

# PROGRESS REPORT NO. 12

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MAY 1989



**WATER AND SANITATION  
FOR RURAL DEVELOPMENT PROJECT**

Sponsored by U.S. Agency  
for International Development

**Operated by CDM and Associates**

Camp Dresser & McKee International, Inc.  
Associates in Rural Development, Inc.  
International Science and Technology Institute  
Research Triangle Institute  
Training Resources Group  
University of North Carolina at Chapel Hill  
University Research Corporation

# WATER AND SANITATION FOR HEALTH PROJECT

## Progress Report No. 12

May 1989

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Summary of CDM Contract Activities August 29, 1980, to February 28, 1989

Water and Sanitation for Health Project  
Contract No. 5973-7-00-8081-00, Project No. 836-1249  
Sponsored by the Office of Health, Bureau for Science and Technology  
U.S. Agency for International Development  
Washington, D.C. 20523

## Current WASH Task Managers

J. Ellis Turner, Project Director

Craig R. Hafner, Deputy Project Director

Janice Burns, Environmental Health

Ron Johnson, Financial/Management Systems

Frederick S. Mattson, Engineering

Philip W. Roark, Technology/Operation and Maintenance

Fred Rosensweig, Institutional and Human Resources Development

May Yacoub, Community Participation and Hygiene Education

Dan Campbell, Librarian

Diane B. Bendahmane, Information Management

Betsy Andrews, Publication Production

Sumana Brahman, Task Support

Teresa Sarai, Task Support

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## Abbreviations and Acronyms

AFR—Bureau for Africa	ISTI—International Science and Technology Institute	PVO—private voluntary organization
AFR/DP—Africa Bureau, Office of Project Development	LAC—Bureau for Latin America and the Caribbean	REACH—Resources for Child Health
AFR/FR/HPN—Africa Bureau, Office of Technical Resources, Division of Health, Population, and Nutrition	LAC/DR—Bureau for Latin America and the Caribbean, Office of Development Resources	REDSO/EA—Regional Economic Development Service Offices/ East Africa
AID—Agency for International Development	LDC—less or least developed country	REDSO/WA—Regional Economic Development Service Office/ West Africa
AID/ASIA—AID Bureau for Asia (now in ANE)	NE-PD-ENV—Near East Bureau, Office of Project Development, Environmental Protection (now in ANE)	RHUDO—Regional Housing Development Office
AID/NE—AID Bureau for Near East (now in ANE)	NE/TECH—Near East Bureau, Office of Technical Support (now in ANE)	ROCAP—Regional Office for Central American Programs
AIDIS—Inter-American Association of Sanitary Engineers	NE/TECH-HPN—Near East Bureau, Office of Technical Support, Health Population and Nutrition Development Division (now in ANE)	RTI—Research Triangle Institute
ANE—Bureau for Asia and Near East	NGO—non-governmental organization	RWS&S—rural water supply and sanitation
ARD—Associates in Rural Development	O&M—operations and maintenance	S&T/H—Bureau for Science and Technology, Office of Health
AWWA—American Water Works Association	OFDA—Office of Foreign Disaster Assistance	S&T/HEA—Bureau for Science and Technology, Office of Health
CARE—Cooperative for American Relief Everywhere	ORT—oral rehydration therapy	S&T/HAWS—Bureau for Science and Technology, Office of Health, Division of Community Water Supply and Sanitation
CDM—Camp Dresser & McKee International, Inc.	PAHO—Pan American Health Organization	TOT—training-of-trainers
CEP—community education and participation	PCV—Peace Corps volunteer	TRG—Training Resources Group
CSAP—Child Survival Action Plan	PHD—project identification document	UNC—University of North Carolina
DS/ENGR—Development Support Bureau (now S&T), Office of Engineering	PP—project paper	UNDP—United Nations Development Programme
DS/HEA—Development Support Bureau (now S&T), Office of Health	PPC-E—Bureau for Program and Policy Coordination, Office of Evaluation	UNEP—United Nations Environment Programme
DS/POP—Development Support Bureau (now S&T), Office of Population	PPC/EL—Bureau for Program and Policy Coordination, Office of Evaluation and Information	UNICEF—United Nations Children's Fund
FVA/PVC—Bureau for Food for Peace and Voluntary Assistance, Office of Private and Voluntary Assistance	PRE—Bureau for Private Enterprise	URC—University Research Corporation
FY—fiscal year	PRE/H—Bureau for Private Enterprise, Office of Housing and Urban Programs	USAID—United States Agency for International Development
HEALTHCOM—Communications for Child Survival	PRIGOR—Primary Health Care Operations Research	VBC—Vector Biology and Control Project
HRD—human resource development	PRITECH—Technology for Primary Health Care	WASH—Water and Sanitation for Health Project
IRC—International Reference Center for Community Water Supply and Sanitation (The Hague)		WHO—World Health Organization
		WID—women in development
		WS&S—water supply and sanitation

# 1. WASH: HIGHLIGHTS OF 1988; PLANS FOR 1989

## WASH III BEGINS

### New Directions

October 1988 marked the advent of WASH III. After a competitive bidding process, Camp, Dresser, and McKee was again selected to manage the AID resource in water and sanitation. WASH III was funded for five years at approximately \$25 million. While WASH III is indistinguishable from WASH II in many respects, and while the transition from one to the other has been smooth, some changes are afoot. It is not totally business-as-usual.

The trend begun in WASH II towards the social and financial, rather than the engineering and hardware, aspects of water and sanitation is accentuated in WASH III. If anything has been learned during the Water Decade (the U.N. International Drinking Water Supply and Sanitation Decade, 1979-1990) it is that achieving effective water and sanitation systems and reaping the health benefits from them are much more complicated than originally envisioned, involving a range of disciplines from engineering to anthropology. This trend is apparent in the list of key task categories that have been identified for WASH III: community participation/hygiene education, health, institutional and human resource development, finance, engineering, operations and maintenance, information, and research. WASH III will take a more pro-active stance in developing its plans, making sure that significant activities are carried out under these all-important categories.

### New Features

WASH III also has some completely new features. To increase WASH's ability to deal with the social and financial aspects of water and sanitation, some new subcontractors have been added to the WASH consortium. University Research Corporation (URC) has joined with the International Science and Technology Institute (ISTI), Research Triangle Institute (RTI), and the Training Resources Group (TRG) as a core subcontractor. URC has extensive experience in public health operations research and epidemiology, having organized and administered the successful PRICOR Project, a project for operations research funded by AID's Office of Health, Bureau for Science and Technology.

Also, WASH has two new resource subcontractors: Atlanta University and the Morehouse School of Medicine, both historically black institutions of higher learning. Atlanta University will be one of the primary team resources for conducting studies on the sociocultural factors affecting the sustainability of water and sanitation

programs and will assist WASH in analyzing the economic benefits of improved water supply and sanitation. The Morehouse School of Medicine will conduct applied research on subjects related to health and strengthen WASH's capabilities in primary health care and vector control. The University of North Carolina and Associates in Rural Development continue as resource subcontractors in the WASH consortium.

Some of the new features of WASH III affect the way in which USAID missions will access the services of WASH. First, WASH consultants may now be assigned for tours of up to a year, thus expanding the range of assignments they can undertake. Second, the contract ceiling for WASH III is higher than it was for WASH II, but a greater percentage of the money must come from mission buy-ins—50 percent as compared with the earlier 35 percent. Third, it will be possible to enlist WASH assistance for projects in solid waste and environmental protection. Fourth, WASH III will be collaborating with ISTI on the development of its information tracking system for AID's Office of Health, attempting to help it improve its water supply and sanitation data base so that it can provide more useful and timely information to the field.

While the advent of WASH III brings with it clear changes, all the elements that have made for the success of the WASH Project in the past are still in place: the management information system pioneered by WASH, which has now become a model for other centrally funded AID resource projects; the roster of consultants, which makes it possible for WASH to respond flexibly and rapidly—especially in emergency situations; the excellent training and wide experience of WASH personnel, which account for the high quality of WASH performance; and the WASH library, which consistently provides high quality information services to AID missions, governments, and donor organizations.

## HIGHLIGHTS OF RECENT ACTIVITIES

### Activities with a Regional Focus

In January 1989, WASH put the finishing touches on a collection of profiles of the status of water and sanitation in twenty selected Sub-Saharan African countries for AID's Africa Bureau. AID asked WASH to survey the progress these countries had made during the Water Decade, to estimate what resources would be necessary to achieve the countries' targets for water and sanitation coverage, and to suggest a water and sanitation strategy for the bureau.

The collection of profiles revealed that in Africa, as in many other areas in the developing world, the most intractable problems in extending water and sanitation coverage concern such intangibles as training people and strengthening institutions, setting up effective systems for operation and maintenance, establishing fair and workable tariffs or cost-recovery mechanisms, gathering information for planning, and setting priorities when government resources are scarce. In fact, these are the same issues that WASH has been concentrating on more and more in recent years.

The African profiles were modeled on a similar collection prepared in 1987 for the Bureau for Latin America and the Caribbean in connection with AID's Central American Initiative. The Latin America/Caribbean report was updated in February 1989. Such "strategy" reports are meant to be used, refined, and elaborated over time in a collaborative process among the bureaus and missions concerned.

The Bureau for Asia and the Near East also has involved WASH in an issue-oriented exercise. WASH staff are currently drafting papers on rural water supply and environmental issues and the environmental aspects of rapid urbanization and industrial growth to be a part of a group of papers on natural resources issues. The papers are intended to help the Bureau redefine its natural resources strategy so that it can achieve the maximum advantage with the available funds.

### **Work for the Non-Regional Bureaus**

Water and sanitation issues concern the non-regional AID bureaus also. For example, the Bureau for Private Enterprise/Housing and Urban Affairs has asked WASH to assist it in preparing a report on urbanization. WASH's contribution is to examine water and sanitation problems posed by the rapidly growing urban and peri-urban areas of the developing world.

Also in the area of housing, WASH is at present involved in projects for AID's Regional Housing and Urban Development Offices in Tunisia, Ecuador, Jamaica, and Morocco. These projects generally consist of residential water and sewerage construction or rehabilitation.

WASH activities for the Bureau for Food for Peace and Voluntary Assistance, Office of Private and Voluntary Assistance, usually involve giving technical assistance to a private voluntary organization that is implementing a water and sanitation project. For example, since the last Progress Report was issued, six WASH activities have been initiated to respond to requests from World Vision's five-country African Water Project. WASH's assistance has concentrated on training, especially in hygiene education, and on helping World Vision to set up effective management units for carrying out its

ambitious three-year project.

WASH/CARE collaboration has also been active. WASH has recently participated in evaluating CARE water and sanitation projects in Rwanda, Sudan, and the Dominican Republic, and there are many more examples of collaboration between CARE and WASH. In requesting WASH participation, CARE aims to improve its water and sanitation efforts throughout the world and to strengthen its water and sanitation staff. In 1985 WASH and CARE jointly produced a framework for planning for CARE water and sanitation projects.

### **Country-Specific Activities**

As usual, the preponderance of new WASH II and III task assignments originate in requests from AID missions. Approximately 40 such tasks in 30 different countries were initiated in the year and a half (October 1987 to February 1989) since the last Progress Report was issued. These tasks are wide ranging and many occur in "sequence" or step-by-step as part of a long-term governmental strategy. For example, two activities were carried out in Sri Lanka: the first was a yearly monitoring/evaluation of the water and sanitation sector program, the second—which grew out of the monitoring and evaluation—was assistance in setting up a strategic planning unit for implementing the country's water and sanitation program.

Similarly, in Swaziland WASH assisted the government in developing a water and sanitation sector plan. Previously, WASH had carried out a water and sanitation sector manpower assessment and had helped the Rural Water Supply Board to design an ongoing evaluation system for improving water and sanitation sector activities.

In Zaire, WASH has had a long history of contributions to continuing USAID projects in the water sector. WASH was just asked to prepare a national plan on the operation and maintenance of rural water systems. This will require a series of consultancies, including field research to integrate several administrative arrangements into an efficient strategy for sustaining both old and future water systems.

### **Child Survival Activities**

In recent years, a number of WASH tasks have focussed on the natural links between child survival and water and sanitation programs. In Bolivia, WASH participated on a team of specialists responsible for developing a child survival/water and sanitation project. The project combined various child survival interventions such as oral rehydration, growth monitoring, and malaria prevention with water and sanitation in an overall integrated effort.

In Malawi, WASH provided a water/sanitation engineer to work on a project paper team for a

primary health care project. The engineer's assignment was to prepare the water supply, waste disposal, and village hygiene components of this integrated project that is designed to reduce maternal and child mortality and morbidity.

Under WASH III, the USAID Mission in Haiti has requested WASH to develop feasible indicators for integrating projects in community health/child survival with water and sanitation. In the coming months WASH will launch a new activity to examine the synergism between child survival and water and sanitation and to see what existing and potential linkages exist between the two types of programs.

### Collaboration with Other Organizations

WASH has tried to look for new ways to collaborate with other agencies and organizations working in water and sanitation—organizations such as the Peace Corps, the World Bank, UNICEF, the

United Nations Development Program (UNDP), the World Health Organization, and bilateral development assistance organizations. Notable efforts in this regard in recent months have been with the African Development Bank, the Peace Corps, the UNDP/World Bank Program, and the UNDP project on the Promotion of the Role of Women in Water and Environmental Sanitation Services (PROWESS)—just to name a few.

A two-person team of WASH consultants, along with four subject-area specialists, reviewed the African Development Bank's draft policy paper on water supply and sanitation. This paper could eventually provide the African Development Bank with a means to review proposed water supply and sanitation projects.

In January 1989, WASH and the Peace Corps Office of Training and Program Support conducted a workshop for the Africa region on water and sanitation programming for Peace Corps assistant country directors and programming and training officers. The goal of the workshop was to improve the programming skills of Peace Corps personnel. A year earlier WASH had participated in a programming and evaluation workshop on the use of the Peace Corps *Water and Sanitation Programming Guidelines*. Like CARE and World Vision, whose collaboration with WASH is discussed above, the Peace Corps is using the WASH resource to strengthen its capabilities in water and sanitation programming.

In December 1988, WASH was asked to join with the UNDP/World Bank Water and Sanitation Program to carry out a workshop on community management of water supply and sanitation services. Although there is a growing awareness of the importance of community management of water and sanitation programs, information is lacking about what role the national agencies should take vis a vis communities. The purpose of this workshop was to explore this question.

Collaboration also takes place between WASH and other centrally funded AID resources. For example, WASH and the Vector Biology and Control Project have developed a Guinea Worm Information Network to disseminate the latest information about this disease. Members of the network participate in a quarterly coordination meeting with the Centers for Disease Control, Global 2000, and other organizations interested in guinea worm. In March 1988, WASH assisted in the planning and implementation of a World-Wide Conference on Guinea Worm in Accra. WASH presented a number of papers on guinea worm at the conference, one of which summarized the findings of a study carried out by WASH of the impact of guinea worm on mothers with small children in Nigeria. Guinea worm is of special interest for the Water and Sanitation Decade because the disease is totally absent in areas where people drink water exclusively

### WASH CONFERENCE PAPERS

WASH staff members frequently participate in water and sanitation-related conferences and seminars by preparing and delivering papers. The following is a selection of some recent conference papers. Although these are not listed with WASH Technical and Field Reports, they are available on request.

**"Expanding the Role of Community Participation in Water Supply and Sanitation Projects,"** May Yacoob and Dennis B. Warner, National Council of International Health, Washington, DC, May 1988.

**"Mothers with Guinea Worm: What Happens to Their Children?"** May Yacoob, Second Workshop in Dracunculiasis in Africa, Accra, Ghana, May 1988.

**"Appropriate Technologies in Water Supply and Sanitation Development,"** Dennis B. Warner, AIDIS/ASCE Regional Symposium, Columbia University, New York, January 1988.

**"Sustaining Hygiene Education in Programs of Water Supply and Sanitation,"** May Yacoob, African Studies Annual Meeting, Denver, CO, November 1987.

**"A Simplified Costing Format for Primary Health Care Activities,"** J. Ellis Turner and Dennis B. Warner, World Federation of Public Health Associations, Mexico City, March 1987.

# THE WASH CATALOG

The WASH Catalog is an annotated list by topic of WASH "generic" products--those reports, manuals, guidelines and conference papers that deal with issues and problems common to water and sanitation projects in various settings. (It does not list reports that relate specifically to a given project in a given locale.) The Catalog comprises six short pamphlets, one on each of the topics listed below.

Each pamphlet begins with a short overview that surveys what WASH has learned about the topic in almost ten years of field experience. The emphasis is on practical information. The summaries follow the overview. Unlike the "classic" annotated



## WATER SUPPLY, SANITATION AND HEALTH

"The WHO Alma Ata Declaration of 1978 included water supply and sanitation as an element of primary health care along with health education, control of endemic disease, maternal and child health, immunizations against infectious diseases, food and nutrition services, and treatment of common disease. In fact, safe water and sanitary excreta disposal would appear to be necessary for all the other elements to be fully effective. As the Romans understood, in water is health."

### Sampler of reports summarized...

Strengthening Linkages between Primary Health Care and Water Supply Projects

The Value of Water Supply and Sanitation in Development: An Assessment of Health-Related Interventions

Guidelines for Designing a Hygiene Education Program in Water Supply and Sanitation for Regional/District Level Personnel



## INSTITUTIONAL AND HUMAN RESOURCES DEVELOPMENT

"It is a truism of international development that success and failure are not dictated by technology alone. Nowhere is this more evident than in the field of water supply and sanitation. While getting the technology in place is costly and the technology applied has not always been 'appropriate,' it is fair to say that the failures in water supply and sanitation tend to be less with technology than with people and institutions."

### Sampler of reports summarized...

Guidelines for Institutional Assessment in Water and Wastewater Institutions

Training Non-Technical Workers for Rural Water and Sanitation Projects

Pretesting and Revising Instructional Materials for Water Supply and Sanitation Programs



## INFORMATION AND TECHNOLOGY TRANSFER

"Water supply and sanitation problems cannot be solved simply by having the nations that have the hardware transport it to locations in the Third World. First, the facilities must be appropriate to the place and acceptable to the users. Second, new locations needing assistance will continue to be identified, so the installation of facilities must be a continuing process. Thus, developing nations require not only the hardware but also the ability to use and reproduce it, i.e., the technology."

### Sampler of reports summarized...

Surface Water Treatment for Communities in Developing Countries

The Selection of Drilling Rigs for Rural Water Supply

A Workshop Design for Latrine Construction: A Training Guide

From safe sources. Tracking guinea worm morbidity is a good way to assess the progress of the Decade in many areas of Africa and Asia.

## WASH REPORTS AND PUBLICATIONS

During WASH III some new publications are planned to supplement the field and technical

reports that are a regular feature of WASH activities. A catalog of WASH reports has been prepared. This catalog covers the "generic" reports (i.e., those reports that have wide applicability) issued over the history of the WASH project. There are six sections corresponding generally to the subject categories that have been marked for special emphasis mentioned above. Each section starts with a short discussion of the subject and continues with

bibliography, the summaries or "annotations" in the WASH Catalog are detailed enough to cover the basic findings of the report or to discuss the issue at hand in some depth. To keep the information current, the catalog is updated on a regular basis.

The WASH Catalog is available free of charge on request. Simply write to WASH indicating which sections of the catalog you wish to receive and we will send them out to you at once. Reports listed in the catalog are also available on request.



### OPERATIONS, MAINTENANCE AND FINANCE

"The question of how to cover the costs of a system in operation is the most vexing one faced by a community or an administering public agency. Can costs be reduced by the use of volunteer labor and simple technologies? Will the users of the service pay the full cost? Will the government perpetually subsidize the service? Failure to answer these questions probably explains more system failures than anything else."

#### Sampler of reports summarized...

Estimating Operations and Maintenance Costs for Water Supply Systems in Developing Countries  
Guidelines for Conducting a Financial Management Assessment of Water Authorities  
Willingness to Pay for Water in Rural Areas: Methodological Approaches and an Application in Haiti



### COMMUNITY PARTICIPATION AND THE ROLE OF WOMEN

"In recent years, the concept of community participation in water and sanitation development has been strongly reformulated to embody two distinct ideas. First, participation is necessary in order that local people can assume the responsibility for the systems, including maintaining them in a timely manner. Second, hygiene education is closely linked to community participation. People recognize the need for facilities, but they need information on their utilization. Only then will they be able to protect water sources and adopt hygienic methods of excreta disposal, food handling, and child care."

#### Sampler of reports summarized...

A Workshop Design for Community Participation  
New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects  
Community Participation and Women's Role in Water Supply and Sanitation in Developing Countries: A Three-Part Bibliography



### PROGRAM AND PROJECT DEVELOPMENT

"The field of water and sanitation is similar to other development sectors in its acceptance of the concept of program cycles—a pattern of activities with beginnings, endings, and new beginnings. However, the rhythm of cycles is not always smooth in water and sanitation efforts because more than technology is involved. People-oriented activities, such as community participation and health education, must be interwoven with technology, and often their implementation precedes or extends beyond the technical work of facilities installation."

#### Sampler of reports summarized...

Water and Sanitation Profiles of Twenty African Countries  
Social and Economic Preconditions for Water Supply and Sanitation Programs  
Facilitator Guide for Conducting a Project Start-Up Workshop

summaries of selected relevant reports. The catalog provides an "introduction" to water and sanitation as seen through the eyes of WASH experience. (See box above.)

