICAL GRAVITY-FED WATER SYSTEM



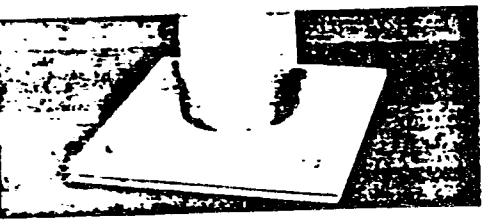
Note: In certain installations, depending upon water flow and elevation, a reservoir and/or break pressure tank(s) will not be required.

INDIA MARK-II HANDPUMP

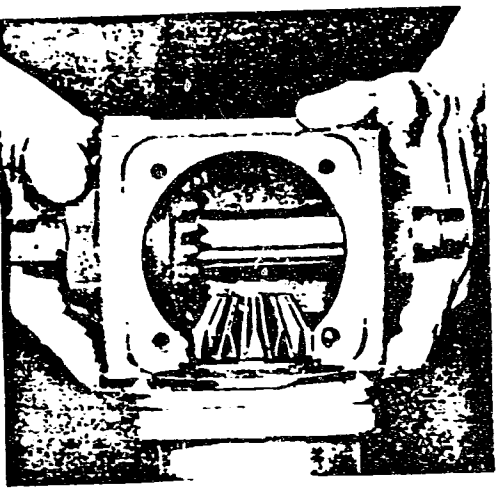


ANNEX 17 - HAND PUMP DESIGNS

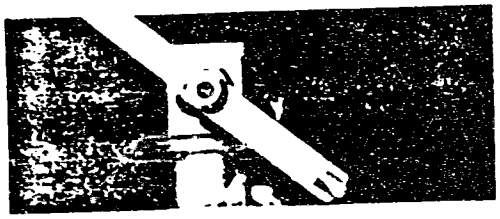
MOYNO POSITIVE DISPLACEMENT PUMP



Pump stand fabricated from heavy steel plate and pipe. Will not crack or break during shipping or installation. Will withstand severe abuse in the most rugged operating conditions.

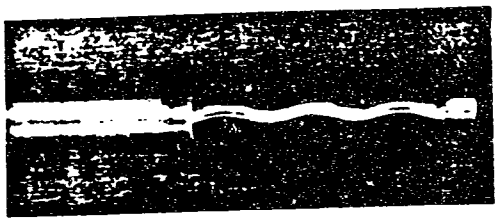


Heavy duty gearbox incorporates a right angle gear arrangement in a rugged housing. Gears are machined and hardened steel, mounted on high strength steel shafts. Tapered roller bearings provide precise gear alignment and long life. Sealed housing along with double lip seals on both handle and output shafts prevents lubricant leaking.

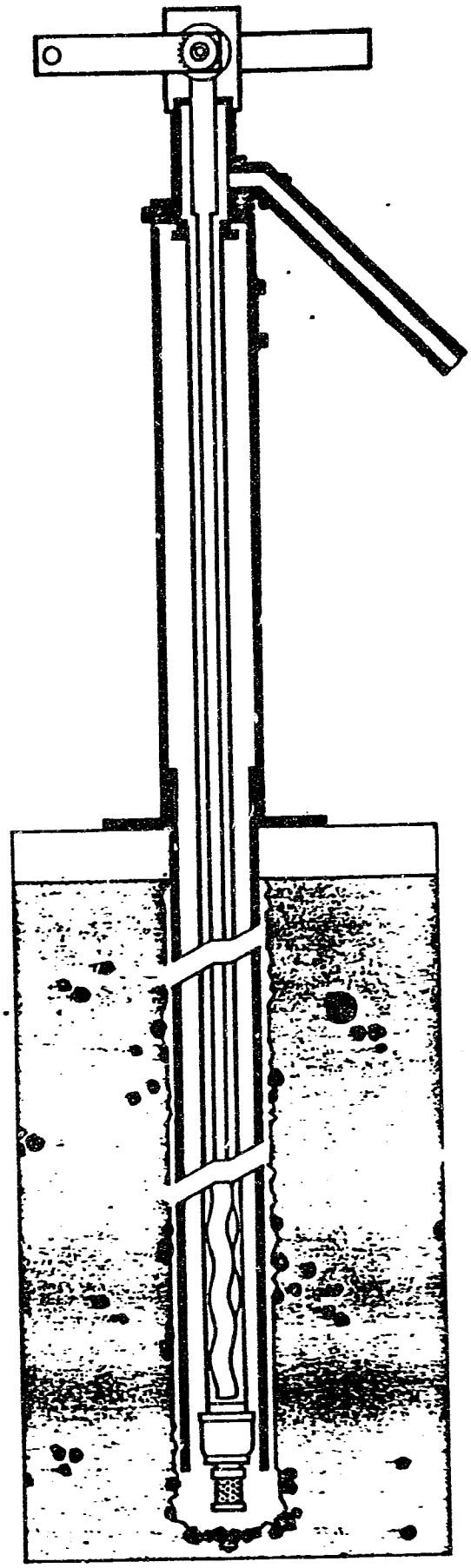


Rugged steel handle arms are keyed and bolted to the handle shaft. 7/8" diameter handles permanently attached to handle arms.

Special socket head bolts used throughout to minimize vandalism or pilferage.