To meet the demand for training materials on water and sanitation technologies in French, Spanish, and Arabic, WASH launched a considerable translation effort in early 1989. *Managing Institutional Development Projects* (Technical

Report 49), *New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects* (Technical Report 52), and *The Value of Water Supply and Sanitation in Development* (Technical Report 43) are being translated into French and Spanish, and *Guidelines for Institutional Assessment* (Technical Report 37) and *What Makes Hygiene Education Successful?* (Technical Report 55) into French, Spanish, and Arabic. Four of the

WASH training manuals have also been translated into French and Spanish.

Looking ahead to the end of the Decade and beyond, WASH is preparing a lessons-learned publication to synthesize WASH experience with 450 activities in 60 countries. This should be ready for publication by late 1989. The lessons fall into two general categories. The first comprises lessons about providing technical assistance, whether through an international technical assistance program or through a central government. The second comprises lessons about fieldwork in the areas of technology transfer, human and institutional resource development, community health, and community participation. The role of governments, private voluntary organizations, and policymaking are also covered. Taken as a whole the lessons stress the importance of advance planning, collaboration among development organizations, responsiveness to the problems faced by developing countries, and the importance of strengthening water and sanitation institutions and fostering community participation so that systems constructed will be sustainable.

#### BEYOND THE DECADE

USAID/WASH, like other organizations dedicated to improving water and sanitation in developing countries, is now becoming more and more involved in developing a framework for global cooperation beyond the Decade. Approximately 50 external support agencies, among them USAID/WASH, established a Collaborative Council to "coordinate, accelerate, and expand sector activities through to the year 2000." The most recent meeting of this group was in The Hague in November 1988.

The Collaborative Council appointed a "1990 Committee" of 20 representative members of the Council. Its mandate, as its name suggests, is to carry out collaborative activities to prepare for a global consultation on water and sanitation in 1990 to kick

off the second Water Decade. WASH will attend that meeting, which will probably take place in India.

The 1990 Committee established two temporary working groups—one on the Communication of Information and one on Applied Research. USAID/WASH is involved in both of them and is functioning, with the UNDP/World Bank Program, as the lead agency or secretariat for the Temporary Working Group on Applied Research. These groups are attempting to set realistic agendas for the coming years by identifying research and information bottlenecks that have obstructed progress. WASH is also participating in informal working groups on operation and maintenance, cost recovery, and community participation.

The Decade has served very effectively to focus attention and resources on water supply and sanitation. While safe water for all is still a remote goal, the development community is committed to continue the work of the Decade to the end of this century.

#### NEW FEATURES OF PROGRESS REPORT 12

This edition of the Progress Report now lists 538 activities and some 300 reports. To help readers find what they want, new indices have been prepared (see pages 72 and 93). These new indices have considerably more headings and subheadings than the indices that appeared in previous editions of the Progress Report. Please note that the separate country indices have been discontinued. Country headings may now be found in the major subject indices. However, the author index for reports has been retained. The new indices are supplemented with a list of evaluations and assessments in the appendix.

It is hoped that this progress report will help keep all WASH clients and kindred organizations apprised of WASH activities and aware of opportunities for collaboration as we move into a new decade of activities. Comments on this report and WASH activities, as well as requests for WASH reports and other publications, are welcomed.

## 2. WASH TASK ASSIGNMENTS

This chapter contains brief descriptions of all WASH assignments as of February 28, 1989, listed numerically by project. WASH I (September 1980 to September 1984) assignments are given first, followed by WASH II (initiated in October 1984) and the current project, WASH III (initiated in October 1988). Each assignment carries a number and a prefix that indicates the project under which the assignment was originated. During WASH I, all assignments were called OTDs, standing for Order of Technical Direction. WASH II assignments are called RMs (Request Memoranda) or ACTs (Activities). WASH III assignments carry the prefix TAS standing for Task.

Each citation includes the number of the assignment, the initiation date, the current status, and the name of the WASH manager. (The names of the current WASH task managers may be found opposite the table of contents on page ii.) The description of the assignment includes the name of the AID mission or bureau that initiated the assignment. If a WASH report was prepared as part of the assignment, the report number is given at the end of the citation. (The reports themselves are listed in Chapter 3.)

All assignments are indexed by subject at the end of this chapter. In addition, all evaluations and assessments undertaken by WASH are listed in an appendix. This year, the subject index was completely revamped; the many new headings and subheadings should make it much more useful.

### WASH I (September 1980 to September 1984)

OTD #1      September 1980: Completed      Warner

**Technical Assistance in Administration of Rural Sanitation Project—Bolivia** USAID/Bolivia requested WASH assistance in improving the administration of the Bolivia Rural Sanitation Project. The purpose of the project was to create an institutional capability within the Ministry of Social Welfare and Public Health and its Division of Environmental Sanitation to provide potable water and sanitation facilities to small Bolivian rural villages of 800 persons or less. The WASH consultant assisted the Mission and the Division of Environmental Sanitation in establishing a simplified information and accounting system, among other things. See WASH Field Report No. 47.

for use on public and private water hydrants); and 4) the Roboscreen (low-cost PVC slotted pipe to screen out gravel and sand in well pipes).

OTD #3      October 1980: Completed      Beverly

**Project Design Manual References Development—Near East Bureau** The Near East Bureau developed a manual to assist USAID staff in identifying and describing water supply and sanitation projects in the field. An important component of the WS&S Manual is its "reference library" consisting of seventeen texts, papers and reports, some unpublished, which was supplied by WASH under this OTD. Similar "library sets" and bibliographies on water supply and sanitation themes can be developed on request from Missions and Bureaus.

OTD #2      September 1980: Completed      Beverly

**American Public Health Association Meeting—Exhibit of AID Appropriate Technology Water Supply and Sanitation Devices—Detroit, Michigan—DS/HEA** The purpose of this exhibit, held 17-23 October 1980 in Detroit, was to show interested health professionals from the United States and foreign countries appropriate water supply technologies developed under AID auspices. The devices shown were: 1) the AID handpump; 2) the Robometer (a low-cost, household, user activated, CO<sub>2</sub> cartridge powered device to release measured volumes of water); 3) the Robovalve (a PVC heavy duty, essentially leak proof, faucet/valve

OTD #4      October 1980: Completed      Hafner

**Competency-Based Training/Planning for Agency—DS/HEA AID/W** The purpose of this OTD was to collect and analyze information about training in past and present AID projects involving water and sanitation components. The results of this analysis are used by WASH in responding to training assistance requests from Missions and Bureaus and in planning training conferences, workshops and seminars. This process was aimed at developing appropriate strategies and guidelines for the training aspects of water supply and sanitation project design, implementation, and evaluation at all levels in developing countries.

OTD #5      October 1980: Completed      Isely

**UNICEF/Pan American Health Organization Water Supply and Sanitation Workshop and Discussion of WASH Services, Lima, Peru-PAHO DS/HEA** This meeting was one of six held by UNICEF in its several regions for the purpose of defining UNICEF's activities during the International Drinking Water Supply and Sanitation Decade, 1981-1990. It was held in Lima, Peru 17-22 November 1980. The purposes of having a representative of the WASH Project present were: 1) to learn more about UNICEF's and PAHO's plans and programs for the Water Decade; 2) to explain the WASH Project and how its work could be coordinated with other organizations; and 3) meet LDC people active in water supply and sanitation. See WASH Field Report No. 30.

OTD #6      October 1980: Completed      Isely

**Social Science Analysis for Water Supply and Sanitation: AID Administrator Bennet Project Evaluation-PPC/EI** As part of its program of impact evaluation of rural projects, the Bureau for Program and Policy Coordination (PPC) requested social science expertise on Peru from the WASH Project. A social scientist did a document search and data analysis on health, socio-economic, institutional and demographic indicators for the provinces of Ancash and Libertad, Peru. Corresponding information was also developed describing the broader characteristics of the sierra region and the nation. See WASH Field Report No. 1.

OTD #7      November 1980: Completed      Isely

**Oral Rehydration Therapy (ORT): Review Discussion of Need for Using Potable Water in ORT Solution-DS/HEA DS/POP** Major issues discussed were the effects of oral rehydration solutions made with contaminated water and how the provision of potable drinking water might improve health and have a desirable effect on morbidity, mortality and fertility rates, and on nutrition. The results of this meeting, which includes a limited literature search on oral rehydration fluids and disinfection, may be found in WASH Technical Report No. 2.

OTD #8      November 1980: Completed      Isely

**Pan American Health Organization Caribbean Community Water Supply and Sanitation Planning Meeting in Barbados-PAHO DS/HEA** The purpose of this international meeting, sponsored by the Pan American Health Organization and the Caribbean community, was to discuss: 1) proposed national environmental health activities in the Caribbean to improve programming; 2) the International Drinking Water Supply and Sanitation

Decade; and 3) the new AID Water and Sanitation for Health Project (WASH) which began operating in September, 1980. Twenty senior environmental, health project and engineering officers from Caribbean countries and international agencies attended the meeting.

OTD #9      November 1980: Completed      Warner

**Rural Water Supply Review-Haiti** AID has supported the CARE and other PVO rural water supply projects in Haiti for several years with good results but with much room for improvement and expansion. Fourteen rural water systems were visited and appropriate recommendations made. Since a dozen or more PVOs are active in Haiti's water supply and sanitation development, a major recommendation was that WASH support a practical workshop for all local PVOs and others concerned with water supply and sanitation in Haiti. A workshop was held in February 1983. See WASH Field Report No. 2. See also WASH Field Reports Nos. 77 and 96, and OTDs Nos. 129, 140 and 162.

OTD #10     November 1980: Cancelled      Beverly

**Regional Health Officers Conference Participation for West Africa-REDSO/WA AFR/DR** After the WASH Project staff had spent several days organizing a presentation and procuring documents for distribution at this Conference, scheduled for 7-13 December 1980 at Abidjan, Ivory Coast, a decision was made by the Africa Bureau to delete the subject of water and sanitation from the agenda. However, the documents on water supply and sanitation that were to have been distributed at the Conference were mailed to the participants at their missions.

OTD #11     November 1980: Completed      Warner

**Local Manufacturing for Water Supply and Sanitation Devices-Philippines** The AID Offices of Capital Development and Engineering in Manila had programmed the local manufacture of AID handpumps and Roboscreens, which are used in wells and infiltration galleries to screen out sand. They requested WASH Project assistance in laying out the scope of work for the procurement, supervision and production of this equipment and of complete wind-powered water pumping system/facilities. The draft scope of work was reviewed by the Mission and led to OTD #10 below. See WASH Field Report No. 3. See also WASH Field Report No. 54.

OTD #12     November 1980: Completed      Warner

**Research and Development Prototype Water Supply and Sanitation Devices-DS/HEA** The purpose of this OTD was to review options, prepare

recommendations to DS/HEA for discussion, and develop a subcontract with an organization having highly innovative, inventive industrial and mechanical engineering professionals with demonstrated expertise in going from concept to operational prototype in short periods of time. Georgia Tech Research Institute was selected to provide these R&D services during WASH I. Georgia Tech in turn let a subcontract with the University of Maryland for joint use of the latter's International Rural Water Resources Development Laboratory at College Park, Maryland, in addition to its own R&D facilities in Atlanta, Georgia.

OTD #13      December 1980: Completed      Warner

**Italian Earthquake Relief Assistance—OFDA (Office of Foreign Disaster Assistance)** Following a visit to the disaster areas near Naples by an AID representative in early December 1980, the WASH Project Staff was requested to identify and contact United States and European sources of suitable sanitation equipment that was available for shipment to the disaster area. Estimates of the homeless population ranged from 50,000 to over 150,000 people. A twenty-five page report (plus technical appendices) outlining twelve alternative solutions to the community water supply and sanitation situation was dispatched by courier to Naples on December 13, 1980 for use by the local U.S. Disaster Relief Team. See WASH Field Report No. 25.

OTD #14      December 1980: Completed      Warner

**Peri-Urban and Rural Water Supply and Sanitation Program Review and Project Development—Ecuador** This task for USAID/Ecuador had two distinct parts: peri-urban and rural. The peri-urban review and assessment involved working with an Ecuadorian private volunteer organization (Fundacion Natura) and local municipal sewerage companies in Quito, Guayaquil and other cities. The work included analyzing environmental sanitation and sewerage problems, plans and constraints, suggesting alternative strategies, identifying high priority projects, and making overall recommendations. Constraints of concern were high-cost inappropriate technologies, lack of trained manpower and funding, and absence of policy direction. The technical analysis in selected rural towns was of integrated approaches that included low-cost housing, water, sewerage and related infrastructure, social services and employment generation/training activities. See WASH Field Reports Nos. 9 and 12.

OTD #15      December 1980: Completed      Warner

**Well Drilling Equipment Specifications and Procedures—Tunisia** As part of its rural potable water subproject, the AID Mission in Tunisia was

examining the use of low-cost technology for drilling relatively shallow wells (maximum 200 meters) having low to moderate yields. The government of Tunisia was experienced in drilling larger and deeper wells for irrigation water but needed assistance in preparing a suitable invitation for bidders for the purchase of a smaller, less expensive drilling rig. The Mission also 1) examined the use of PVC in well casing and self-purification of receiving waters as a function of treatment; 2) participated in a round-table conference on design review and discussion of guideline scope and contents with Jordanian and AID officials and consultants; and 3) prepared an outline of guidelines and recommendations for the National Planning Commission. See WASH Field Report No. 4.

OTD #16      December 1980: Completed      Isely

**Water Supplies for Rural Land Reclamation—Mauritania** The AID Mission in Mauritania needed assistance with a Project Paper for rural land reclamation intended to improve the traditional construction of "barrages" (dams). The dams retain rainwater runoff for recession agriculture in the dry-land interior of the country, e.g., earth/rock dams are broken in October and the moist soil behind the dam (70-150 hectares) is used for agriculture. The dams are later patched up for the next rainy season. Ideas suggested to the Mission included establishing schistosomiasis surveillance and control teams; a pilot project in one dam area to chemically control urinary schistosomiasis; to disturb snail growth and kill mosquito larvae by fluctuating the water level behind the dams; and to provide better wells for human and animal use as well as the organization of populations around these tasks. See WASH Field Report No. 11.

OTD #17      December 1980: Completed      Warner

**Review of Appropriate Water Supply Technologies, Implementation Planning, Local Manufacturing and Training—El Salvador** Field work on this task was cancelled, but a brief review and bibliography of appropriate technology for rural water supply and sanitation suitable for El Salvador was prepared as WASH Field Report No. 25.

OTD #18      December 1980: Completed      Warner

**Water Supply and Sanitation Implementation Plan Design for Rural Water Project—Peru** The purpose of this AID Project in Peru was to provide potable water systems, latrines and health education to 120 communities of about 500 inhabitants each in selected regions of the sierra and high jungle over a

five year period. The eight million dollar project (five million from AID) integrated these activities into the primary health programs of those communities and simultaneously strengthened the administrative and technical capacity of the Peruvian Regional Health Office involved in the project. The WASH consultant provided a list of suggestions and recommended revisions of the implementation plan, procedures and schedule. See WASH Field Report No. 6. Also see OTD #74 below and WASH Field Report No. 38.

OTD #19 January 1981: Completed Isely

**Food Waste Project: Expert Panel Review-PPC/E DS/HEA** The purpose of this OTD was to coordinate the development of a comprehensive, in-depth review of the Food Waste/Sanitation Cost-Benefit Methodology Project carried on from 1971-1976 by the University of North Carolina at Chapel Hill and the Institute of Nutrition of Central America and Panama (INCAP). See WASH Technical Report No. 12.

OTD #20 January 1981: Completed Warner

**Small Wastewater Stabilization Pond Design and Analysis-Lebanon** Under an Environmental Sub-project, AID was supporting the American University in Beirut, Lebanon, and the Ministry of Public Health in the design, construction and testing of small wastewater stabilization ponds to treat sewage from small towns. The Mission requested technical advice on design alternatives to minimize construction costs. After reviewing the situation, plans, sites, operation, budgets and schedules with AID and Lebanese officials, the WASH consultant developed recommendations on the most appropriate and acceptable approaches to small wastewater stabilization pond utilization. See WASH Field Report No. 10.

OTD #21 January 1981: Completed Donaldson

**Latrine and Water Container Design Analysis, and Planning of Evaluations and of Health Materials-Dominican Republic** Under Health Sector Loan II, AID was assisting the Secretariat of Health in the Dominican Republic to provide water supply, latrines and health education in 500 rural villages having 26,500 homes. The Mission requested technical assistance in: 1) designing and carrying out evaluation plans for Health Sector Loan II; 2) providing information on waterseal latrines; 3) preparing specifications for household water containers and water treatment; and 4) designing health education materials for potable water and sewage disposal activities. See WASH Field Report Nos. 5, 21 and 23.

OTD #22 January 1981: Cancelled

**Review of Testing Prediction Sanitation Model Project-DS/HEA**

OTD #23 January 1981: Completed Warner

**Preparation of Guidelines for Water Supply and Sanitation Project Design and Implementation, Inter-Regional-DS/HEA** Many missions and several AID Bureaus have expressed a need for guidelines of this kind. The WASH staff reviewed relevant AID work and reports on this subject and developed realistic and useful guidelines for water supply and sanitation project design and implementation to be used for and in developing countries. Draft guidelines are under review.

OTD #24 January 1981: Completed Warner

**Rural Water Supply and Sanitation System Design for AID Project Paper-Ecuador** Mission required technical assistance in two areas: rural sanitation delivery systems, and engineering analysis of proposed water supply systems. The IEOS (Ecuadorian Institute of Sanitation Work) needed guidance in determining specific numbers of persons to be trained, person-months and types of technical assistance to be provided, vehicle requirements, and inter-governmental agency organizational restructuring. See WASH Field Report No. 13.

OTD #25 February 1981: Completed Isely

**Rural Sanitation Manpower Development (RSMD): Workshop and Program Assistance-Indonesia** The Government of Indonesia, with AID support, was in final planning stages of its Rural Sanitation Manpower Development (RSMD) Project, and requested WASH guidance on the project and for a training workshop. Topics included water supply and sanitation appropriate technology (AT) alternatives, planning for technological research and development, development of systems and practices for effective wide-scale application of appropriate techniques and methods, curriculum development for inservice training and/or retraining of existing sanitation personnel, and review and comment on approximately 12 proposals for research already submitted by RSMD staff in Regional Centers. See WASH Field Report No. 16.

OTD #26 February 1981: Completed Warner

**Project Design Assistance for Health and Environmental Monitoring Project (HEMP) and Water Supply and Sanitation Manpower Training-Tanzania** USAID Tanzania requested project design support for work with the Ministry of Lands, Housing and Urban Development (ARDHI) on training, and with the Muhimbili Medical Center

(MMC) in the Department of Community Medicine, University of Dar es Salaam, on the Health and Environmental Monitoring Project (HEMP). The work in training with ARDHI concerned development of a sanitation education master plan and the possible creation of new facilities. Facilitation will involve public health engineering curricula at the University, technician training at the ARDHI Institute, health officer training at three regional centers, health educator training at Muhimbili Hospital, and health assistant training. This work will provide background information for a Project Identification Document (PID). See WASH Field Reports Nos. 7 and 8.

OTD #27 February 1981: Completed Isely

**Evaluation of Rural Health Project—Niger**

USAID/Niger requested two French speaking consultants to participate in a four-man evaluation team. Components of the project to be evaluated included: public health administration (epidemiology, logistics, supplies distribution, cold chain, construction of dispensaries); training (curriculum development at the certified and state level nursing schools); supervision and management of rural health teams, rural sanitation and water supply; and cost control.

OTD #28 February 1981: Completed Isely

**Representation of DS/HEA and WASH at Conference of World Federation of Public Health Associations, Calcutta, India, 23-26 February 1981—DS/HEA**

The WASH consultant set up and manned an AID/WASH display, participated in the conference as an international health expert, and explained the WASH Project to all concerned. A folding graphic and photographic display of WASH functions was prepared and sample AID Robovalves and Roboscreens were taken for exhibition, along with relevant descriptive information for distribution. The consultant also visited the National Environmental Engineering Research Institute (NEERI) at Nagpur, India, to discuss the WASH Project and possible modes of collaboration. See WASH Field Report No. 14.

OTD #29 February 1981: Completed Donaldson

**Development of Local Capability to Fabricate Handpumps and Well Screens—Honduras**

USAID/Honduras requested WASH assistance in local manufacture of the AID Handpump and Roboscreen. Sites were selected for installing 30 AID handpumps as well as 10 Dempster pumps, 10 Moyno pumps and 10 locally-manufactured SANDPAR pumps in order to compare their performance. Installation of the handpumps and assistance in developing a program and

manuals for their operation and maintenance was conducted under WASH OTD No. 85. See WASH Field Report No. 85. See also WASH Field Report No. 103.

OTD #30 March 1981: Completed Warner

**Participation in XIII Central American Congress of Sanitary Engineering Meeting, 16-20 March 1981, Guatemala City—Guatemala**

USAID/Guatemala and ROCAP requested WASH to present the WASH Project and its capabilities to Latin American engineers who were assembling to discuss Central American cooperation during the U.N. International Drinking Water Supply and Sanitation Decade. See WASH Field Report No. 15.

OTD #31 March 1981: Completed Warner

**Wastewater Treatment Design Review and Guidelines Preparation—Jordan**

USAID/Amman and the National Planning Commission had reviewed the need and value of the "standardization" of design, construction, operation and maintenance of wastewater treatment processes and plants in the cities and rural towns of Jordan. The WASH consultant 1) analyzed and evaluated the feasibility studies and designs for all wastewater treatment plants and processes under review in Jordan, including plant visits for consideration of appropriateness and of effluent quality, standards, and self-purification of receiving waters as a function of treatment; 2) participated in a round-table conference on design review and discussion of guideline scope and contents with Jordanian and AID officials and consultants; and 3) prepared an outline of guidelines and recommendations for the National Planning Commission. See WASH Field Report No. 17.