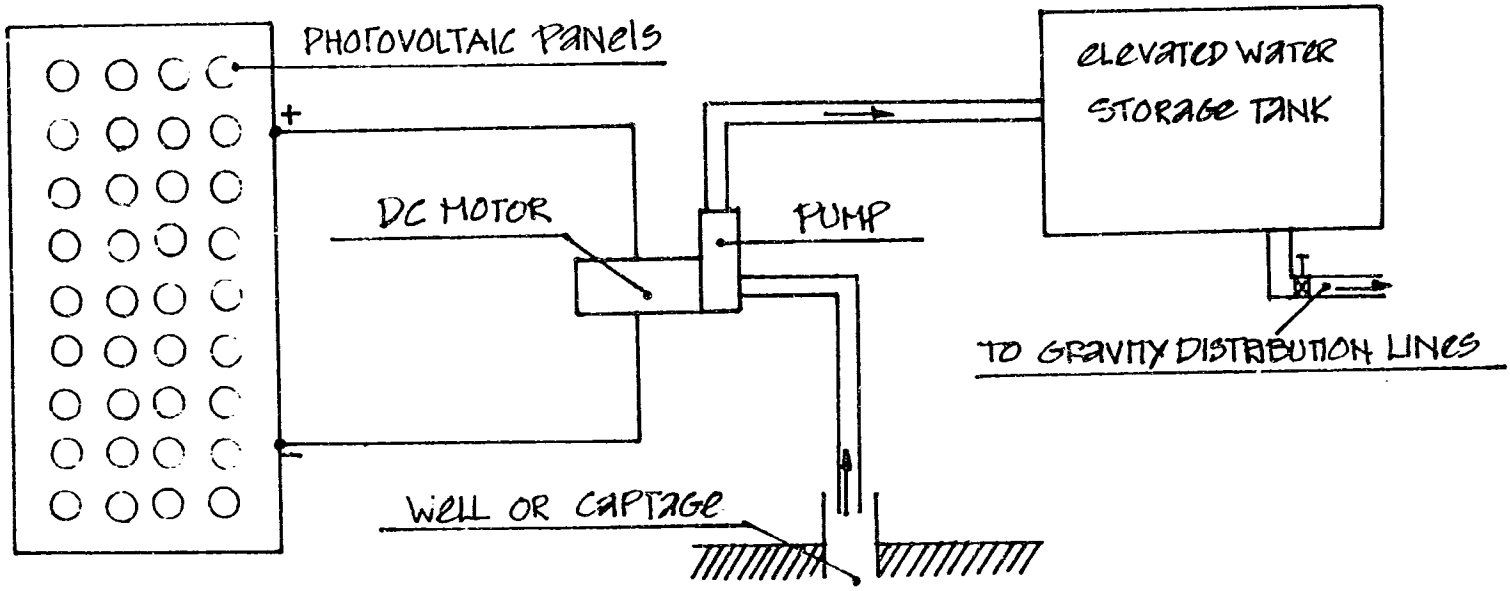
Pumping elements designed to provide years of trouble free operation. The rotor is machined from alloy steel and plated for additional abrasion resistance and longer life; the stator utilizes a special low water swell elastomer, permanently bonded to a steel tube.



ANNEX 18 - SOLAR PUMP SYSTEM

The key to direct solar generated electricity is the solar cell. Solar cells are made of wafer of silicon or other material specially treated to change its polarity. When sunlight strikes the cell, D.C. electricity is generated. Groups of these cells are then connected and mounted in a weather-proof frame to make a solar panel. A group of panels are wired in series or parallel (an array) and provide an electrical source that will operate indefinitely at no further cost.

The panels' ability to produce direct current electricity is limited only by the amount of direct or diffused light from the sun. The electrical current obtained from the panel is directly proportional to the area receiving light. A photovoltaic panel can produce 100 watts or more of electricity per square meter of area covered.



The above system is based on the fact that water storage is more desirable then electrical storage. The D.C. pump motor takes its power directly from the solar panels. Water is pumped during the day and all or partially stored - for availability during cloudy periods or nighttime. This eliminates batteries and their control circuitry - reducing system cost and maintenance and improving reliability.

ANNEX 19
Revised 10 May 1984

Summary of Construction & Rehabilitation Expenditure by Fiscal Year

	FY 84	FY 85	FY 86	FY87	FY 88	LOP
I. Personal Costs						
a. Int.'l Personnel	38,565	90,000	95,000	105,000	95,000	423,565
b. Local Personnel	15,250	205,000	225,000	247,000	180,000	872,250
II. Training Costs	-	-	-	-	-	-
III. Commodity Costs						
-Local Purchase						
a. Material & Equipment	20,000	68,460	199,615	98,305	37,670	424,050
b. Vehicle	128,800	-	-	-	-	128,800
-U.S. Purchase						
a. Material & Equipment	98,000	565,000	430,000	10,000	10,000	1,113,000
b. Vehicle	-	137,200	50,000	-	-	187,200
IV. Other Costs						
a. Fuel	3,390	35,000	38,000	40,000	25,000	141,390
b. Maintenance & Other Veh. Related Costs	2,720	44,000	48,000	48,000	20,000	162,720
c. Office & Warehouse Rent & Maintenance	11,250	24,000	26,000	28,000	18,000	107,250
d. Office Equipment & Supplies (Local)	10,300	2,000	2,000	2,000	1,500	17,800
e. Office Equipment & Supplies (US)	-0-	2,000	2,000	2,200	1,500	7,700
f. Other Supporting Staff Costs	2,000	20,000	22,000	25,000	15,000	84,000
SUB-TOTAL	330,275	1,192,660	1,137,615	605,505	403,670	3,669,725
CARE N.Y. OVERHEAD 9%	29,725	107,340	102,385	54,495	36,330	330,275
V. TOTAL	360,000	1,300,000	1,240,000	660,000	440,000	4,000,000