OTD #32 March 1981: Completed Beverly

**Coordination of WASH Information on Activities and Exchange with International Information Centers—DS/HEA**

The purpose of the WASH Project Information Center is to provide information gathering synthesis, reproduction, dissemination and follow-up services, including water supply and sanitation (WS&S) guideline development to AID Missions, Geographic Bureaus and other offices of AID. The Information Center is a clearinghouse information retrieval facility which stores and disseminates WS&S information on request. To further the development of WASH Project international information capabilities, the WASH Information Director was authorized to visit specified information organizations and centers in Europe, Asia, and Latin America. These organizations are cooperating with the International Reference Center for Community Water Supply and Sanitation (IRC), The Hague, and its Program on

Exchange and Transfer of Information (POETRI) under WHO auspices for the UN Water Decade. These visits established sound, long-term working relationships on WS&S matters concerning information exchange and various modes of collaboration on information development, acquisition, analysis and dissemination. In addition, possible cooperative interactions on WS&S training, technical assistance, and technology transfer/adaptation were explored. Coordinating visits were made to the IRC, the Intermediate Technology Development Group (London), the Water Research Center (Stevenage, U.K.), the TOOL Foundation (Amsterdam), the Pan American Center for Sanitary Engineering and Environmental Science-CEPIS (Lima, Peru), the Asian Institute of Technology and its Environmental Sanitation Information Center (AIT-ENSIX) in Bangkok, and the World Health Organization (WHO) in Geneva. See WASH Field Reports Nos. 18, 48 and 64.

OTD #33      April 1981: Completed      Warner

**Development of Testing Protocol for Mobile Water Treatment and Disinfection Units in Disaster Situations-DS/HEA OFDA** A sanitary engineer with background in development and coordination of testing experimental design and protocols for water treatment and disinfection devices was supplied by WASH to act as facilitator between AID/Office of Disaster Assistance, the U.S. EPA (Office of Registration) and the U.S. Army Medical Research and Development Laboratory (Ft. Detrick, MD) in development of chemical, biological and virological testing protocols for mobile water treatment and disinfection units.

OTD #34      April 1981: Completed      Hafner

**Coordination and Facilitation of Use of WASH Technical Assistance Service in Africa-AFR/TR DS/HEA** The Africa Bureau requested the services of a Technical Assistance coordinator to work with the AFR Bureau and the field missions for increased utilization and awareness of WASH technical services in water and sanitation. The WASH Senior Project Officer coordinated directly with DS/HEA and AFR/TR officials, desk officers and other personnel as necessary. He made three trips to Africa and visited Botswana, Cameroon, Ivory Coast, Kenya, Lesotho, Malawi, Sierra Leone, Swaziland and Zaire. Fifteen OTDs resulted from these trips.

OTD #35      April 1981: Completed      Isely

**Participation in the AWWA Meeting, St. Louis, 8-12 June, 1981 DS/ENGR DS/HEA** The American Waterworks Association International

Affairs committee (AWWA) extended an invitation to WASH to address the Conference on the general subject of "Acceptance of Public Water Supply in Developing Countries". See WASH Technical Report No. 6, "Women, Water and the Decade."

OTD #36      April 1981: Completed      Warner

**Evaluation of Rural Water Supply Project-Burundi** WASH assistance was sought through the AID Representative to evaluate an ongoing rural water supply project in Burundi. The WASH team assessed the impact of this UNICEF project, investigated other opportunities to increase the accessibility of rural populations to safe water and suggested further means of fostering community health/sanitation education. The team developed criteria for evaluating spring captation, conducted a brief evaluation by visiting representative cross sections of the communes, and reviewed other donor gravity fed water projects to assist in obtaining the most cost-effective systems. See WASH Field Report No. 24.

OTD #37      April 1981: Completed      Isely

**Participation in Session on Water, Sanitation and Health Education, UNICEF, New York, 22-23 April 1981-DS/HEA** A session involving UNICEF headquarters and field staff plus invited experts from other institutions addressed the complexities of water supply and sanitation, its impact upon health, and the critical mix of interventions which might assure or increase such benefits. Also on the agenda was a discussion of the role of sanitation/health education in water programs. Two WASH consultants participated. See WASH Field Report No. 31.

OTD #38      April 1981: Completed      Warner

**Further Development of Rural Water and Sanitation Project-Thailand** WASH pre-project design work assistance was provided for preliminary assessment of technical and economic feasibility of providing clean water to small communities or rural population concentrations of 2,000 or less using piped water systems. Appropriate non-piped alternative supply systems were identified and assessed for certain areas of northeast Thailand. Scopes of work for design and feasibility studies of the above and related matters were also prepared. See WASH Field Report No. 19.

OTD #39      May 1981: Completed      Warner

**Evaluation of the Water Supply Systems Management Project for the National Water and Sewage Authority (NWSA)-Yemen** WASH

assistance was sought to evaluate the ongoing Water Supply Systems Management project in the Yemen Arab Republic. The project evaluation included:

1. Evaluation of progress towards attainment of project objectives and goals.
2. Recommended revision of project objectives and goals as appropriate and recommended project modification/reductions as appropriate.
3. Identification and evaluation of problems or conditions which may impede progress towards those objectives.
4. Assessment of steps that can be taken to overcome or minimize those problems. See WASH Field Report No. 22. Also see OTD #161.

OTD #40      May 1981: Completed      Donaldson

**AID Handpump Manufacture-Philippines** As part of the Barangay Water Program (BWP), AID/Philippines requested technical assistance for local manufacture and installation of the AID handpump and training BWP engineers and technicians in well siting, construction and pump installation, operation and maintenance. The WASH subcontractor assisted a local foundry in manufacturing the AID handpump and conducted final acceptance inspection of the pumps in March 1982. An extensive manual was prepared for use by the BWP engineers in well construction and pump installation, operation and maintenance. A week-long seminar was held in April 1982 to train BWP engineers and technicians in the content of and use of the manual. See WASH Field Report No. 54.

OTD #41      June 1981: Completed      Hafner

**Technical Assistance of Cultural Anthropologist in Peace Corps Training Program-Peace Corps DS/HEA** The Peace Corps Water and Sanitation Sector requested WASH assistance in providing a cultural anthropologist to train thirty Peace Corps trainers in New Mexico May 31 to July 3, 1981, in conjunction with the U.S. Indian Health Service. The trainees were preparing for work in Kenya, Guatemala, Togo, Yemen, Lesotho and Tonga. The purpose of the training program was to prepare the trainees with basic skills and knowledge in the following areas: the role of the volunteer in development, construction skills, water systems (springs, wells, pumps, hydrology, surveying, system design, etc.), waste disposal, health education and group participation training techniques.

The WASH consultant provided guidance on the relationship of water and sanitation technologies to community acceptance and development activities.

OTD #42      June 1981: Completed      Warner

**Technical Assistance to AID Office of Foreign Disaster Assistance (OFDA)-DS/HEA** WASH was requested by DS/HEA and OFDA to develop, and to maintain on a stand-by basis, a team of qualified disaster assistance personnel. The team includes experienced water supply and sanitation engineers to provide disaster assessment and coordination services plus technical personnel to operate emergency water purification plants in or near disaster areas. Team members have been selected and trained in advance and are available for short-term overseas assignments on short notice. WASH disaster teams were deployed for emergency water supply duties in flooded areas of Tunisia in November, 1982, and in Ecuador in January, 1983. See WASH Field Report No. 74. See also Field Reports Nos. 25, 41, 79 and 112.

OTD #43      June 1981: Completed      Warner

**Technical Assistance for the Barangay Water Program-Philippines** The Barangay Water Program (BWP) is designed to provide potable water via small systems of public faucets or individual house connections, including household storage facilities, to small rural farming and fishing communities. AID/Manila requested technical assistance from WASH for the start-up, delivery, performance testing and post-completion training, as well as recommendations for improving the SAPANAG BATO water system. Other assistance was desired in refining designs, revising the post-completion manual, and improving local manufacture of BWP system components. The consultant also inspected each operational BWP "Level II-A" system, made appropriate recommendations, and produced a set of 35mm color slides of these systems for training, orientation and debriefing purposes. See WASH Field Report No. 57.

OTD #44      June 1981: Completed      Isely

**Training and Technical Assistance for Technology Development and Dissemination in Water and Sanitation for Rural Sanitation Manpower Project-Indonesia** The Center for Education and Training (PUSDIKLAT) of the Indonesian Ministry of Health is the implementing agency for the Rural Sanitation Manpower Development Project. It requested support from USAID/Jakarta in the design of a program of training and technical assistance in the development and dissemination of appropriate technology in water and sanitation.

Specific assistance was needed to refine the proposed design and to identify required program inputs. This work was a follow-on to OTD #25. See WASH Field Report No. 28.

OTD #45 July 1981: Completed Hafner

**Village Health Education and Training: Program Planning, Implementation and Evaluation—Benin and Togo** AID Missions in Benin and Togo requested WASH assistance in village health education and training for program planning, implementation and evaluation. Work included developing the overall training strategy and sequencing of events; determining who needs to be trained to do what; designing and implementing training of trainer workshops; developing job aids; and developing management, evaluation and performance analysis procedures and instruments. In addition, the WASH consultant developed procedures for coordination among groups in Togo and groups outside of Togo, assisted in the training of Togo Peace Corps Volunteers and their co-workers; supported the Peace Corps Associate Director in various planning tasks; and assisted the Benin Peace Corps Director in designing health education training materials. See WASH Field Reports Nos. 27 and 51 and OTD No. 91 below.

OTD #16 July 1981: Completed Donaldson

**Handpump Installation Operation, Maintenance and Training Project—Haiti** AID/Port-au-Prince requested WASH technical assistance in securing and installing AID and other handpumps and in training suitable public or private agencies, including PVOs, in installation, operation and maintenance of the pumps. The WASH consultants obtained AID handpumps from the Dominican Republic, selected sites and installed the handpumps at Camp Perrin and La Gonave. They also developed an operation and maintenance plan for the pumps being installed. In addition to the Dominican Republic/AID handpumps, some Moyno deep well handpumps and a prototype AID Handpump manufactured at Fonderie Nationale in Haiti were installed. Observation of the performance of the latter pumps provided useful information concerning the feasibility of manufacturing the AID handpump in Haiti. See WASH Field Report No. 128.

OTD #47 July 1981: Completed Isely

**Technical Assistance in Review of Rural Primary Health Care Project Paper—Zaire** AID/Zaire requested the services of WASH to review the Rural

Primary Health Care Project Paper with the Mission and Ministry of Health officials. Preventative health measures were emphasized in the review.

OTD #48 July 1981: Completed Donaldson

**Technical Assistance in Handpump Maintenance and Plastic Valve and Faucet Manufacture—Dominican Republic** AID/Santo Domingo requested WASH technical assistance in support of its Health Sector Loan II Project in two areas: handpump quality control and maintenance and local manufacture of a plastic foot valve and water container faucets. The WASH consultant made recommendations for a quality control program at the local foundry; the content and format of handpump service manuals being prepared by the Ministry of Health; planning and organizing handpump maintenance programs; logistical planning for spare parts, and preventive maintenance guidelines and schedules. He also worked with a local firm on the manufacture of the plastic valves and faucets. See WASH Field Report No. 101.

OTD #19 August 1981: Completed Hafner

**Survey of Potential Subcontractors for Human Resources Development Support—S&T/HEA** The Office of Health requested WASH to survey potential human resources development (HRD) subcontractors with demonstrated effectiveness and proficiency in innovative approaches to the analysis of human resource needs, training system development and implementation, and training system evaluation to support HRD activities. Relevant selection criteria included knowledge of subject matter in key areas, e.g., operation and maintenance of small water supply systems; language capability; LDC experience; availability; experience in use of performance based systems in solving problems in knowledge, skill and attitudinal areas of performance; demonstrated capability to work in human resource needs assessment and evaluation, task analysis, performance problem solving, training material development, training of trainers, training system development, implementation of training and development of job aids.

OTD #50 September 1981: Completed Beverly

**Technical Assistance in Technology Transfer Including Development and Testing (Lab and Field) of Low Cost Technology for Developing Countries—S&T/HEA** WASH was requested to provide technical assistance and information to S&T/HEA in the development, adaptation and testing of certain low cost technologies in water supply and sanitation for developing countries. The scope of this work included six related sub-tasks:

1. Collection and analysis of technical information on flow limiters, family water purification units, hydraulic rams, 'package' water treatment plants, sewerless excreta disposal units, and alternatives to reciprocating handpumps.

2. Activation and preparation of product development, testing and demonstration facilities under contracts with Georgia Tech and the University of Maryland.

3. Establishment of a steering committee of experts inside and outside AID, and the planning, organizing and conducting of a seminar on WS&S technology appropriate for manufacture in LDCs.

4. Review and analysis of simple, low cost appropriate well drilling technologies.

5. Review, analysis and conceptual modification or replacement of Moyno type deep well handpump design to substantially reduce costs and render suitable for LDC manufacture.

6. Provision of professional services of additional consultants as required to perform above sub-tasks. A Technology Transfer Workshop was held April 12-20, 1983. Twenty-six consultants, WASH staff and AID personnel participated in the Workshop.

OTD #51 August 1981: Completed Hafner

**Implementation of Workshop on Excreta Disposal in Non-Sewered Areas-NE/TECH** The Near East Bureau requested WASH assistance in developing and implementing the above workshop. This included:

1. Contacting speakers and participants in consultation with NE/TECH.

2. Preparing workshop agenda.

3. Arranging for workshop site.

4. Arranging for instructional materials.

5. Taping workshop.

6. Preparing workshop proceedings.

The workshop was attended by twenty-five participants and was held on September 10, 1981, in the Conference room of the International Science and Technology Institute (ISTI), one of the CDM Associates.

OTD #52 August 1981: Completed Isely

**Participation in Workshop on Primary Health Care, 31 August to 3 September, 1981 in Sousse, Tunisia-NE/TECH/HPN** WASH was requested to provide consultant services to NE/TECH/HPN for the above workshop. The purpose of this workshop was to bring together key health representatives of Near East nations, A.I.D. and other institutions to share their experience with primary health care programs and to discuss the technical, institutional and operational aspects of primary health care programs and their component parts. Special attention was focussed on the need for water supply and sanitation facilities to serve as

models in all health facilities, especially in peri-urban and rural areas. See WASH Technical Report No. 8 and Field Report No. 29.

OTD #53 August 1981: Completed Isely

**Participation in AID Health Officers Workshop in Lome, Togo, 15-20 November, 1981- AFR/H**

WASH design and implementation assistance for the above workshop was requested by the Africa Bureau. WASH prepared the agenda and educational materials for that portion of the workshop dealing with water supply and sanitation in relation to the proper planning and implementation of primary health care programs. See WASH Technical Report No. 13.

OTD #54 August 1981: Completed Isely

**Participation in AID Health Officers Workshop in Chiang Mai, Thailand, 8-14 November 1981- ASIA/TR**

WASH participation in the above workshop was requested by the Asia Bureau in order to plan and facilitate discussions of Bureau policy on water supply and sanitation. WASH had earlier provided a draft policy paper. The WASH consultant served as a resource person during workshop sessions and was available to participants for consultation. The American Public Health Association was responsible for the overall organization of the workshop.

OTD #55 September 1981: Completed Hafner

**Analysis of Human Resources Development Needs for the Hashemite Kingdom of Jordan**

The AID Mission in Amman, Jordan, requested assistance in developing a national water resources training program. Following intensive preparation in the U.S., the field work included review of human resources development (HRD) in Jordan with AID and relevant agencies, visiting agencies and facilities, reviewing documentation and preparing a preliminary HRD plan, program and schedule. These were discussed with Mission staff and government officials and modified appropriately before formal presentation to the concerned institutions. See WASH Field Report No. 34.

OTD #56 September 1981: Completed Isely

**WASH Participation in International Reference Center (IRC) Advisory Group on Community Education and Participation (CEP)-IRC S&T/HEA**

The International Reference Center for Community Water Supply and Sanitation, the Hague, requested, through AID's Office of Health, that WASH provide a working member to serve on the above Advisory Group and to participate in the first meeting of the Group. The terms of reference of the Advisory Group were:

1. To provide overall guidance to the CEP Programme and coordination with other relevant international activities.
2. To review and evaluate, from a scientific and technical standpoint, the content, scope and dimension of the programme.
3. To recommend priorities for technical cooperation activities, studies and services of the CEP Programme.
4. To provide the Steering Committee for Cooperation Action, donor organizations, bank, and Governments with a continuous independent assessment of the CEP Programme and related activities.
5. To recommend joint plans and actions for the further development of the CEP Programme and other relevant international activities. See OTD #65 below.

OTD #57      September 1981: Completed      Isely

**Technical Assistance to the National Council for International Health for Development and Implementation of Water and Sanitation: A Workshop for PVOs** WASH was requested to supply technical assistance to the Office of Health in the development of a workshop on implementation, preparation and evaluation of water supply and sanitation for PVOs in collaboration with the National Council for International Health (NCIH). The activities included:

1. Designing and formatting the workshop, incorporating results of survey of PVOs,
  2. Identifying and selecting speakers with survey input from the planning committee,
  3. Compiling bibliography and supplying selected materials for workshop participants,
  4. Supervising the dress rehearsal of sessions that needed to be rehearsed,
  5. Identifying possibly exhibitors for poster sessions, commodity or equipment displays,
  6. Preparing background papers for the workshop,
  7. Assisting with workshop implementation the first week of December 1981, and
  8. Providing technical editing of the proceedings.
- See WASH Technical Report No. 14 and OTD No. 70 below.

OTD #58      October 1981: Completed      Donaldson

**Technical Assistance to Develop Scope of Work for Impact Evaluation of Health Sector—Dominican Republic** WASH was requested to assist USAID/Dominican Republic in preparing a cost estimate and scope of work for implementing the evaluation plan for Health Sector Loan II. The loan is to provide water, latrines and health education in 500 rural communities. Mortality and anthropometric data for the evaluation were to be gathered by local

health promoters in 100 communities. The evaluation plan included sections on sample design; data collection, monitoring, processing and analysis; personnel requirements and qualifications; and a contract schedule with estimated costs by task. See WASH Field Report No. 35.

OTD #59      October 1981: Completed      Isely

**Technical Assistance for Water Conservation Seminar—Jordan** WASH was requested to support USAID/Jordan in planning and conducting a day-and-a-half water conservation seminar for Jordan's water supply institutions. The work for this task included consultant preparation in the U.S.; discussions with relevant officials in Jordan; orientation visits to water supply/conservation areas in Jordan; planning and implementing the seminar; and preparing a report on the seminar and recommendations to improve water conservation practices in Jordan. See WASH Field Report No. 36.

OTD #60      October 1981: Completed      Isely

**Technical Assistance in Water Supply and Sanitation Planning and Training—Sudan** WASH was requested to supply technical assistance in assessing and making recommendations in relation to USAID/Sudan planning efforts in water supply and sanitation in six project areas. These were:

1. Northern Primary Health Care Project—a regional project to construct new health centers in North and South Kordofan Provinces,
2. Rural Health Support—a national dispensary and school construction project contracted to the African Medical Research Foundation of Nairobi,
3. Reforestation Program—provision of potable water to farmers in this program in conjunction with CARE,
4. Refugee camps on three borders of Sudan—WS&S requirements,
5. Port Sudan Refugee Water Supply Project—in conjunction with CARE, and
6. Darfor Region—study of allocation of water for domestic, livestock and agricultural uses.

See WASH Field Report No. 37.

OTD #61      October 1981: Completed      Donaldson

**Technical Assistance in Operation and Maintenance of Water Pumping Systems—Morocco** WASH was requested to provide training for fifteen Peace Corps volunteers in Morocco in the installation, maintenance and repair of selected water pumping systems. The scope of work included collection and preparation of training materials; briefings with Peace Corps staff in the U.S. and Morocco; detailed planning of a four-week training course; conducting training; and preparing a final report. See WASH Field Report No. 43.

**Technical Assistance for Health Sector**

**Assessment—Egypt** WASH was requested to provide technical assistance for the health sector assessment in Egypt and preparation of an environmental health working paper. The scope of work included preparation and briefing of WASH consultants at AID/W; in-country travel and review and analysis of relevant available documents and data; and preparation of a final report. The report reviewed and summarized existing data on environmental determinants of health status in Egypt; identified important gaps in existing data; discussed priority problems, changes and trends; identified institutions and interrelationships between health status and AID's assistance to the water, sewage, housing industrial and agricultural sectors; and concluded with a set of recommendations for AID action. See WASH Field Report No. 33.

**Technical Assistance in Local Handpump**

**Manufacture and Maintenance—Tunisia** AID/Tunisia requested WASH technical assistance in local manufacture, field monitoring and adaptation of the AID Handpump in support of an on-going program. The scope of work included improving quality control of pump manufacturing at the foundry, assuring that pump designs were properly adapted to conditions in rural Tunisia, and planning and managing an integrated field installation, re-installation, repair, maintenance, monitoring and training program. The WASH consultants coordinated activities with AID/Tunis, government officials, manufacturing companies and suppliers, and the Ecole Nationale d'Ingenieurs de Tunis (ENT) which installed the pumps. See WASH Field Report No. 100.

**Technical Assistance for Well Siting—Mali**

USAID/Mali requested technical assistance for recommending siting of twenty-nine wells in twenty-five villages of the First Region of Mali (Yelimare Circle). The WASH consultant was a hydrogeologist with experience in siting hand-dug and borehole wells using aerial photography, soil resistivity tests and investigative drilling. This work included reviewing aerial photographs in Bamako, working closely with regional and local government officials and technicians, visiting all well site areas, and consulting with the local water committee in Yelimare. See WASH Field Report No. 32.

**Collaboration with the International Reference Center on Directory of Resources—IRC S&T/HEA**

The Office of Health requested WASH technical support in jointly developing, printing and disseminating a "Directory of Resources for Community Participation in Water Supply and Sanitation for Developing Countries." The Directory was based on existing descriptions of institutions in WASH and IRC files supplemented by information from a questionnaire sent to European and American NGOs, PVOs, bilateral agencies, and other organizations and researchers in community education and participation, and relevant LDC organizations. The Directory provides an essential tool for everyone involved in the Water Decade to facilitate the exchange and transfer of information and guidance on community education and participation. The Directory is not part of the WASH Technical and Field Report series. See OTD No. 56 above.

**Technical Assistance in Well Drilling for Private Voluntary Organization (PVO) Fundacao**

**Esperanca in Amazon Basin—Brazil** USAID/Brazil requested WASH technical assistance in preparing a proposal for the AID supported PVO Fundacao Esperanca, in Santarem, Para, Brazil. The Foundation needed technical advice in deep well drilling in the highland villages it serves. See WASH Field Report No. 40.

**Preparation of Manual on the Installation, Operation and Maintenance of Portable Packaged Water Treatment and Disinfection System—S&T/HEA OFDA**

WASH assistance was requested by S&T/HEA and the Office of Foreign Disaster Assistance (OFDA) to prepare a manual on the installation, operation and maintenance of a portable packaged water treatment and disinfection system. An instructional manual was prepared to accompany the equipment for use anywhere in the world where it is sent to disaster areas. The manual was designed for ease of comprehension and use by people of diverse cultural backgrounds who may have little formal education or mechanical training. Simple graphics and photos that are culturally neutral were used where appropriate.

**Analysis, Design, Prototype Development, and Demonstration System Construction and Operation of PAHO "Pumpless Pump"—S&T/HEA**

WASH was requested to provide technical assistance to S&T/HEA in the design, testing and

demonstration of the PAHO "pumpless pump" system. The scope of work included engineering analysis and mathematical modeling of the system, design and construction of a system capable of serving a community of 5,000 persons, and the preparation of a user application manual suitable for use in developing countries. Also required was the planning of an information dissemination and demonstration program to alert development officials throughout the world of the operational feasibility of this technology.

OTD #69 November 1981: Completed Donaldson

**Design and Implementation for AID Handpump Testing Program—Dominican Republic, Ecuador, Honduras, Philippines and Tunisia—S&T/HEA**

WASH was requested by S&T/HEA to design and implement a testing program for the AID Handpump being manufactured in the Dominican Republic, Ecuador, Honduras, Philippines and Tunisia. The scope of work includes shipment of pumps from the countries to the Georgia Institute of Technology, design and execution of a time-stress component testing program, procurement of test equipment and material, documentation of test procedures and results, redesign and testing of components and systems as appropriate, and preparation of test reports and recommendations. See WASH Field Report No. 131.

OTD #70 November 1981: Completed Hafner

**Technical Assistance for Seminar on Handpumps for Community Water Supply in Developing Countries—S&T/HEA**

WASH was requested to supply technical support and information materials for a half-day seminar on handpumps sponsored by S&T/HEA. The seminar was conducted on December 1, 1981, in conjunction with the National Council for International Health (NCH) Workshop for Private Volunteer Organizations held December 2-4, 1981 and attended by forty-five participants. (OTD 57).

OTD #71 November 1981: Completed Donaldson

**Design and Implementation of Robo-Valve Testing Program—Ecuador—S&T/HEA**

WASH was requested to design and implement a testing program for the Robovalves being manufactured in Ecuador. The scope of work included acquisition and time-stress testing of seventy Ecuadorian-made Robovalves for a continuous day-in and day-out period of three months to determine design, material and fabrication flaws. The work was done at the International Rural Water Resources Development Laboratory of the University of Maryland. See WASH Field Report No. 102.

OTD #72 December 1981: Completed Donaldson

**Laboratory Assessment and Testing of AID Handpump—S&T/HEA**

WASH was requested by S&T/HEA to provide it with results of a laboratory assessment and testing of the AID Handpump. The results are based on the World Bank/UNDP approved testing protocol which was applied by the Consumers Association (CA) of the United Kingdom to some thirty different pumps from all over the world. WASH supplied two AID deep-well handpumps manufactured in a developing country to the CA Harpenden Rise Laboratory in Hertfordshire, England, for testing over a twenty month period. See WASH Field Report No. 130.

OTD #73 December 1981: Completed Isely

**Technical Assistance in Revision of CARE Water Supply and Sanitation Project—Indonesia**

USAID/Indonesia requested WASH technical assistance in reviewing and refining the scope of work of an AID-funded CARE water and sanitation project. Specific assistance was desired to integrate a health education component into the project including the assessment. Plans were formulated for training CARE field staff in health education methods including the use of supportive materials with an emphasis on community participation. See WASH Field Report No. 39.

OTD #74 December 1981: Completed Donaldson

**Evaluation, Planning and Training Assistance to Rural Water Supply and Sanitation Project (RWSS)—Peru**

USAID/Peru requested WASH technical assistance for the Peru Rural Water Supply and Sanitation Project (RWSS) in several areas. The work included a technical evaluation of the plans for thirty gravity water systems, the design of a training seminar, and assistance to the National Directorate of Sanitary Engineering in analyzing future technical assistance and procurement needs. See WASH Field Report No. 38.

OTD #75 December 1981: Completed Hafner

**Development of the National Sanitation Environmental Education Master Plan—Tanzania**

AID/Tanzania requested WASH technical assistance to develop the plan recommended in WASH Field Report No. 7 of March 9, 1981, "Tanzania—A National Environmental Sanitation Education Master Plan—A Preliminary Review." The scope of work included collection of relevant information on training and on the status of sanitation programs and projects in Tanzania and the development of the Master Plan based on the Field Trip Report. The Plan outlined educational and training objectives,

operational strategies, roles of participating institutions, implementation requirements and schedules, evaluation procedures and estimated financial needs. See WASH Field Report No. 58.

OTD #76 December 1981: Completed Donaldson

**Small Water Supply Systems: Training Program Design and Implementation with Agua del Pueblo-Guatemala** USAID/Guatemala and Agua del Pueblo, a PVO, requested technical assistance in the design and implementation of a comprehensive workshop on small scale pumped water supply systems. The resulting workshop program included training in technology and design selection; training in the planning, design, construction, operation and maintenance of small scale pumped water supply systems; and the development of organizational capacities to transfer technical knowledge from the engineer level to the professional level. The workshop took place July 5-30, 1982, with ten Guatemalan engineers participating. See WASH Field Report No. 56.

OTD #77 January 1982: Completed Warner

**Planning for Improved Excreta and Wastewater Pilot Demonstrations-Egypt** USAID/Egypt requested a WASH Advance Team to prepare an implementation plan for pilot demonstration projects for improved excreta and wastewater disposal methods in selected unsewered areas of Greater Cairo in Giza Governorate. For an immediate solution, the WASH team recommended field tests into the improvement of equipment, including pumper trucks, tractor drawn trailers, and animal drawn carts, for the collection and transport of sanitary wastes from sewage vaults. For long term solutions, the team recommended three types of field tests: community-financed sewers, small diameter sewers connected to existing sewage vaults, and septic tanks. Overall recommendations included sites, personnel, support requirements, and costs. See WASH Field Report No. 52.

OTD #78 January 1982: Completed Isely

**Training of Sanitarians-Senegal** AID/Senegal requested WASH assistance in improving the sanitation training school which furnishes personnel to the Sine Saloum Rural Health project. The work included collecting relevant training materials in French and English; assisting in task analysis and performance objective development; suggesting training activities and appropriate evaluation techniques; designing and assisting delivery of a two week program emphasizing hands-on skills; making recommendations for improving the supervision and continuing education of sanitarians; and

preparing a final report. The WASH consultant also assisted in preparation and supervision of the construction of latrines, composting sites, and well protection and deepening activities, which are part of the two week practical training program. See WASH Field Report No. 44. Also see OTD #147 and WASH Field Report No. 91.

OTD #79 January 1982: Completed Isely

**Technical Assistance in Planning Diarrheal Disease Control Subproject-Indonesia** USAID/Indonesia requested WASH to assist ACEH Province officials in planning a diarrheal disease control subproject that includes a water supply and sanitation component. The work included assessing water supply and sanitation facilities in Kabupaten Pidie, reviewing existing training and supervision activities in water supply and sanitation and the community participation situation, and developing recommendations and appropriate interventions which might be used in the subproject. The team contributed to a work plan for the subproject which integrates water supply and sanitation activities with diarrheal disease control, surveillance, treatment, training, and community participation. See WASH Field Report No. 42.

OTD #80 February 1982: Completed Rosensweig

**Training-of-Trainers Workshop for AID Handpump Technology Transfer Personnel-S&T/HEA** The Office of Health requested WASH assistance in the design and implementation of a six day Training-of-Trainers Workshop for selected personnel involved in the transfer of AID handpump technology. Ten participants came from the Georgia Institute of Technology, the University of Maryland, ISTI and S&T/HEA staff. The purpose of the workshop was to upgrade the training skills of the participants so they could more effectively implement the transfer and proper utilization of the AID handpump in-country. The workshop was held February 21-27, 1982, and covered basic principles of adult learning, needs assessment, writing objectives, and designing and delivering training. Participants were trained in task and performance oriented approaches. See WASH Field Report No. 45.

OTD #81 February 1982: Completed Beverly

**Collection and Analysis of AID Program Data for Interregional Planning in Water Supply and Sanitation-S&T/HEA** The Office of Health requested WASH to provide consultant and consultant support services for management and analysis of AID water supply and sanitation data from 1973 to the present. The principal consultant

collected relevant AID programmatic and historic project data base materials and then entered, stored, processed and readout data in desired formats using standard and self-developed computer programs. This data is continuously up-dated under a separate ISTI contract with the Office of Health.

OTD #82 February 1982: Completed Rosensweig

**Local Manufacture of AID Handpumps—Ecuador** WASH provided technical assistance to two local manufacturers for the production of 30 AID handpumps, which were to be used in a USAID funded rural water project. The OTD included the preparation of job aids for quality control of the production process and for the installation and maintenance of the handpump. WASH also trained twenty Peace Corps Volunteer and PVO personnel in installation and maintenance. See WASH Field Reports Nos. 110, 123, 124 and 125.

OTD #83 February 1982: Completed Donaldson

**Testing of Portable Water Purification Units for Use in Disaster Assistance—OFDA S&T/HEA** The AID Office of Foreign Disaster Assistance requested an evaluation of the quality of water produced by portable water purification and disinfection units which were developed for use in disaster assistance operations. A total of 30 samples of heavily polluted water were tested at a certified laboratory. After running through the disinfection units, 29 of the samples showed no coliform organisms. The effluent quality, therefore, was within USEPA drinking water standards. See WASH Field Report No. 41.

OTD #84 February 1982: Completed Donaldson

**Technical Assistance in Project Identification for Water Supply, Sewage and Health Sector Loan Project—Dominican Republic** USAID/Santo Domingo requested WASH technical assistance in the development of data for a Project Identification Document for the water/sewage/health education element under Health Sector Loan III. The work included reviewing status of past and current projects, resource availabilities and existing plans, assisting in identifying the problem and in the determination of project purpose, scope, size, constraints, desired inputs and outputs, relationships with the government and local organizations, and estimated impacts on beneficiaries and the environment.

OTD #85 February 1982: Completed Donaldson

**Technical Assistance in Field Installation, Training, Testing and Evaluation of Handpumps—Honduras** USAID/Honduras requested WASH assistance in implementing Stage II of the Honduras

Handpump Project. WASH was asked to install several types of handpumps in up to fifty sites selected under Stage I (WASH OTD No. 29) and to test and evaluate the performance of a handpump manufacturer's quality control training manual and a handpump installation, operation and maintenance manual. Government health promoters were also trained in pump installation, operation and maintenance and in water quality testing and well disinfection. See WASH Field Report No. 103.

OTD #86 March 1982: Completed Rosensweig

**Attendance of WASH Training Officer at Meeting of Interagency Task Force on Human Resource Development—UN Water Decade, Geneva—S&T/HEA** The Office of Health requested that the WASH Training Officer participate in the March 11-12, 1982, Geneva meeting of the U.N. Interagency Task Force on Human Resources Development. This was part of WHO coordination efforts for the International Drinking Water Supply and Sanitation Decade. The agenda of the meeting included a review of U.N. agency and donor countries' development plans, programs and proposals, a discussion of means to achieve a cooperative approach to Decade HRD, and development of a short- and medium-term plan of action. The Training Officer also stopped in London in order to establish linkages with the Industrial Training Service.

OTD #87 March 1982: Completed Isely

**Participation in AIDIS/PAHO Regional Symposia on Human Resources for the Water Decade, Panama July 26—August 3, 1982—S&T/HEA** The Office of Health requested WASH to participate in and prepare a workshop for two meetings in Panama City, Panama. The first meeting on human resource development aspects of water supply and sanitation was sponsored by PAHO. WASH worked with PAHO and the Office of Health in planning and implementing a session of "Training of Trainers" and in designing and coordinating the working group. The second meeting was the XVIII Congress of AIDIS—Interamerican Association of Sanitary Engineers. Its theme was also human resource development aspects of the International Drinking Water Supply and Sanitation Decade.

OTD #88 April 1982: Completed Hafner

**Feasibility Analysis and Design Study of Effluent Reuse and Night Soil Disposal for Maseru—Lesotho** USAID/Lesotho requested WASH technical assistance for feasibility analysis and preliminary design work on utilization and disposition of human wastes from the city of

Maseru. The scope of work for the first task, effluent re-use from the sewage treatment plant for crop irrigation, included a feasibility analysis; determination of rough design parameters, cost/benefits, and a preliminary pilot plant design; evaluation of health hazards and control requirements; and preparation of a report. The scope of work of the second task, night soil disposal, included investigation of alternatives, their feasibility and costs, and recommendations for the most appropriate method of disposal. See WASH Field Report No. 55.

OTD #89      April 1982: Completed      Donaldson

**Preparation of a Manual on "Practical Water Treatment for Communities in Developing Countries"-S&T/HEA** The AID Office of Health requested WASH to prepare a manual on "Practical Water Treatment for Communities in Developing Countries." The resulting manual contains information on the technical, managerial, and human resource aspects of operating and maintaining community water treatment systems. See WASH Technical Report No. 29. A revised version of this report was published in 1984 by John Wiley & Sons with the same title.

OTD #90      April 1982: Completed      Rosensweig

**Second Training-of-Trainers Workshop for AID Handpump Technology Transfer Personnel, September 15-17, 1982-S&T/HEA** The Office of Health requested WASH to plan and conduct the second "Trainer-of-Trainers Workshop for AID Handpump Technology Transfer Personnel," September 15-17, 1982. This workshop reinforced and expanded on the material covered in the February 1982 Workshop (OTD #80). Among other topics, it reviewed progress, identified training problems, reinforced training design and delivery skills, and provided practice in using training techniques and writing training materials. There were eight participants from the Georgia Institute of Technology and staff from the WASH GIC who are involved in technology transfer operations. See WASH Field Report No. 60.

OTD #91      May 1982: Completed      Isely

**Planning Assistance for Rural and Village Health Activities-Togo** USAID/Togo requested WASH technical assistance for planning rural and village level health activities in Plateaux and Savane regions. The scope of work included review and revision of baseline medical, hygiene and water usage surveys and procedures; assisting in the planning of management and implementation strategies to integrate current Affaires Sociales activities into the proposed water project health program; and exploration of technical possibilities

for alternative water resource development strategies in villages where drilled wells have proven unfeasible. The consultant also worked with government officials to outline ways of increasing community participation in village health activities.

OTD #92      May 1982: Completed      Isely

**Technical Assistance for Workshop on Water Supply and Sanitation for Rural Dispersed Populations-Tunisia** USAID/Tunisia requested WASH planning and implementation support for a Tunisian Workshop on Water Supply and Sanitation for Rural Dispersed Populations in Arid Countries. The purpose of the workshop was to exchange information and experience on rural water services, on technologies for disinfection at water points and in homes, on equipment and fittings for use at water points, including handpumps, and on related activities. Workshop outputs included recommendations for action and training in the format of an execution plan and the creation of a network of professionals in Tunisia and Francophone Africa. The workshop was held in November 1982 in Kasserine. See WASH Field Report No. 67.

OTD #93      May 1982: Completed      Donaldson

**Technical Assistance in Administration of Rural Sanitation Project-Bolivia** USAID/Bolivia requested WASH assistance in improving the administration of the Bolivia Rural Sanitation Project. The purpose of the project was to create an institutional capability within the Ministry of Social Welfare and Public Health and its Division of Environmental Sanitation to provide potable water and sanitation facilities to small Bolivian rural villages of 800 persons or less. The WASH consultant assisted the Mission and the Division of Environmental Sanitation in establishing a simplified information and accounting system, among other things. See WASH Field Report No. 47.

OTD #94      May 1982: Completed      Donaldson

**Review of Design Standards, Specification and Costs for Water Supply and Sanitation Systems for Low Income Housing-Honduras** The USAID Regional Housing and Urban Development Office in Honduras requested WASH technical assistance to develop mechanisms for accelerating the current process of project implementation, to review current design standards of WS&S infrastructure systems for low income housing, and to participate in a seminar on appropriate design standards for water and waste disposal in low income shelter projects in Latin America. The WASH consultant worked closely with the two Honduran water authorities and other public and private sector organizations in the

course of review and evaluation activities. See WASH Field Report No. 46, available in English and Spanish.

OTD #95      May 1982; Completed      Donaldson

**Kanye Village Sewerage and Sanitation Feasibility Study—Botswana** USAID/Botswana requested WASH assistance to conduct a feasibility study for sanitation in Kanye Village, which has a population of about 22,000 people. WASH consultants carried out a need assessment, developed sanitation options, and recommended an integrated approach involving ventilated improved pit (VIP) latrines, sanitation seminars, and broad based community participation. See WASH Field Report No. 95.

OTD #96      May 1982; Completed      Rosensweig

**Monitoring and Evaluation of Community Health Promoter Training Course—Ecuador** AID/Ecuador requested WASH assistance to observe and review a three week classroom and field demonstration training course being held for community health promoters from eighteen provinces in Ecuador. The course was given by the Ecuadorian Institute of Sanitary Works (IEOS) in conjunction with AID. The purpose of the review was to develop insights and recommendations to strengthen future training courses and the IEOS program in rural water supply, sanitation and community participation. See WASH Field Report No. 49.

OTD #97      May 1982; Completed      Donaldson

**Technical Assistance in Well Siting and Drilling—Dominican Republic** USAID/Dominican Republic requested WASH assistance in the well siting aspects of Health Sector Loan II. The original well drilling program had resulted in a high incidence of dry holes which required review. The WASH consultant made recommendations to improve the productivity of local well drilling companies and assisted in revising the well drilling contracting program to minimize the problem of reduced drilling capacity. See WASH Field Report No. 50.

OTD #98      June 1982; Cancelled

**Training Assistance on Groundwater Contamination and Quality—Costa Rica**  
Cancelled at request of Mission.

OTD #99      June 1982; Completed      Beverly

**Health Information System Development: Microcomputer Demonstration—Dominican Republic** USAID/Dominican Republic requested WASH technical assistance to design and present a demonstration of how information generated by the Secretariat of Health (SESPAS) could be processed,

analyzed and displayed using a microcomputer system. Some 6,000 SESPAS primary health care workers, or promoters, were each collecting basic health and household data on 100–300 families. Methods of efficiently using this information for analytical, planning and management purposes were under consideration and the microcomputer may provide a cost effective method of processing and analysis. The scope of work included meeting with Mission and SESPAS personnel to determine the characteristics of the data and the data collection system and to determine appropriate uses of processed data. Based on these findings, a preliminary set of file structures, record formats and displays was established for demonstration to SESPAS and Mission officials. Suggestions were also made as to possible hardware/software combinations that might be appropriate for later assessment in a feasibility study (see OTD #103). The demonstration was given in September 1982. See WASH Field Report No. 111.

OTD #100      June 1982; Completed      Hafner

**Technical Assistance in Training-of-Trainers for Public Health Nurse Supervisors and in Training for Spring Cappers—Zaire** USAID/Zaire requested technical assistance in two training tasks: training-of-trainers (TOT) for fifteen public health nurse supervisors who would work with village health committees, and training of 20 Peace Corps Volunteers (PCVs) in spring capping techniques. The two week training-of-trainers course conducted in July and August 1982 emphasized adult learning processes, preparation of training objectives, planning of training sessions, and innovative health education approaches. In the Peace Corps spring capping course, held in October, the sanitary engineering training consultant assisted the Peace Corps on-site trainer and emphasized practical site assessment, flow measurement, and physical design. This consultant also advised PCVs and Zairians of possible solutions to water flow, drainage and design problems of existing spring boxes in specific areas and prepared a draft spring capping instructional manual. See WASH Field Report Nos. 62 and 73. Also see WASH Technical Report No. 28.

OTD #101      June 1982; Completed      Donaldson

**Evaluation Assistance for Rural Water and Sanitation Project—Honduras** USAID/Honduras requested WASH assistance in evaluating the status of the Honduras rural water supply and sanitation project, which was intended to provide 247,000 families with access to safe water and to adequate human waste disposal facilities but was experiencing serious delays in implementation. WASH consultants recommended changes in project

organization, management, and financial procedures as well as in technical design, construction, and operations and maintenance. See WASH Field Report No. 69.

OTD #102      June 1982: Completed      Rosensweig

**Technical Assistance on Appropriate Well Drilling Equipment—Ecuador** USAID/Ecuador requested WASH assistance to provide Meals for Millions/Freedom from Hunger Foundation, a U.S. private voluntary organization operating in Ecuador, with technical advice on well drilling equipment appropriate for local use. Meals for Millions has a project to provide water for improvement of the nutritional and health status of the population of the Santa Elena peninsula in Southern Ecuador. The WASH consultant assessed the situation and capabilities of local organizations to procure, and/or manufacture, operate, and maintain various types of well drilling equipment and recommended the appropriate drilling rig. See WASH Field Report No. 59.

OTD #103      June 1982: Completed      Beverly

**Health Information System Development: Assessment and System Design Study—Dominican Republic** USAID/Dominican Republic requested WASH technical assistance to make an assessment and system design study of the data collection activities of the Secretariat of Health (SESPAS) under Health Sector Loan II. The scope of work included review of forms and of data collection procedures, definition of information requirements, information system design, and preparation of manual and computerized system specifications, as appropriate. Two specific areas of information system design were selected for detailed analysis: inventory control and field operations management. Recommendations identified design assumptions and addressed trade-offs of manual versus computerized systems with specific attention being given to accuracy, availability, accessibility, flexibility and possible external applications of data and analyses. See WASH Field Report No. 111 and OTD #99.

OTD #104      July 1982: Completed      Warner

**Investigation of Appropriate Water and Sanitation Systems for Low Cost Housing—Kenya** The USAID Regional Office of Housing and Urban Development in Nairobi requested WASH technical assistance in investigating appropriate water supply and sanitation systems for low cost housing in the Umoja II housing project in Nairobi. Working with a technical committee of the Nairobi City Council, WASH consultants developed four alternatives for water and sanitation systems, including

(1) temporary community sanitary facility, (2) Kayole I project standards, (3) courtyard standpipe with pour flush toilet, septic tank and small diameter sewer, and (4) minimum cost conventional system. Interim reports are available.

OTD #105      July 1982: Completed      Donaldson

**Technical Assistance in Lecture Workshop on Sanitary Engineering Design for Developing Countries—Ecuador** USAID/Ecuador requested a WASH consultant to participate in a week-long training seminar on cost efficiency in the design and implementation of sanitary engineering facilities in developing countries. The consultant demonstrated the use of a computerized planning model on a minicomputer and conducted seminars on efficient sanitary engineering design and appropriate technology. See WASH Field Report No. 63.

OTD #106      July 1982: Completed      Hafner

**Technical Assistance in Developing a National Drinking Water Supply and Sanitation Plan—Central African Republic** USAID/Central African Republic (CAR) requested WASH assistance in developing a national drinking water supply and sanitation plan similar to that prepared for Sri Lanka. The WASH consultant provided preliminary coordination for plan formulation which included discussions with AID and CAR officials of the water supply and sanitation situation, needs and implementation capabilities; review of resources required to design a national plan; and an initial schedule of plan development activities. A National Action Committee for the Water Decade has been established and a Technical Coordinator has been appointed. Follow-up WASH assignments included assisting in the formulation of a water supply and sanitation policy document; a national seminar to review and approve the policy; and the development of a short-term action plan. See WASH Field Reports Nos. 53, 72, and 97.

OTD #107      July 1982: Completed      Isely

**Technical Assistance in Development of Inter-Sectoral Water Supply and Sanitation Strategy Paper for the Africa Bureau—AFR/TR/HNP** The Africa Bureau Health/Nutrition/Population Division requested WASH assistance to develop an intersectoral water supply and sanitation (WS&S) strategy statement. WASH consultants had been drafting an Africa WS&S strategy paper primarily from the health sector viewpoint and with an emphasis on human and institutional resource development. In reviewing this paper, the Africa Bureau recognized the need for a broader, more comprehensive inter-sectoral perspective and requested an appropriate revision of the paper. The

revision emphasized rural and peri-urban water supply and sanitation in sub-Saharan Africa. See WASH Technical Report No. 19.

OTD #108 August 1982: Cancelled

**Training Assistance to the Assistant Sanitary Technician Schools—Cameroon** Cancelled at request of Mission.

OTD #109 August 1982: Completed Isely

**Technical Assistance to Peace Corps Water Supply and Sanitation Sector—S&T/H/WS** WASH was requested to assist the Peace Corps in a review of its water supply and sanitation activities to serve as a basis for planning and implementing future operations in the water supply and sanitation sector. The scope of work included interviewing key Peace Corps staff, collecting and analyzing relevant documentation and data, identifying strategic opportunities, resource requirements, and possible deployments, and preparing a final report. In addition, the consultants updated the 1980-1981 Peace Corps Project Summary of Water and Sanitation Projects for 1982-1983. See WASH Field Report No. 86.

OTD #110 August 1982: Completed Donaldson

**Coordination/Collaboration on LDC Training with the International Water Supply Association (IWSA)—S&T/H/WS** WASH was requested to participate in a planning meeting of the Committee on Waterworks Personnel of the IWSA in Zurich, Switzerland, on September 6, 1982. The agenda of the Committee included: reviewing the minutes of earlier Working Group meetings as well as reports of Regional Conference (1981-India, 1982-Africa); considering papers for the 1981 Tunis Congress; examining arrangements for Post Congress Seminars in developing countries; and discussing a proposal for a training workshop to be held for developing countries in 1983.

OTD #111 August 1982: Completed Rosensweig

**In-Service Training for Peace Corps Volunteers in Rural Potable Water Supply Project—Morocco** USAID/Morocco requested WASH to provide in-service training to 11 Peace Corps Volunteers (PCVs) in the operation and maintenance of water pumping systems for the rural potable water supply project and to review the status of the project. Since completing initial training under OTD No. 61 in February 1982, PCVs had identified unresolved problems and had expressed a need for further training. The assignment included reviewing the situation with PCVs, preparing a work plan and material requirements for in-service training of

PCVs, conducting in-service training at selected field sites, and providing assistance in the design of a diesel repair trouble shooting course to be given by others. See WASH Field Report No. 61.

OTD #112 September 1982: Completed Rosensweig

**Participation in Practice of Management Seminar—S&T/H/WS** The Office of Health authorized the WASH Senior Training Officer to participate in a seminar on "The Practice of Management Principles," October 25-29, 1982, in Rosslyn, Virginia. The seminar was conducted by the Coverdale Organization, an internationally recognized consulting firm specializing in increasing awareness and skills in the human, non-technical "process" areas of management. Understanding and proficiency in these areas is vital to the achievement of quality organizational results and the personal satisfaction of those involved. The approaches and techniques demonstrated in the seminar are being applied to WASH activities in the area of management training.

OTD #113 September 1982: Completed Donaldson

**Technical/Managerial Review of the AID Handpump Technology Transfer Program in Sri Lanka, Philippines, Indonesia, Honduras, and Dominican Republic—S&T/H/WS** The AID Office of Health requested that WASH participate in a technical/managerial review of the AID Handpump Technology Transfer Program in Sri Lanka, Philippines, Indonesia, Honduras and Dominican Republic. During the field visits, WASH consultants reviewed the current and anticipated future status of handpump manufacturing, handpump marketing, pricing, and distribution, and the supply and delivery of spare parts; field installation effectiveness; and training and community participation effectiveness. The consultants also ascertained current and future USAID handpump technology transfer activities. See WASH Field Report No. 76.

OTD #114 September 1982: Completed Donaldson

**Assessment and Evaluation of the Feasibility of Local Manufacturing of the AID Handpump—Peru** USAID/Peru requested WASH to conduct an evaluation of the feasibility of local manufacturing and marketing of the AID Handpump and Robodevices in Peru. WASH consultants carried out a needs assessment, marketing study, and a review of manufacturing and maintenance capabilities. They concluded that low manufacture of the AID handpump was feasible in Peru but that further cost analyses were required to decide on future handpump production. See WASH Field Report No. 89.

OTD #115 September 1982: Completed Donaldson

**Technical Assistance in Design of Well Drilling Program—Honduras** USAID/Honduras requested WASH assistance in designing a well construction program for western Honduras that would encompass an estimated 3,000 drilled and hand dug wells. A WASH consultant reviewed the hydrogeological and well construction practices of the area. He recommended increased emphasis on cable tool drilling methods, private sector contractors, and gravity flow water systems. See WASH Field Report No. 65.

OTD #116 September 1982: Completed Isely

**Technical Assistance in Training Social Promotional Agents in Spring Capping and Rainwater Harvesting—Togo** USAID/Togo requested WASH assistance in the training of social promotion agents in village level water supply and sanitation system design and construction as part of on-going AID funded projects. The technical and training instruction given to these agents was to prepare them to assist village populations in developing local springs and rainwater harvesting systems. The training-of-trainers training plan addressed preparation, coordination, training sequence, agenda, and types of performance demonstrations in the field. It also identified controls to insure that the training materials/methodology used for these efforts with the Togo trainees resulted in a package of field tested materials and methodology that can be translated and applied in other country/geographic situations. See WASH Field Report No. 87. Also see Technical Reports Nos. 27 and 28.

OTD #117 September 1982: Completed Isely

**Technical Assistance in Evaluation of Foster Parents Plan Water Projects—Indonesia** USAID/Indonesia requested WASH assistance with the technical aspects of evaluating the 2,000 site water supply program of the private volunteer organization Foster Parents Plan. The social and health aspects were evaluated by the staff of Foster Parents Plan. The scope of work included review of relevant project documents; interviews with staff of AID, Foster Parents Plan, and ministries and with village committees; inspection of existing and planned water source sites; and preparation of an evaluation report. The report considered suitability of location and effectiveness of existing wells and gravity systems, appropriateness of planned sites, construction program, technology selection and training, and the strengths and weaknesses of the overall program. See WASH Field Report No. 71.

OTD #118 September 1982: Completed Hafner

**Technical Assistance in Assessing and Planning CARE Water Supply and Sanitation Projects—Cameroon** USAID/Cameroon requested WASH assistance in assessing CARE water supply and sanitation programs and in preparing the CARE 1983-1987 Development Plan. The scope of work had two major tasks. The first was to assess the current status of CARE-managed water supply and sanitation (WS&S) programs in the Northern and Eastern Regions. The second task was to assist CARE in making reasonable and feasible projections of WS&S activities for the next five years. Sub-tasks included the development of practical targets and reasonable "indicators" against which to measure progress and to prepare a draft of relevant sections of CARE's multi-year plan. See WASH Field Report No. 75.

OTD #119 September 1982: Cancelled

**Technical Assistance in Planning the Evaluation of Water Supply, Sanitation and Health Projects—Philippines** Cancelled at request of the Mission.

OTD #120 September 1982: Completed Isely

**Technical Assistance in Evaluation of Water Supply, Sanitation and Health Aspects of Spring-Fed Irrigation Project—Tunisia** USAID/Tunisia requested WASH assistance in conducting an interim evaluation of the water supply, sanitation and health aspects of a spring-fed irrigation project. The evaluation was undertaken jointly with the Central Tunisia Development Authority and AID. The scope of work included reviewing relevant documentation, interviewing AID and government officials, visiting sites and preparing an evaluation report and recommendations. See WASH Field Report No. 84.

OTD #121 September 1982: Completed Rosensweig

**Technical Assistance for Training-of-Trainers Workshop for Peace Corps—S&T/H/WS** The Peace Corps requested WASH assistance in the design and delivery of a training-of-trainers (TOT) workshop December 6-9, 1982 for the Indian Health Service in Alaska. Eighteen Indian Health Service engineers and sanitarians who participated in the workshop were trained to serve as technical trainers in the continental U.S. for Peace Corps Volunteers assigned to water supply and sanitation projects. The scope of work encompassed the design and delivery of a four day TOT workshop and the preparation of a final report which included an evaluation and recommendations. See WASH Field Report No. 70.

OTD #122 September 1982: Completed Rosensweig

**Development of Trainers' Guides on Handpump Installation and Maintenance, and Latrine Construction—S&T/H/WS** WASH developed two training guides on handpump installation and maintenance and latrine construction. Both training guides contain all the information a trainer needs to plan and conduct a comprehensive workshop, including training designs, trainer guidelines, and participant handouts. The guides were developed for trainers to use in training field workers. The training guides can be adapted with minor changes for use in a wide variety of situations. See WASH Technical Reports Nos. 25 and 26.

OTD #123 October 1982: Completed Rosensweig

**Technical Assistance in Design and Delivery of a Training Workshop on Management Team Building—Thailand** USAID/Thailand requested WASH training assistance in designing and delivering a workshop on management team building for the Provincial Waterwork Authority (PWA) of Thailand. The workshop was held for the 30 top managers of PWA from November 1-5, 1982. The workshop was a first step in future PWA activities to strengthen its management and its training capability. Most of the workshop was conducted in Thai. See WASH Field Report No. 68.

OTD #124 October 1982: Completed Donaldson

**Technical Assistance to Assess Solid Waste, Wastewater and Water Supply Situation and Requirements—Lebanon** USAID/Lebanon requested WASH assistance to assess the solid waste, wastewater and water supply situation and requirements in Metropolitan Beirut. The scope of work included contacting public, private and foreign organizations active in these subsectors; reviewing their activities and plans; estimating the effectiveness of their individual and collective efforts; and determining areas of need and future resource requirements for the subsectors. From this data the WASH consultants prepared a suggested action plan, schedule and estimates of resource requirements, and other recommendations considered appropriate. See WASH Field Report No. 66.

OTD #125 October 1982: Completed Donaldson

**Technical Assistance in Staffing AID/WASH Exhibition Booth at APHA Annual Meeting, Montreal, November 13-19, 1982—S&T/H/WS** The AID Office of Health requested WASH to provide professional staff for the AID/WASH exhibition booth at the annual meeting of the American Public Health Association in Montreal, Canada, November 13-19, 1982. The WASH

portion of the booth contained display panels with photographs, an operational AID Handpump, and a variety of WASH reports and publications for discussion and distribution to visitors to the booth.

OTD #126 November 1982: Completed Donaldson

**Review of Water-Seal Latrine Field Acceptance and Possible Local Manufacture—Honduras** USAID/Honduras requested WASH assistance in reviewing the acceptance of water-seal latrines and the feasibility of manufacturing them in Honduras. At the time, Honduras had programmed the installation of 18,000 pit latrines and 14,000 water-seal latrines. A WASH consultant then in Honduras on another task made a preliminary survey to determine what steps should be taken next.

OTD #127 November 1982: Completed Rosensweig

**Reconnaissance Visit in Preparation for Sanitation Workshop—Senegal** USAID/Senegal requested WASH services to plan a workshop on latrine construction and solid waste disposal for nurses working in the Bakel Health Component of the Irrigated Perimeters Project. The planning visit took place in December 1982. The purposes of the planning visit were to review workshop planning to date, assess the proposed workshop site, and investigate the participation of other Senegalese institutions. As a result of the planning visit the workshop was scheduled for April 1983. See OTD No. 147.

OTD #128 December 1982: Completed Donaldson

**Coordination/Collaboration on Water and Sanitation in Asia—S&T/H/WS** At the request of the AID Office of Health, WASH partially financed the travel costs of a keynote speaker at the International Seminar on Human Waste Management for Low-Income Settlements, in Bangkok, Thailand, January 16-22, 1983, sponsored by the Asian Institute of Technology and others.

OTD #129 January 1983: Completed Donaldson

**PVO Seminar on Rural Potable Water and Sanitation Systems—Haiti** USAID/Haiti requested WASH technical services in the design and implementation of a seminar on rural potable water and sanitation systems for private volunteer organizations (PVOs). WASH consultants provided these services and the seminar was held in February 1983. A seminar of this kind was recommended by WASH under OTD #9 in November 1981 in WASH Field Report No. 2. See WASH Field Report No. 77.

OTD #130 January 1983: Completed Donaldson

**Comparative Life Cycle Cost Analysis of AID and MOYNO Design Handpumps—LAC/DR S&T/H/WS** WASH was requested by the AID Latin America Bureau, the Dominican Republic Mission, and the Office of Health to make a comparative life cycle cost analysis of the AID and Moyno design handpumps that are used in the Dominican Republic. The AID handpumps were manufactured in the Dominican Republic while the Moyno pumps were imported from the U.S. The cost analysis included annual operational and maintenance cost estimates, sensitivity analyses, and the use of several interest rates. Although the analysis was sensitive to the interest rate employed, it was found that the Moyno pumps were slightly more expensive on an annual or life cycle basis than the locally manufactured pumps. See WASH Field Report No. 80.

OTD #131 January 1983: Completed Rosensweig

**Technical Assistance to Improve Management Structure and Systems of Public Health Inspectorate—Swaziland** USAID/Swaziland requested WASH assistance to strengthen the management structure and systems of the Public Health Inspectorate in the Ministry of Health. The Inspectorate is responsible for latrine construction, spring protection, food inspection and the control of pest and communicable diseases. The scope of work included evaluation of present level of management skills, identification of key management skills to perform job duties, review of proposed organization structure of the Inspectorate, preparation and delivery of an in-service management training program for health inspectors, and development of a management information system and of other recommendations as appropriate. See WASH Field Report No. 108.

OTD #132 February 1983: Completed Rosensweig

**Planning of Latrine Construction Workshop and Determination of Training Needs in Water Supply and Sanitation—Dominican Republic** USAID/Dominican Republic requested WASH technical assistance in planning a latrine construction workshop for Peace Corps Volunteers and Dominican field personnel working under Health Sector Loan II. The scope of work included establishing the workshop objectives, collecting information on participants and planning for all logistical arrangements. Additional assistance was provided to review and discuss short and long term training needs in water supply and sanitation within the scope of Health Sector Loan II. As a result of the planning, two workshops were scheduled in April-May 1983 under OTD #143 below.

OTD #133 February 1983: Completed Isely

**Feasibility Study and Planning of Water Supply and Sanitation Systems for Private Volunteer Organizations—Indonesia** USAID/Indonesia requested WASH to provide assistance to several private volunteer organizations (PVOs) operating in Irian Jaya, Indonesia. WASH assisted the Mission in making a feasibility study and plan for a PVO Operating Grant project involving 70-80 small scale water systems and the World Relief Corporation in the Minyambou area of Irian Jaya. WASH also assisted the PVO Development Information Service in planning a water supply and sanitation project in the Jaya Paura of Irian Jaya. See WASH Field Report No. 90.

OTD #134 February 1983: Completed Donaldson

**Development of Solid Waste Disposal Plan for Beirut and Other Areas in Lebanon—Lebanon** USAID/Lebanon requested WASH technical assistance in developing, with Mission, Near East Bureau and Lebanon Government staff, an environmentally sound "Plan of Action" to stop the continuing pollution of the Mediterranean from improper solid waste dumping. The plan prepared by a WASH consultant included potential institutional participants, recommendations for future dump site operations, and estimated costs of plan implementation. See WASH Field Report No. 79.

OTD #135 February 1983: Completed Donaldson

**Revision of Plan for Rural Water Supply and Sanitation Project—Honduras** USAID/Honduras requested WASH technical assistance to revise the work content and financial plan of the ongoing Rural Water Supply and Sanitation Project, which was experiencing serious delays in implementation. Working with the Programa de Saneamiento y Agua Rural (PRASAR), the WASH consultant recommended installing 950 handpumps out of the 3,000 originally planned and constructing 600 new wells. In addition, recommendations were made regarding scheduling, project siting, and equipment acquisition. See WASH Field Report No. 81.

OTD #136 February 1983: Completed Isely

**Preparation of Scope of Work for Evaluation of CARE Rural Water Project—Indonesia** USAID/Indonesia requested WASH technical assistance in preparing the scope of work for the evaluation of the ongoing CARE Rural Water Project. Since 1980 CARE has constructed 70 small scale rural water supply systems of 500 wells and numerous gravity flow systems in over 100 villages at a cost of about \$2,500,000. The evaluation of progress to date enhanced future programming by assessing the

cost-effectiveness and impact of completed works. The WASH consultant also assisted the Mission in considering a strategy for CARE to leverage its resources for greater impact on government water programs. See WASH Field Report No. 83 and OTD No. 155 below.

OTD #137 February 1983: Completed Isely

**Development of Comprehensive Training Plan for Rural Spring Capping Project—Burundi** USAID/Burundi requested WASH technical assistance to develop a comprehensive training plan for rural workers involved in the installation and maintenance of capped springs and in the promotion of domestic hygiene and sanitation. The scope of work included reviewing current health and sanitation programs of the Ministries of Health and Social Affairs and of UNICEF's spring capping project and assessing the training resources of each Ministry and of the Ministry of Development, which is in charge of the Project. It also included developing a comprehensive training program aimed at maximizing the health and sanitation benefits of spring capping, providing a list of required equipment and materials, and furnishing guidelines for the Ministries to institutionalize this program in their long-term plans of operation. See WASH Field Report No. 78.

OTD #138 February 1983: Completed Hafner

**Technical, Training and Management Assistance to the National Water Supply and Drainage Board—Sri Lanka** USAID/Sri Lanka requested that WASH provide technical, training and management assistance to the National Water Supply and Drainage Board (NWSDB) and also to the Ministry of Local Government, Housing and Construction (MLGHCL). Areas needing improvement included training, operations and maintenance, rehabilitation, water quality monitoring, planning, technology evaluation, organizational development and community financing of water supply and sanitation systems. The specific tasks of the WASH consultants were to prepare and conduct a workshop for 20 NWSDB staff on the management of operations and maintenance activities and to develop procedures and methods for the maintenance of water supply and sanitation activities. See WASH Field Reports Nos. 94 and 122.

OTD #139 February 1983: Completed Donaldson

**Technical Assistance with Design of a Rural Water Supply Project—Thailand** USAID/Thailand requested WASH assistance in preparing materials for a project paper for a rural water supply project. The Provincial Water Authority (PWA), which operates some 700 rural piped water systems, sought

to improve its capacity to design, install, manage and maintain these systems. The proposed project was intended to up-grade PWA's technical and management skills and identify measures to reduce capital and operating costs. The WASH consultants, working as members of the project design team, specifically addressed requirements for manpower training needs assessments, and the planning and implementation of training delivery systems.

OTD #140 March 1983: Completed Isely

**Engineering Evaluation of Foster Parents Plan Water Projects—Haiti** USAID/Haiti requested that WASH provide technical assistance for an engineering evaluation of the private volunteer organization Foster Parents Plan (FPP) water projects. The scope of work included assessing existing water supply sources, distribution networks, and maintenance activities; examining the unused filter system and reservoirs near Croix-des-Bouquets to determine costs and feasibility of future use; designing simple drains for public fountain areas and a storage tank for spring water; and making recommendations as appropriate, e.g., rainwater catchments, etc. See WASH Field Report No. 96.

OTD #141 March 1983: Completed Hafner

**Rural Health Zone Directors Workshop—Zaire** USAID/Zaire requested WASH participation in a health zone directors workshop, which is part of the Annual Conference of the AID Basic Rural Health Project in Zaire. The scope of work included identifying and discussing needs for spring capping, rain water harvesting and well construction, development of training strategies to meet the needs, planning regional water-related seminars for 1983-84, and specific seminar planning on rainwater harvesting for two rural health zones seminars for 1983. See WASH Field Report No. 88 and OTD No. 167 below.

OTD #142 March 1983: Completed Hafner

**Public Health Education for Low-Cost Sanitation—Tanzania** USAID/Tanzania requested WASH to provide a public health educator to assist the Ministry of Lands, Housing and Urban Development (ARDHI) in preparing strategy outlines for health education and promotion in low-cost sanitation for peri-urban areas of Dar es Salaam. The consultant worked with the low-cost sanitation unit, the Institute of Adult Education, the City Council, and other organizations. The scope of work for the strategy outline included defining objectives; determining personnel and logistic requirements and methods of operation and promotion; identifying teaching/promotion aids

needed; designing the monitoring and evaluation process; and estimating program costs. See WASH Field Report No. 92.

OTD #143      March 1983: Completed      Rosensweig

**Design and Delivery of Two Workshops on Latrine Construction—Dominican Republic** As a follow-up to OTD #132 USAID/Dominican Republic requested WASH to design and deliver two workshops on latrine construction as part of AID Health Sector Loan II activities. The participants were Peace Corps Volunteers and Dominican Health Promoters, the latter being responsible for the latrine component and health education activity of Health Sector Loan II. The scope of work included preparing training materials, organizing the workshops, which included solid waste disposal and potable water handling in addition to latrine construction, conducting the workshops, and preparing an evaluation and final report. The first workshop was conducted from April 4–15, 1983 for twenty-five participants and the second from April 25–May 6, 1983 for twenty-two participants. The workshop also served as a field test for the WASH Training Guide on Latrine Construction. See WASH Field Report No. 93. The Training Guide is Technical Report No. 25.

OTD #144      March 1983: Completed      Hafner

**Design and Delivery of Three Training-of-Trainers Workshops on Community Participation in Water Supply Projects—Malawi** USAID/Malawi requested WASH technical assistance in the design and delivery of a training-of-trainers workshop for six Malawian trainers and two three-week-long workshops on community participation in relation to the AID piped water project. Sixty-five Ministry of Health field staff were trained in health education and sanitation improvements in rural piped water supply areas. Workshop topics included the communication process, adult learning theory, community motivation methods, shared approaches to developing problem-oriented learning programs, community education techniques and materials, and village health committee formation, function, administration and supervision. See WASH Field Report No. 99.

OTD #145      March 1983: Completed      Isely

**Assistance in Evaluation of Rural Supply Project—Togo** USAID/Togo requested WASH assistance as a member of a team to evaluate the Rural Water Supply Project. The overall evaluation assessed the effectiveness of the establishment and functioning of wells, village health committees, AID and Togo government project staff, and of pump maintenance

systems; and the effectiveness of training village pump mechanics and of micro-project planning in the plateau region. The WASH consultant specifically addressed training effectiveness and relationships between villagers and field agents, identified problems encountered in carrying out project activities at the village level, and suggested possible solutions. See WASH Field Report No. 82.

OTD #146      March 1983: Completed      Isely

**Design of Research/Action Demonstration Study on Community Participation—Tunisia** USAID/Tunisia requested WASH planning assistance for the Central Tunisia Development Authority (CTDA). The WASH consultant assisted CTDA in the detailed planning and budgeting of a study designed to demonstrate the impact of community participation on the attainment of water supply, sanitation, and primary health care program objectives. The initial study concept is to take three different groups of communities with varying degrees of historical community participation and assess relative costs, resource utilizations, effectiveness, and impact of community participation activities on program objectives.

OTD #147      March 1983: Completed      Rosensweig

**Design and Delivery of Workshop on Latrine Construction, Solid Waste Disposal, and Wastewater Disposal for Rural Areas—Senegal** USAID/Senegal requested WASH assistance to design and deliver a sanitation workshop and to provide additional follow-up technical assistance with participants from the Bakel Project. The workshop covered latrine construction, solid waste disposal and wastewater disposal for rural areas. The activity included planning the workshop for sixteen participants, developing the training materials, arranging logistic requirements, conducting the workshop, evaluating the workshop and preparing a final report and recommendations. The workshop was held in Bakel from April 20–May 3, 1983. This follows up OTD No. 127 above. See Field Report No. 91.

OTD #148      May 1983: Completed      Donaldson

**Technical Assistance in Development of a Water Supply and Sanitation Project—El Salvador** USAID/El Salvador requested WASH assistance to support a health systems project development team in El Salvador. The WASH consultant identified targets of opportunity to be incorporated into the project paper related to improving the on-going Ministry of Health latrine program (design and construction) and assessed needs for the development of appropriate technology in household water systems.

OTD #149 July 1983: Completed Hafner

**Rural Water Supply Evaluation—Malawi** USAID/Malawi requested WASH assistance in designing and conducting a mid-project evaluation of the Self-Help Rural Water Supply Project. The purposes of this formative evaluation were to establish a baseline of evaluation data for the final evaluation and to measure current progress towards achieving project outputs, purposes, goals and end-of-project status. Six areas were investigated by the WASH evaluation team: project inputs by AID and the Government of Malawi; strengthening of the institutions involved in the project; project outputs; the construction and operational status of community water systems; the performance of the community water systems; and the economic, social and health impacts of the project. See WASH Field Report No. 105.

OTD #150 July 1983: Completed Donaldson

**Evaluation of Construction Aspects of Integrated Rural Health Project—Guatemala** USAID/Guatemala requested WASH assistance in evaluating the construction aspects of the Community-based Integrated Health and Nutrition System Project for rural health delivery. The project included construction of 114 small gravity fed potable water systems, 7,000 latrines, 1,500 housing improvements, 13 health posts, one regional service center and the renovation of 41 health posts. The WASH consultant reviewed Ministry of Health implementation plans and its logistic and administrative capabilities to monitor and meet project objectives, and made recommendations relevant to the timely and satisfactory completion of the project. See WASH Field Report No. 104.

OTD #151 July 1983: Completed Donaldson

**Technical Assistance for Private Sector Water Program—Bolivia** USAID/Bolivia requested WASH assistance in preparing a proposal for a private sector potable water and rural sanitation project. The WASH consultant assessed the technical feasibility of the proposed private sector initiative which involved Bolivian savings and loan institutional financing. A representative of the AID Bureau of Private Enterprise developed the institutional financing aspects of the proposal.

OTD #152 July 1983: Completed Rosensweig

**Preparation of Scopes of Work for Human Resource Development Programs—Peru** USAID/Peru requested WASH assistance in designing scopes of work for regional level rural water supply training programs for the Ministry of Health. The three training program subjects were 1) design and supervision of construction of rural water systems, 2) operation and maintenance of rural water

systems, and 3) health education programs which integrate primary health care with the construction of rural water systems and latrines.

OTD #153 August 1983: Completed Hafner

**Development and Testing of Rainwater Harvesting Training Materials—Inter-Regional S&T/H/WS**

The Office of Health requested that WASH continue development and testing of rainwater harvesting training materials on a more extensive basis than previously authorized. The scope of work included a technical review of existing materials; review and revision following field pilot test which was conducted under OTD No. 167; development of a dissemination strategy for the final products to reach key people with operational program interests; and distribution of the training materials to these individuals. See WASH Technical Report No. 27 and Field Report No. 115.

OTD #154 August 1983: Completed Rosensweig

**Development and Testing of Spring-Capping Trainers Guide—Inter-regional S&T/H/WS**

The Office of Health requested that WASH develop and test the spring-capping training guide. The scope of work included the development of the first draft, revisions based on a field test, and final production. The training guide contains all the information a trainer needs to plan and conduct a comprehensive two-week workshop, including training designs, trainer guidelines, and participant handouts. The guide was developed for trainers to use in training field workers with responsibility for rural water supply and sanitation. See WASH Technical Report No. 28.

OTD #155 August 1983: Completed Donaldson

**Technical Assistance in Evaluation of CARE Water Program—Indonesia** USAID/Indonesia requested WASH assistance in conducting the second part of an evaluation of the CARE Water Project. The scope of work included evaluation of CARE's field staff, of CARE's community involvement approach, and the involvement of the Government of Indonesia in CARE water project activities. Recommendations addressed how the CARE approach and training program might be incorporated into Government operations, how it might be used by other development organizations and PVOs, and how alternative financing methods may be applicable to CARE water projects. See WASH Field Report No. 107.

OTD #156 August 1983: Completed Hafner

**Technical Assistance in Evaluation of National Institute of Health Science Project—Sri Lanka**

USAID/Sri Lanka requested WASH assistance in the

mid-project evaluation of the National Institute of Health Science Project in the Ministry of Health, Sri Lanka. The WASH consultant was a member of the evaluation team and provided expertise in public health, water supply, sanitation and institutional training of community workers at the paraprofessional level in developing countries.

OTD #157 August 1983: Completed Halner

**Technical Assistance in Evaluation of CARE/ Kenya Rural Water Projects—Kenya** USAID/ Kenya requested WASH assistance in the design and execution of an evaluation of several rural water supply projects that CARE had worked on over the past three years. The scope of work included determining what has worked well, the reasons therefore and the impact on recipient communities; recommending viable community-based maintenance systems for future CARE projects in Kenya; reviewing and recommending realistic project goals and an appropriate goal accomplishment indicator system; developing a practical evaluation methodology for future CARE projects; and informally training CARE staff in evaluation approaches and methodologies. See WASH Field Report No. 106.

OTD #158 September 1983: Completed Rosensweig

**Technical Assistance in Assessment of Sanitation Sector and Strategy Design—Tunisia/RHUDO** USAID/Tunisia, the AID Regional Housing Office (RHUDO) in Tunisia, and the AID Office of Housing and Urban Programs in the Bureau for Private Enterprise (PRE/H), requested WASH assistance in undertaking an assessment of the sanitation sector in Tunisia and in developing a strategy for meeting urban and periurban sanitation needs. The scope of work included reviewing selected current and planned sewerage and drainage projects of other donors; assessing dimensions of sanitation sector needs, constraints, programs, policies and institutions, managerial, and financial capabilities; reviewing projects submitted for funding and identifying those eligible for AID/ Housing financing; and assisting in an initial development of a strategy and options for undertaking AID financing of future programs and projects in the sanitation sector. See WASH Field Report No. 109.

OTD #159 September 1983: Completed Rosensweig

**Technical Assistance in Institution Building—Near East Bureau** AID/NE requested WASH assistance in assessing the institution-building needs and plans of the water sector in the Near East region. WASH

assisted the Near East Bureau Water Resources Subcommittee on Institutional Development in assessing the capabilities of Near East institutions in Yemen, Egypt, Tunisia, and Jordan based on literature reviews and interviews with experts. The Report provides a description of the institutional setting, discusses sector trends in terms of programs and investments, identifies problems and constraints affecting the sector, and provides a framework for examining the status and institutions in each country. See WASH Field Report No. 119.

OTD #160 September 1983: Completed Rosensweig

**Technical Assistance in Human Resource Development—Near East Bureau** At the request of the Water Resources Committee of the Near East Bureau, WASH was asked to identify and assess the organizations and institutions that offer high quality training and educational programs in the water and wastewater sector. A handbook was developed which catalogues programs by length of the course, type of training offered and relation to key job functions in the sector. A companion document identifies sources of training materials for operations and maintenance. See WASH Field Reports Nos. 117 and 118.

OTD #161 September 1983: Completed Donaldson

**Technical Assistance in Evaluation of Small Rural Water Systems—Yemen** USAID/Yemen requested WASH assistance in evaluation of the small rural water systems project and preparing the terms of reference for the water sector assessment planned for early 1984. The general scope of work included assessing activities and plans of the organization; staffing of the contractor and the rural water department; project replicability; the role and impact of Peace Corps and of women in the project; and the long range requirements for similar water supply projects in Yemen. See OTD No. 39 and WASH Field Report No. 22.

OTD #162 September 1983: Completed Isely

**Technical Assistance on Project Paper for Community Water Systems Development—Haiti** USAID/Haiti requested WASH assistance in preparing a Project Paper for Community Water Systems Development. The WASH consulting team focused on site and water supply technical alternatives, options for institutional arrangements with PVOs, baseline data acquisition for socio-economic and health impact evaluation, technology transfer opportunities and resources, and utilization of local experience in project design and development of financing schemes.

OTD #163 September 1983: Completed Beverly

**Technical Assistance in Staffing AID/WASH Exhibition Booth at APHA Annual Meeting, Dallas, Texas, November 13-17, 1983-S&T/H/WS** WASH was requested by the Office of Health to provide professional staff for the AID/WASH exhibition booth at the annual meeting of the American Public Health Association. WASH display panels with photographs were part of the AID exhibit. The WASH section also included an operational AID Handpump and a variety of WASH reports and publications for discussion and distribution to visitors to the booth.

OTD #164 October 1983: Completed Donaldson

**Technical Assistance in Reviewing Low-Cost Alternative Water Supply and Sanitation Concepts and Designs-Ivory Coast** The USAID Regional Housing and Urban Development Office in Abidjan requested WASH assistance in reviewing low-cost alternative water supply and sanitation concepts and designs. The WASH team worked with the Housing Office in the Ivory Coast to identify and evaluate alternatives that were within the social, financial, and technical resources of the Ivory Coast for its low-cost housing projects. Key issues addressed included the social, technical, and financial range of affordable solutions; capital costs per user; environmental impacts; local availability of materials and equipment; possible financing schemes, such as a revolving fund; and feasible changes in current technical standards. See WASH Field Report No. 113.

OTD #165 October 1983: Completed Isely

**Collection and Presentation of Water and Sanitation Related Health Education Materials-S&T/H/WS** The Office of Health requested that WASH prepare a collection of water and sanitation related health education materials produced in developing countries and especially descriptions of how they were developed and used. The materials and associated descriptions will be used as examples and as guidance and inspiration for the creation of new indigenously prepared materials by health educators and trainers in developing countries and by consultants. The scope of work included obtaining copies and/or descriptions of materials and of their development and use; reviewing, cataloging and abstracting the materials; and preparing a health education resource bibliography. See WASH Technical Report No. 30.

OTD #166 October 1983: Completed Rosensweig

**Technical Assistance for Workshop on Sanitation and Latrine Construction-Sierra Leone** USAID/Sierra Leone and the Peace Corps requested WASH assistance to design and deliver a two week sanitation and latrine construction workshop for twenty-four Peace Corps Volunteers and staff from the Ministry of Energy and Power and the Ministry of Health. The workshop included hands-on experience in latrine construction and maintenance, as well as consideration of community participation, local practices, health education strategies, and project development and planning skills. The WASH training guide on latrine construction was piloted during this workshop. See WASH Field Report No. 114. Also see Technical Report No. 25.

OTD #167 October 1983: Completed Hafner

**Technical Assistance for Rainwater Harvesting Workshop-Zaire** USAID/Zaire requested WASH assistance to design and deliver a two-week workshop on rainwater harvesting for twenty-five national rural health workers, missionary health staff and Peace Corps Volunteers. The workshop concentrated on the technical skills and practices applied in the construction, operation, and maintenance of gutters and above-and-below-ground cistern systems used for household, institutional and community water supply. Previously developed WASH training materials on rainwater harvesting were adapted to Zaire and translated into French for use in the workshop. See WASH Field Report No. 115. Also see WASH Technical Report No. 27.

OTD #168 October 1983: Completed Hafner

**Technical Assistance in Evaluation of Rural Water-Borne Disease Control Project-Swaziland** USAID/Swaziland requested WASH assistance in conducting a mid-project evaluation of the Rural Waterborne Disease Control Project. The project has three major inter-related components-health education, environmental sanitation and public health engineering, and a survey of schistosomiasis and water-related diseases-aimed at expanding the capacity of the government to deliver effective preventive health services. In addition to assessing progress on eighteen specific aspects of the project, the WASH evaluation team reviewed the scope and content of the project, work plan priorities and time requirements and the appropriateness of the implementation strategy and of support received by

the contracting team. The team also assessed the need for a post-project knowledge, attitudes and practices survey, and made appropriate recommendations. See WASH Field Report No. 120.

OTD #169      October 1983: Completed      Isely

**Participation in International Workshop on Measuring the Health Impacts of Water Supply and Sanitation Projects, November 21-25, 1983, Dhaka-Bangladesh** The Office of Health authorized WASH participation in the International Workshop on Measuring the Health Impacts of Water Supply and Sanitation Projects. The workshop was organized by the International Centre for Diarrheal Disease Research, Bangladesh, and the London School of Hygiene and Tropical Medicine, and had some thirty invited participants plus observers. The WASH consultant presented a paper entitled "Opportunities, Problems and Pitfalls in Using Health Status Measures to Evaluate Water Supply and Sanitation Projects in Togo, Malawi and Tunisia."

OTD #170      October 1983: Cancelled

**Technical Assistance for Development of Project Paper Amendment for Rural Water Supply and Sanitation Project-Togo** Cancelled at request of Mission.

OTD #171      November 1983: Completed      Donaldson

**Disaster Assistance Following Earthquake-Turkey** The AID Office of Health and the Office of Foreign Disaster Assistance requested WASH technical assistance in evaluating the earthquake situation and its requirements in eastern Turkey. A WASH consultant and the AID WASH Project Manager analyzed water supply and sanitation conditions, requirements and opportunities resulting from the earthquake and coordinated water purification and planning activities in consort with U.S. and Turkish government officials.

OTD #172      November 1983: Completed      Donaldson

**Drought Emergency Assistance-Mauritania** The AID Office of Foreign Disaster Assistance and the Mauritania Mission requested WASH services in planning relief measures for the drought situation in Mauritania. The WASH team recommended short term technical assistance activities as well as long-term water supply improvements involving equipment replacement, well drilling, well

maintenance, operator training programs, and drilling rig repairs. See WASH Field Report No. 112.

OTD #173      January 1984: Completed      Donaldson

**Technical Assistance in Well Drilling and Community Participation-Bolivia** USAID/Bolivia requested WASH assistance in the well drilling and community participation aspects of the Bolivia Rural Water Supply and Sanitation Project, which had been suspended in 1980 and reactivated in 1983. WASH consultants developed recommendations on drilling rigs, well siting, pumps, and generators as well as on the community participation aspects of staff deployment, transportation, recruitment, equipment, technical assistance, and community promotion. See WASH Field Reports Nos. 116 and 121.

OTD #174      January 1984: Completed      Isely

**Technical Assistance in Evaluation of Rural Water Supply Project-Upper Volta** USAID/Upper Volta requested WASH assistance in conducting a benchmark assessment of the on-going rural water supply project. The assessment report reviewed the overall management of the project and its major components; choice of technology, well construction, and pump installation; pump and well maintenance organization and financing; host country management capability to continue well site identification and future well drilling; training of health assistants and village health workers; content of the health education component; and coordination of the component with well construction and use.

OTD #175      January 1984: Completed      Rosensweig

**Technical Assistance in Organizing a Training Unit in the Directorate of Rural Sanitation (DISAR)-Peru** USAID/Peru requested WASH assistance in organizing and planning the initial operations of the central training unit recently established in the Directorate of Rural Sanitation (DISAR). The WASH consultants assisted DISAR in organizing the training unit; establishing objectives, functions, positions and procedures; in developing a model for courses that DISAR will conduct; and in coordinating DISAR's training delivery system with other AID projects, other donors, and other national agencies. See WASH Field Report No. 126.

OTD #176 February 1984: Completed Hafner

**Technical Assistance on Project Paper for Urban Development—Jamaica** USAID/Jamaica and the Regional Housing Office/Caribbean requested WASH assistance in reviewing and refining a scope of work for the preparation of the project paper for an urban development project. The WASH consultant was involved with the water supply, sanitation, solid waste disposal and environmental health components of the paper.

OTD #177 February 1984: Completed Donaldson

**Evaluation of Basic Village Services Project—Egypt** USAID/Egypt requested WASH to provide an experienced rural public works engineer to assist in the third mid-project evaluation of the Basic Village Services Project. The purpose of this Project was to improve and expand the capacity of villages and governates to plan, manage, finance, implement and maintain selected infrastructure projects. At the time of the evaluation, there were 3,560 sub-projects encompassing 1,425 villages in 20 rural governates. Over 3,000 people had been given technical and managerial training, with 3,000 more in the training pipeline. The contribution of the rural public works engineer to the evaluation included assessment of the quality, quantity and effectiveness of sub-project engineering and of technical assistance and training, and the preparation of recommendations in these areas for successful project completion.

OTD #178 February 1984: Completed Rosensweig

**Evaluation of the Integrated Health Delivery Project—Ecuador** USAID/Ecuador requested WASH assistance in evaluating the water supply and sanitation component of the ongoing integrated Health Delivery Project which was being implemented by the Ecuadorian Institute of Sanitary Works (IEOS). The WASH evaluation team assessed IEOS' overall management capabilities and structure, cost/effectiveness in appropriate technology utilization, and its training programs, especially for paraprofessionals. The team also determined the status, quantitative results and effectiveness of IEOS' vehicle and equipment procurement, operations and maintenance program; the gravity water supply system construction program; the handpump and latrine installation program; and the community health education and participation program. Inter-institutional arrangements and the role of AID's sanitary engineer were considered and appropriate recommendations made to improve over-all project performance. See WASH Field Report No. 127.

OTD #179 February 1984: Completed Donaldson

**Assessment of Water and Sanitation Emergency Situation—Mozambique** The AID Office of Foreign Disaster Assistance and the U.S. Embassy in Mozambique requested WASH technical assistance to assess the damage caused by Typhoon Domitia in February 1984. Torrential rains caused the worst flooding in recorded history. A WASH consultant reviewed the overall water supply and sanitation condition in the capital of Maputa and surrounding areas and recommended replacements of needed irrigation, water supply, and sanitation equipment.

OTD #180 February 1984: Completed Donaldson

**Technical Assistance in Evaluation of Provincial Cities Project—Egypt** USAID/Egypt requested WASH assistance as part of a team to evaluate the on-going Provincial Cities Project. Principal issues addressed by the evaluation were whether inputs were being achieved in a timely and effective manner, had they resulted to date in the outputs envisaged in the project paper, and had the inputs/outputs contributed to the timely accomplishment of the project goal and purpose. Other topics considered were the role of the Egyptian private sector in project implementation; the effectiveness of coordinated action by the Egyptian government, AID and the AID contractor; the role of Provincial Cities in decentralization and Egyptian development; and the extent to which capacity building ("institutionalization") is occurring as a result of the project.

OTD #181 February 1984: Completed Rosensweig

**Technical Assistance on Project Paper for Housing/Sanitation Program—Tunisia** The USAID Regional Housing Office (RHUDO) in Tunisia requested WASH technical assistance in preparing the project paper for a combined Housing/Sanitation Program. This assistance was a follow-up to OTD #158 WASH provided a sanitary engineer and an economist who, as part of a five person team, prepared the sanitation/sewerage component. Their contribution included criteria for beneficiary identification, technical project descriptions, review of standards, a program financing plan, and a cost/benefit analysis. The team also assisted in coordinating efforts with existing sanitation projects funded by the World Bank, Kuwait Fund, and Tunisian government agencies, and in identifying specific sanitation/sewerage projects to be funded.

OTD #182      May 1984: Completed      Rosensweig

**Follow-up Technical Assistance for Private Water Sector Water Program—Bolivia** USAID/Bolivia requested WASH technical assistance for the private sector water program. This was a follow-up to work done under OTD #151 for the Bolivian Savings and Loan System (CAGEN) and AID's Bureau for Private Enterprise. The scope of work included development of site selection criteria, advice on appropriate design and construction of water, wastewater and excreta disposal systems, counsel on community participation, promotion, operation and maintenance of systems, and a review of CAGEN's proposed general project plan. Guidelines for project evaluation were also considered.

OTD #183      May 1984: Completed      Donaldson

**Review of Wastewater Treatment Facilities—Jordan and NE/PD/ENV** USAID/Jordan requested WASH technical assistance in conducting a comparative review of two operational wastewater treatment facilities. Aspects covered included the methods being used to recover the wastewater for further economically productive use; design operation, and maintenance problems and procedures; the monitoring plan being used to protect public health and the environment; and the procedures undertaken to insure that there are no adverse public health or environmental impacts.

OTD #184      May 1984: Completed      Rosensweig

**Participation in Human Resource Development Core Group Meeting—S&T/H/WS** In February, 1984, the World Health Organization invited WASH to participate in the work of a Core Group on Human Resources Development (HRD) for the UN Water Decade. Other members of the Core Group are AID, WHO, PAHO, ILO and the World Bank. The Core Group is an advisory group to the Task Force on HRD. Agenda topics included exchange of information on training activities; assessment of training needs in support of the Decade; the need to develop presentations illustrating the benefits of an integrated and systematic approach to HRD; the difficulty of mounting effective HRD programs where existing water and sanitation programs are weak and rarely coordinate their programs; and preparation and publication of a series of guidance articles focusing on organizational development and HRD. The meeting was held May 29–June 1, 1984 in Washington, D.C.

OTD #185      June 1984: Completed      Donaldson

**Technical Assistance in Evaluating and Planning Rural Water and Sanitation Maintenance Systems—Honduras** USAID/Honduras requested WASH technical assistance to evaluate alternative maintenance arrangements and to recommend appropriate maintenance systems for the on-going rural water supply and sanitation project. A WASH consultant assisted SANAA and the Ministry of Health to develop a self-financing operations and maintenance plan which made maximum use of existing human and technical resources. The consultant also recommended that there be a plan director, that an information system be developed, that in-service training be established, and that implementation begin in a pilot area. See WASH Field Report No. 129.

OTD #186      June 1984: Completed      Hafner

**Technical Assistance in Evaluation of the Upgrading Component of the Housing and Community Services Project—Egypt** USAID/Egypt requested that WASH provide an experienced civil engineer as part of a team that will evaluate the upgrading component of the housing and community service project for low-income areas in Egypt. The WASH consultant was concerned primarily with the community planning and water supply and sanitation infrastructure design standards aspects of the project. Since community upgrading programs should minimize the costs of physical improvements so that cost recovery can be maximized through affordable special assessments, particular attention was paid to service level trade-offs with appropriate infrastructure/facility designs and costs. See WASH Field Report No. 133.

OTD #187      June 1984: Completed      Rosensweig

**Technical Assistance in Planning the Rural Water Supply and Sanitation Component of a Health Sector Project—Belize** USAID/Belize requested WASH technical assistance in preparing project documentation for the improvement and expansion of rural water supply and sanitation (WS&S) facilities and the strengthening of institutional back-up as part of a proposed health sector project. As a member of a three-person planning team, the WASH consultant first assessed the current situation in terms of goals, plans, resource capabilities and availability, and potential locations of WS&S projects. Then, following discussion with local officials as to potential service areas, coverages, types of services, resource allocations, payment systems and schedules, the consultant prepared a

preliminary WS&S project design. The physical design emphasized low costs, local materials, local operation and maintenance, and suitability for wide-spread replication. The project design also included institutional and human resource development activities to strengthen administrative and WS&S service delivery capabilities locally and nationally.

OTD #188 July 1984: Completed Hafner

**Development of Rural Water Supply National Plan-Zaire** USAID/Zaire requested WASH assistance in the development of a rural water supply (RWS) national plan. The government, private volunteer agencies and other donors in Zaire are committed to uniting efforts and developing a national plan. The scope of work for this initial effort included reviewing the situation, existing plans, projects, and proposals; contacting agencies, PVOs and institutions concerned with RWS; devising a strategy for developing the plan, including information requirements, the role of organizations participating in the planning process, financing requirements, schedules and an outline of the plan; and preparing scopes of work for planning actions by participants and follow-up WASH consultants. See WASH Field Report No. 135.

OTD #189 July 1984: Completed Isely

**Technical Assistance in Searching for Alternative Water Supplies-Ghana/OFDA** USAID/Ghana and the Office of Disaster Assistance requested WASH services to design a plan to search for and develop alternative water supplies. The drought in Ghana has reached disaster proportions and required expert appraisal of the situation and recommendations for appropriate action. The WASH consultant, an experienced geologist and water supply engineer, reviewed the water supply situation, visited critical sites, and identified emergency and short-term actions and programs, as well as longer term development options, actions and programs, that could be useful in alleviating potable water shortages. See WASH Field Report No. 132.

OTD #190 July 1984: Completed Rosensweig

**Progress Evaluation of Rural Water Systems and Environmental Sanitation Project-Peru** USAID/Peru requested WASH assistance in conducting a progress evaluation of the on-going rural water systems and environmental sanitation project. The project is intended to provide water supply and sanitation facilities and services to 660 villages having populations under 500 people. The evaluation covered the following aspects of the

project: operational status of recently organized regional environmental health offices; progress in construction of community water supply and sanitation systems in the 660 villages; state of development of operations and maintenance procedures for village water systems; level of training and effectiveness of community organization and participation activities; progress in decentralization; and management and administration of the project. See WASH Field Report No. 134.

OTD #191 September 1984: Completed Rosensweig

**Planning Basic Village Services Overseas Training-Egypt** USAID/Egypt requested WASH assistance in planning a five week component (three week workshop and two week field trip) of a ten week course for approximately fourteen Egyptian engineers responsible for design and maintenance of Basic Village Services projects. The WASH component of the course focused on the design of water supply systems, selection of sources and treatment, environmental problems related to water supply and sewerage, appropriate sewerage systems, groundwater pollution, and establishment of maintenance systems. The training program took place in Washington, DC from October 1-December 7, 1984 with the USDA Graduate School coordinating the program.

OTD #192 September 1984: Completed Hafner

**Technical Assistance in Designing Water Supply and Sanitation Workshops-Sudan** USAID/Sudan requested WASH to develop a plan for WASH assistance to the Juba Water and Sanitation Programme (JWASP) in the Equatoria Region. WASH developed a scope of work for WASH assistance, particularly in the area of training, and discussed with the AID Mission potential WASH assistance for fiscal year 1985. The training subjects include latrine design, installation and maintenance, health education, bore-well rehabilitation and shallow well construction.

OTD #193 September 1984: Completed Donaldson

**Technical Assistance in the Engineering Applications of Microcomputer Techniques-Ecuador** USAID/Ecuador requested WASH technical assistance to develop the capability of Ecuadorian engineers to use a microcomputer to evaluate design alternatives for water and sanitation projects. A WASH consultant adapted an existing program to the available computer, conducted a workshop in computer use, and made recommendations regarding future computer operations. See WASH Field Report No. 136.

## WASH II (October 1984 to February 1989)

RM # 101      October 1984: Completed      St. Michel

**Prepare 1st Annual Work Plan for WASH II-S&T/H** This was an administrative Activity requested by the Office of Health to prepare, in close collaboration with the Office of Health and other AID offices, a WASH II Project Annual Work Plan covering the period October 22, 1984, through September 30, 1985. A pre-planning workshop for AID and CDM Associates' Staff was conducted as a basic part of this Activity.

RM #102      October 1984: Completed      St. Michel

**Administrative Start-Up of WASH II-S&T/H** This was an administrative Activity requested by the Office of Health to develop, install and operate a management information system (MIS) for WASH II. It also included the performance of other necessary initial administrative, financial, contracting, leasing, hiring, and organizational tasks to start-up the WASH II Project.

RM #103      October 1984: Completed      St. Michel

**Technical Start-Up of WASH II-S&T/H** This was an administrative Activity requested by the Office of Health to start-up WASH II technical assistance activities in support of AID Missions, Bureaus, offices and other AID clients and collaborators.

RM #104      October 1984: Completed      Warner

**Bolivia: Simple Low-Cost Water and Sanitation Measures for Rural Programs** An evaluation of development projects in the San Julian colonization area indicated major problems in the water supply and sanitation (WS&S) sector and the need for WASH technical assistance services. The scope of work for this activity included review of WS&S data on water supply in San Julian area, evaluation of needs and possible WS&S solutions, and preparation of design recommendations appropriate to the income and lifestyle of colonists. See WASH Field Report No. 140 (in Spanish only).

RM #105      October 1984: Completed      Rosensweig

**Visit to UNICEF and International Development Research Centre (IDRC)-S&T/H** Associate Director/HRD visited IDRC in Canada to discuss the development of support materials for the film "Prescriptions for Health," interviewed appropriate people at CIDA to assess to what extent IIRD is an integral part of projects, and discussed collaboration with UNICEF in New York City.

RM #106      November 1984: Completed      Jordan

**Dominican Republic: Evaluation of Modified AID Type Handpump** The USAID supported handpump manufacturing program, which had been underway for several years in the Dominican Republic, was considering making a handpump from steel pipe rather than cast iron and requested WASH technical assistance. The scope of work included reviewing the AID handpump situation, the ongoing manufacturing/test activities, and the protocol developed by the Georgia Institute of Technology for the modified AID handpump being tested in the Dominican Republic. Recommendations to assure quality production were made. See WASH Field Report No. 139.

RM #107      November 1984: Completed      Rosensweig

**Chile: Coordinating Working Groups with Pan American Health Organizations (PAHO) Symposium** The Associate Director for Human Resource Development conducted a two-day training session in Santiago, Chile, to prepare working group leaders for symposium responsibilities, acted as coordinator for working group leaders, and wrote a brief report summarizing WASH involvement in the symposium.

RM #108      October 1984: Completed      Rosensweig

**U.S. Training for Egyptian Basic Village Service Engineers-S&T/H** The USAID/Egypt Basic Village Services (BVS) Project arranged a training program in the United States for fourteen BVS engineers and requested WASH training assistance in water supply, sewerage, groundwater and maintenance. The scope of work included designing and conducting a three-week workshop on the topics above, coordinating the workshop with the U.S. Department of Agriculture Graduate School, which gave related training, and preparing a summary report. See WASH Field Report No. 141.

RM #109      October 1984: Completed      Rosensweig

**Develop Scope of Work and Prepare Guidelines for Assessing Institutional Effectiveness-S&T/H** Institutional development is a major concern of AID and the Office of Health recognizes specific institutional needs in the water and sanitation sector in developing countries. As an initial step in this area, the Office of Health requested WASH to prepare a scope of work to later develop guidelines for assessing institutional effectiveness. The work under this activity included reviewing available

documents on assessment of institutional effectiveness, interviewing appropriate individuals to determine the overall focus of the guidelines and writing a scope of work that included the purpose of the document, steps needed to develop it and resources required. Activity #146 below covers implementation development of the guidelines.

RM #110 November 1984: Completed Rosensweig

**Tunisia: Site Selection for Housing Projects** The USAID Regional Housing Office (RHUDO) in Tunis has a project with the Tunisian National Sewerage Authority (ONAS) for financing the up-grading of sewerage and drainage systems in low-income neighborhoods and towns. The World Bank and the Kuwait Development Fund are also involved in this project. RHUDO requested WASH assistance in selection of appropriate housing sites. The scope of work included visiting proposed sites to determine eligibility for AID financing, reviewing and evaluating construction costs, assisting ONAS in preparing information for the program delivery plan, and preparing the final report. See WASH Field Report No. 143.

RM #111 December 1984: Cancelled Hafner

**Sudan: Training of Trainers—Latrine Construction Workshop** To support the Juba area water and sanitation program, USAID/Sudan asked WASH for training assistance in latrine construction. The scope of work included preparing and conducting a two-week training-of-trainers workshop using WASH trainer's guide on latrine construction (WASH Technical Report No. 25) and providing technical and training assistance for two Sudanese trainers who will later conduct latrine construction workshops. This assignment was cancelled due to political problems in southern Sudan.

RM #112 December 1984: Completed Warner

**Ethiopia: Technical Assistance to Office of Foreign Disaster Assistance (OFDA) Drought Relief Efforts—Phase I** The Office of Foreign Disaster Assistance of AID requested WASH technical support for water supply in the drought areas of Ethiopia. The scope of work included 1) assessment of current well-drilling equipment capability and hydrogeological potential for water supply to drought stricken areas and 2) assessing equipment rehabilitation requirements and assessment of costs and possible additional equipment needs. See WASH Field Report No. 138.

RM #113 November 1984: Completed Jordan

**Belize: Preparation of Project Paper—Water Supply and Sanitation Component** USAID/Belize was preparing a Project Paper for the Increased

Productivity Through Health Project and requested WASH technical assistance. The WASH consultant provided necessary inputs on tubewells, handpumps, simple water systems, latrines, and maintenance requirements.

RM #114 November 1984: Completed Hafner

**Zaire: National Rural Water and Sanitation Planning** The planning work on this task was a continuation of OTD #188 of July 1984 in WASH I (See WASH Field Report No. 135). Its scope of work included the review of prior WS&S efforts, identification of existing policies, plans and programs, determination of possible future WS&S directions, and formulation of recommended WS&S strategies. A seminar on National Planning was designed and conducted in May 1985. See WASH Field Reports Nos. 142 and 150.

ACT #115 December 1984: Completed Rosensweig

**Development of Team Planning Model for WASH Consultants—S&T/H** To improve the performance of WASH consultants, the Office of Health requested that more comprehensive orientation of consultants be provided prior to their field work. The scope of work included development and implementation of a strategy for the institutionalization of the team planning model within WASH and training WASH activity managers to use the model. See WASH Technical Report No. 32.

ACT #116 January 1985: Completed Rosensweig

**Development of Training Guide on Well Improvement—S&T/H** This Activity continued the series of WASH workshop designs in water supply and sanitation. Earlier guides were on latrine construction, handpump installation and maintenance, rainwater roof catchment systems and spring capping (see WASH Technical Reports Nos. 25, 26, 27 and 28 and Activity 124). The scope of work included review of the methods for improving open, shallow wells; identification of training needs, potential trainees, and required tasks and workshop elements; design of the training guide; and planning of field tests. See WASH Technical Report No. 34.

ACT #117 December 1984: Completed Jordan

**Belize: Baseline Survey for CARE** USAID/Belize requested WASH to assist CARE in its AID supported Village Health Sanitation Project. The scope of work included the development and execution of a baseline survey to gather information

on water usage and excreta disposal in villages in the Orange Walk and Corozal Districts of Belize. See WASH Field Report No. 147.

ACT #118 December 1984: Completed St. Michel

**Egypt: Water/Wastewater Program Assessment**  
USAID and the Government of Egypt have made substantial water and wastewater investments having a significant effect on the rehabilitation, upgrading, and expanding of physical facilities throughout Egypt. USAID/Egypt requested a selective review and assessment of these projects and the agencies and organizations responsible for implementation and operation. A WASH team assisted the Mission in preparing a report presenting findings and recommendations in the areas of management capability and institutional development; training and human resources development; financing project completion and sustainability; system design, construction, and operation; estimating beneficiaries served; assessing ability to pay; and systems impact.

ACT #119 December 1984: Completed St. Michel

**General Administration-S&T/H** This was the basic administrative activity for WASH II operations as requested by the Office of Health. It was continued as Activity #301, #401, and #501 in fiscal years 1987, 1988, and 1989, respectively.

ACT #120 January 1985: Completed St. Michel

**General Technical Management-S&T/H** This was the basic technical management activity for WASH II as requested by the Office of Health. It was continued as Activity #302, #402, and #502 in fiscal years 1987, 1988, and 1989, respectively.

ACT #121 January 1985: Completed Warner

**Ethiopia: Assistance to Office of Foreign Disaster Assistance (OFDA) Drought Relief Efforts-Phase II** This Activity was a continuation of related work done under RM 112 above. The scope of work included assisting OFDA and the Africa Task Force to develop a scope of work to implement recommendations in WASH consultants report (WASH Field Report No. 138) and those approved by USAID for funding. It also required the identification of other sources of support and provision of requested technical services.

ACT #122 February 1985: Completed Isely

**Cameroon: Development of an Evaluation Plan for CARE Northern Wells Project** USAID/Cameroon requested WASH assistance in preparing an

evaluation plan for the on-going CARE well installation and health education project in Northern Cameroon. The scope of work included review of the wells project and its health education component, identification of process and outcome evaluation variables, and development of prototype evaluation protocols for use by CARE in the health education component. See WASH Field Report No. 165.

ACT #123 January 1985: Completed St. Michel

**Preliminary Activity Development-S&T/H** This was a basic administrative activity that will continue for the duration of WASH II. Under it, WASH Operations Center staff, subcontractor staff and consultants prepared Activity Sheets, drafted Activity Implementation Plans, and developed scopes of work for future WASH activities. It continued as Activity #303, #403, and #503 in fiscal years 1987, 1988, and 1989, respectively.

ACT #124 January 1985: On-going Rosensweig

**Development of a Training Guide on Community Participation-S&T/H** This is another in the WASH workshop design series described under Activity #116 above. The scope of work includes a review of existing materials on community participation, clarification of the purposes of the guide, identification of its users, and finally design of the training guide itself. See WASH Technical Report No. 33.

ACT #125 January 1985: Completed Hafner

**Africa Bureau: WASH Initiatives** This was a coordinating activity to develop and reinforce existing contacts between WASH II and the Africa Bureau and missions, to develop new contacts between WASH and the Africa Bureau and missions, and to target high priority missions where WASH has not provided assistance. This activity was continued as Activity #201, #305, and #405 in fiscal years 1986, 1987, and 1988, respectively.

ACT #126 January 1985: Completed Isely

**Asia Bureau: WASH Initiatives** This was a coordinating activity for WASH II to develop and reinforce existing contacts between WASH and the Asia Bureau and missions, to develop new contacts between WASH and the Asia Bureau and missions, and to target high priority missions where WASH has not provided assistance. This activity was continued as Activity #202, #306, and #406 in fiscal years 1986, 1987, and 1988, respectively. Note that the Asia Bureau has been combined by AID with the Near East Bureau as ANE.

ACT #127 January 1985: Completed Warner

**LAC Bureau: WASH Initiatives** This was a coordinating activity for WASH II to develop and reinforce existing contacts between WASH and the Latin America and Caribbean Bureau (LAC) and missions, to develop new contacts between WASH and the LAC Bureau and missions, and to target high priority missions where WASH has not provided assistance. This activity was continued as Activity #203, #307, and #407 in fiscal years 1986, 1987, and 1988, respectively.

ACT #128 January 1985: Completed Rosensweig

**Near East Bureau: WASH Initiatives** This was a coordinating activity for WASH II to develop and reinforce existing contacts between WASH and the Near East Bureau and missions, to develop new contacts between WASH and the Near East Bureau and missions, and to target high priority missions where WASH has not provided assistance. This activity was continued as Activity #202, #306, and #406 in fiscal years 1986, 1987, and 1988, respectively. Note that the Near East Bureau has been combined with the Asia Bureau as ANE.

ACT #129 January 1985: Completed Beverly

**Provision of Information Services to AID and AID-Related Organizations—S&T/H** This was a basic activity required by the WASH II contract that continues for the duration of WASH II. Its purpose is to provide AID and AID-assisted organizations with relevant information on all aspects of the water supply, sanitation and environmental health sector, WASH project activities, and other topics as requested by AID. It also provides for the operation and maintenance of the WASH library and information center and collaboration and information exchange with the international WS&S community. It was continued as Activity #304, #404, and #504 in fiscal years 1987, 1988, and 1989, respectively.

ACT #130 January 1985: Completed Rosensweig

**Near East Water/Wastewater Workshop** The Near East Bureau Water Resources Committee (WRC) requested WASH assistance in planning and supervising a workshop for USAID staff in its Near East Missions. The scope of work included a reconnaissance trip to Near East Missions and planning a workshop on water supply and sanitation project design, implementation and evaluation. The workshop was held in Tunis, April 15-18, 1985. See WASH Field Report No. 149.

ACT #131 January 1985: Completed Warner

**Ethiopia: Technical Assistance to Office of Foreign Disaster Assistance (OFDA) Drought Relief Efforts—Phase III** This activity followed work under Activity 121 above. Its scope of work included assisting the mission in coordinating activities in water sector relief efforts, identifying current and future activities/problems at relief camps, reviewing OFDA efforts to provide water and developing recommendations for future strategies/actions for USAID relief efforts. See WASH Field Reports Nos. 145 and 146.

ACT #132 January 1985: Completed Jordan

**Oman: Capital Region Water Resources Project** USAID/Oman requested WASH assistance in developing part of the Third Five Year Plan in conjunction with the Omani-American Joint Commission. The scope of work included developing an action plan for preparation of master plans, preparing a five-year water/wastewater investment program, evaluating the Brown and Root report on water resources, and developing an implementation plan that identifies top priority projects.

ACT #133 January 1985: Completed Hafner

**CARE Africa Field Staff Training Workshop—S&T/H** The Office of Health requested that WASH continue its collaboration with CARE by assisting in a training workshop for CARE Africa staff. The scope of work included conducting a needs assessment of CARE staff on water supply and sanitation project design, implementation and management, and designing and implementing a training workshop on WS&S to satisfy CARE management requirements. The workshop was held in Sierra Leone, July 1-8, 1985. See WASH Field Report No. 159.

ACT #134 January 1985: Completed Hafner

**Chad: Emergency Health Assessment** As part of its efforts in the drought areas of Africa, the Office of Foreign Disaster Assistance requested support from the Communicable Disease Centers (CDC) in Atlanta. CDC in turn asked WASH to provide a water and sanitation consultant to carry out an emergency health needs assessment as part of a CDC-led health reconnaissance team.

ACT #135 January 1985: Completed Beverly

**Prepare New WASH Brochure—S&T/H** Since the WASH Brochure had not been revised since 1980 and did not reflect the WASH II contract nor include the new WASH Associates, a new brochure

describing WASH services and how to obtain them was prepared and distributed to AID and to WASH related organizations throughout the world.

ACT #136 January 1985: Completed Jordan

**Dominican Republic: Development of Steel Handpump for Rural Water Supply**

**Program** This Activity is a follow-on to ACT #106 and included building a model of the pump that had been tested in the Dominican Republic. Upon approval of the model by the Office of Health, four prototype models were built for delivery to USAID/DR with bidding documents. Gage kits and quality assurance recommendations for local manufacturing were also included.

ACT #137 January 1985: Completed Warner

**Honduras: Technical Assistance in Well Drilling for Non-Governmental Organization**

**Program** The Rotary Club of San Pedro Sula, Honduras, was working on a well drilling project in cooperation with the Rotary Club of Columbus, Ohio, and requested assistance from USAID/Honduras. WASH sent a consultant to Honduras in October to work with a Honduran well driller and provide on-site practical training in well/groundwater hydraulics and hydrology, locating wells, well drilling techniques and handpump installation.

ACT #138 January 1985: Completed Isely

**Sanitary Survey Manual for Village Workers—S&T/H** Under WASH I, WASH consultants had been developing the content of a sanitary survey manual. The Office of Health requested WASH to continue the work and develop a draft sanitary survey manual for village workers.

ACT #139 February 1985: Completed Isely

**Assistance to CARE in Developing Guidelines for Water Supply and Sanitation Projects—S&T/H**

To assist CARE's ongoing activities in the water supply and sanitation sector, the Office of Health requested WASH to collaborate with CARE in developing guidelines for project preparation. The work included reviewing existing documentation, interviewing key CARE personnel and preparing draft guidelines for the design, implementation and evaluation of domestic water supply and environmental sanitation projects in developing countries. See WASH Technical Report No. 40.

ACT #140 February 1985: Completed Yacoub

**Targeting Rural Water Supply and Sanitation Programs in Guinea Worm Endemic Areas—S&T/H**

This Activity followed up work done in

WASH I in collaboration with the Communicable Disease Centers in Atlanta. This task included reviewing results from WASH I on intervention modalities, developing cost estimates, combining interventions into programmatically meaningful packages, and selecting trial countries for field work. See WASH Technical Report No. 38.

ACT #141 February 1985: Completed Isely

**Assistance in Developing Rationale for Including Water Supply and Sanitation in Primary Health Care for Asia/Near East Bureau**

The Asia/Near East Bureau was exploring the role of water supply and sanitation (WS&S) in primary health care (PHC) and requested WASH assistance in reviewing relevant strategies. The work included summarizing known relationships between water supply and sanitation and primary health care, identifying cost-effective WS&S strategies for reducing morbidity and mortality, comparing these with PHC strategies, reviewing findings with an expert panel and determining the role of WS&S in primary health care for the Bureau. See WASH Technical Report No. 36.

ACT #142 February 1985: Completed Isely

**Issues Paper on Water Supply and Sanitation in Relation to Oral Rehydration Therapy—S&T/H**

This activity expanded on material prepared in WASH I. The work consisted of revising the earlier draft and preparing a full issues paper aimed at health and WS&S program administrators in AID and the host countries. It also included preparing an executive summary of the paper for the "educated" general public. See WASH Technical Report No. 31.

ACT #143 February 1985: Completed Warner

**Burkina Faso: Emergency Assistance to Water Supply Sector in Ouagadougou**

The impact of the African drought situation in Burkina Faso led the USAID Mission to request WASH technical services in the capital city area. The work consisted of assisting the government to develop short-term measures for more effective use of water/sanitation resources in Ouagadougou and nearby urban areas affected by the drought and by high internal migration rates. A pre-PID survey of the Ziga damsite was also conducted. See WASH Field Report No. 144.

ACT #144 February 1985: Completed Jordan

**Botswana: Economic Comparison of Latrine vs. Waterborne Sewer Systems**

USAID/Botswana requested WASH to assist the Ministry of Local Lands and Government in the evaluation of alternative sanitation systems for current

and proposed housing projects. The work included reviewing documentation, interviewing AID and government officials, coordinating the task with the health engineer, and documenting per capita costs of on-site latrine systems and waterborne sewerage collection systems. See WASH Field Report No. 148.

ACT #145 February 1985: Cancelled Jordan

**Lesotho: Rural Water Supply and Sanitation Project Evaluation** Mission cancelled request.

ACT #146 February 1985: Completed Rosensweig

**Development of Guidelines for Assessing Institutional Effectiveness in Water Supply and Sanitation Sector-S&T/H** As part of AID's general policy to encourage institutional development, the Office of Health asked WASH to prepare a set of specific guidelines to assess the effectiveness of sector institutions. The work included reviewing existing literature on institutional development, conducting a field survey of two successful institutions to develop a profile, and developing the guidelines. The guidelines identify nine performance categories and indicators of success in each category. See WASH Technical Report No. 37.

ACT #147 February 1985: Completed Warner

**Developing Water Supply Strategy for Drought Affected Areas in Africa-OFDA** This Activity is in support of the Office of Foreign Disaster Assistance's on-going program in Africa. The work had two major tasks: 1) to summarize knowledge on populations at risk to drought and water supply scarcity in Mauritania, Mali, Niger, Burkina Faso, Chad, Ghana, Sudan, Somalia, Kenya, Mozambique, and 2) to develop a short-term action plan plus projections for each country.

ACT #148 March 1985: Completed Beverly

**Collaboration with Non-AID Water Supply and Sanitation Related Organizations in the U.S. and Overseas-S&T/H** This is a basic activity required by the WASH II contract to supply coordination and information services to interface with the U.S. and bilateral donor systems. The task includes establishing and maintaining working relationships, collaborative efforts and information exchange with non-AID organizations in the WS&S sector, private voluntary organizations, multi-lateral and bilateral organizations, international organizations, LDC agencies, private sector organizations, etc. This work was continued as Activity #204, #309, and #409 in fiscal years 1986, 1987, and 1988, respectively.

ACT #149 March 1985: Completed Jordan

**Project Assessment for Operations and Maintenance-S&T/H** Many water supply and sanitation projects in developing countries have failed due to inadequate provisions for operating and maintaining the system after construction or installation. This Activity developed guidelines that will enable project designers and managers to assess the merit of the operations and maintenance component of projects prior to and during the project planning cycle. See Activity #223 and WASH Technical Report No. 35.

ACT #150 February 1985: Completed Jordan

**Benin: Rural Water Project Redesign** The Benin Rural Water Supply Project, which had been suspended in 1981, was re-authorized in October 1984 and required revision in view of the delay. The WASH consultant provided water supply and sanitation inputs to the project re-design.

ACT #151 March 1985: Completed Rosensweig

**Sri Lanka: Project Pre-Implementation Workshop** USAID/Sri Lanka requested WASH assistance during the start-up of a new water supply and sanitation (WS&S) project. WASH consultants planned and conducted a pre-implementation workshop for key contractor, AID and government staff who are involved in the new WS&S project. The workshop emphasized team-building and approaches to problem solving. See WASH Field Report No. 151.

ACT #152 January 1985: Completed Rosensweig

**Planning for Community Water Supply in Developing Countries-S&T/H** WASH was requested by the Office of Health to plan and conduct a workshop in conjunction with the American Water Works Association (AWWA) conference for U.S. consulting engineers and consultants who are interested in learning more about current practices and approaches in the water sector of the developing countries. The workshop was held June 28-29, 1985, in Arlington, Virginia, with fifty-six participants. See WASH Field Report No. 155.

ACT #153 April 1985: Cancelled Isely

**Tunisia: Design Team for Rural Potable Water Project** Cancelled by Mission.

ACT #154 March 1985: Completed Jordan

**Reducing Water Losses in Small Urban and Rural Water Systems-S&T/H** Water losses in water supply systems is a continuing problem. The

purpose of this Activity was to develop guidelines that will assist managers of small urban and rural water systems to establish priorities for measures aimed at reducing water losses.

ACT #155      January 1985: Completed      Beverly

**WASH Staff Conference Participation—S&T/H**

This is a basic communications activity of the WASH II professional staff. WASH staff attends selected conferences, seminars and briefings as presenters or participants in order to foster understanding, collaboration and information exchange in the water supply and sanitation sector for AID and WASH. This activity was continued as Activity #205, #310, #410, and #510 in fiscal years 1986, 1987, 1988, and 1989, respectively.

ACT #156      April 1985: Completed      Hafner

**Central African Republic: Water Decade Planning**

This Activity is a continuation of work begun under OTD #106 above and documented in WASH Field Reports Nos. 53, 72, 97, 137, and 158. The scope of work consisted of assisting the CAR Government agencies to prepare a water supply and sanitation sectoral plan and proposals for an international donors meeting.

ACT #157      April 1985: Completed      Beverly

**Evaluation of WASH Information Services—S&T/H**

The purpose of this Activity was to review and assess the appropriateness, effectiveness, and costs of information products and services provided by WASH to serve as a basis for improving WASH information center operations. The consultants interviewed selected AID staff, WASH personnel, and users of WASH information, reviewed relevant records and reports, and prepared an evaluation report and recommendations for the Office of Health.

ACT #158      June 1985: Completed      Jordan

**Egypt: Assessment of Operations and Maintenance Training of Basic Village Services**

This Activity was a follow-up field visit on the training received by Egyptian engineers in the U.S. under RM #108 above. The work included determining usage of operations and maintenance techniques learned at the U.S. workshop, and assessing current and future O&M improvement strategies for the new USAID decentralization program. See WASH Field Report No. 152.

ACT #159      May 1985: Completed      Jordan

**Oman: Water Distribution System Computer Model**

This Activity is an extension of work done under Activity #132 above. The work included four

tasks: 1) collecting data on the water supply system of the capital area of Oman, 2) developing a computer program to analyze the existing system and project future needs, 3) providing planning, design and operation information, and 4) training MEW personnel to use the program.

ACT #160      July 1985: Completed      Isely

**Thailand: Assessment of Current Status of Rural Water Supply and Sanitation Project**

USAID/Thailand requested WASH assistance for the Ministry of Health on possible future courses of action. The work consisted of assessing the current status of rural water supply and sanitation programs managed by the Ministry of Public Health; reviewing similar projects by other agencies; assisting the Ministry in formulating its next five year WS&S program; and advising on program coordination with other agencies and AID. See WASH Field Report No. 153.

ACT #161      May 1985: Completed      Hafner

**Zaire: SANRU II (Rural Health) Project Paper**

USAID/Zaire requested WASH assistance to provide technical inputs to the SANRU II (Rural Health) Project Paper. The work consisted of preparing cost estimates for well drilling equipment and reviewing plans for other water technologies—spring capping, gravity flow systems, etc.

ACT #162      May 1985: Completed      Hafner

**Sierra Leone: CARE Water Program Evaluation Design**

CARE/Sierra Leone requested WASH, through the USAID Mission, to assist in developing an evaluation plan for its water and sanitation program. The work included three tasks: 1) to assist CARE and the Ministry of Energy and Power in designing a water program evaluation and developing program indicators and goals; 2) to train U.S. and local staff in evaluation methods; and 3) to make recommendations on a health education and community based maintenance system. See WASH Field Report No. 156.

ACT #163      June 1985: Completed      Isely

**Nepal: Assessment of Save the Children Rural Water Supply Systems and Training Field Staff**

The on-going water supply project of the Save the Children Foundation (SCF) had been having technical problems which led USAID/Kathmandu to request WASH assistance. The basic task was to assess the design, construction, maintenance, cost-effectiveness, and long-term viability of the gravity systems constructed by Save the Children. The consultants' report will be the basis for

training-of-trainers, and training of SCF construction and maintenance personnel. See WASH Activity #226 and Field Report No. 157.

ACT #164 June 1985: Completed Isely

**Philippines: Review Baranguay Water Supply Project** USAID/Philippines requested WASH assistance to assess the feasibility and mode of continuing its Baranguay rural water program. The scope of work was divided into three phases: Phase I: assess feasibility of continuing project. Phase II: design continuation project if recommended or design close-out strategy. Phase III: finalize design as necessary.

ACT #165 July 1985: Completed Isely

**Haiti: Design of Evaluation for CARE Community Water Supply Project** USAID/Haiti requested WASH assistance in designing an evaluation plan for CARE's on-going water supply project that would specifically include indicators of change of health status. The work consisted of designing a realistic scheme for evaluating health and related behavioral outcomes for presentation and review with CARE staff, assisting in developing baseline indicators, and suggesting appropriate project changes to enhance project impact on health status and health related behavior. See WASH Field Report No. 154.

ACT #166 July 1985: Completed Warner

**Investigation of Willingness to Pay for Water Supply-S&T/H** The shortage of resources to finance water supply systems has placed renewed emphasis on suitable methods of cost-recovery. The Office of Health asked WASH to investigate the determinates of willingness to pay for water. The scope of work included identifying the factors which determine the willingness to pay for water by householders, including their sensitivity; developing guidelines based on these factors for use by planners; and locating projects where the guidelines could be tested. See WASH Field Report No. 213.

ACT #167 July 1985: Completed Roark

**Burkina Faso: Emergency Dam and Spillway Project** This Activity was a follow-on to Activity 143 above which included a survey of Dam No. 2 near Ouagadougou (see WASH Field Report No. 144). The AID Mission requested WASH assistance to support rehabilitation of the dam. This work involved reviewing emergency repair plans, assisting in refining the repair proposal, and assisting the

Government of Burkina Faso and USAID in reviewing final design and construction plans, approval of construction bids, and construction supervision. The dam was completed in July 1986, and was inaugurated as the Martin Luther King, Jr. Memorial Dam on August 5, 1986. See WASH Field Report No. 192.

ACT #168 August 1985: Completed Rosensweig

**Bolivia: Evaluation of CARE Potable Water Project** USAID/Bolivia requested WASH assistance in evaluating the CARE Potable Water/Irrigation Project. The work consisted of designing and conducting the final evaluation of the technical, institutional and social aspects of the project, as well as assessing the operational strategy used in the project. See WASH Field Report No. 162.

ACT #169 August 1985: Cancelled Rosensweig

**Swaziland: Manpower Development Strategy**  
Cancelled by Mission.

ACT #170 July 1985: Completed Hafner

**Swaziland: National Decade Planning** The Government of Swaziland has established a National Action Group in support of the UN International Drinking Water Supply and Sanitation Decade and requested the USAID Mission to supply technical assistance in planning for the Decade. The first phase of work included reviewing the status of water supply and sanitation projects and of the national planning process, outlining a process for developing Water Decade objectives, and assisting the National Action Committee in determining objectives and steps necessary to achieve them.

ACT #171 August 1985: Cancelled Isely

**Burkina Faso: Preparation of Field Handbook on Community Participation in Health Education**  
Cancelled by Mission.

ACT #172 June 1985: Completed Jordan

**Dominican Republic: Rural Water Supply and Sanitation Project Evaluation** USAID/Dominican Republic requested WASH technical assistance in planning the evaluation of the Health Sector II Project. The task included reviewing, modifying, and simplifying the evaluation plan, and assisting USAID, SEPAS (the Secretariat of Health) and a local firm in collecting and analyzing evaluation data. See WASH Field Report No. 166.

ACT #173 August 1985: Completed Beverly

**Prepare WASH Progress Report No. 9-S&T/H** Periodic Progress Reports distributed to AID and others involved in water supply and sanitation in developing countries are a primary means of informing others of WASH accomplishments in specific subject areas and countries. The summaries of work done by WASH are also useful for identifying WASH-type tasks and defining proposed scopes of work. This task involved reviewing the scope, content and design of the Progress Report with WASH staff and the Office of Health, and writing, editing, printing, and distributing the report. The Progress Report also included an updated WASH Publications List cross-referenced by country, subject, Activity Number and author.

ACT #174 August 1985: Completed Jordan

**Zaire: Village Based Maintenance System for Shaba Refugee Water Supply Project** USAID/Zaire requested WASH technical services to design a maintenance system for the water supply systems in refugee/returnee communities. The work included the review of project documents, performance of a technical needs assessment, development of a maintenance system design, and preparation of a training needs assessment and of an initial training plan. See WASH Field Report No. 170.

ACT #175 August 1985: Completed St. Michel

**Yemen: Sana'a Basin Water Resources Project** USAID/Yemen requested WASH services in recognition of the severity of the water resources situation in the Sana'a basin. The objectives of this Activity were to provide a better understanding of the water resources situation, identify critical issues which must be resolved and present viable options for projects and/or programs related to these issues, present recommended interventions, and review previous planning efforts and ongoing sector projects. Several important constraints to effective planning and management were identified and considered in developing recommended interventions. See WASH Field Report No. 161.

ACT #176 August 1985: Completed Hafner

**Togo: Training in Rainwater Harvesting** USAID/Togo desired to expand the scope of its Rural Water Supply Project and requested WASH assistance in the use of rainwater harvesting techniques. The WASH consultant reviewed the WASH rainwater harvesting training guide, modified it in Togo as appropriate, conducted two

two-week training sessions with Togolese co-trainers, and evaluated the training program and the trainers' performance. See WASH Field Report No. 172 in two volumes.

ACT #177 August 1985: Completed Warner

**Technical Assistance to Drought Stricken African Countries-OFDA** This Activity extends the work done under Activity 147. A member of the WASH Operations Center Staff provided technical advisory services to the Office of Foreign Disaster Assistance primarily in the development of a water and sanitation strategy for dealing with the African drought. He will also serve as liaison between OFDA and WASH.

ACT #178 September 1985: Completed Rosensweig

**Bolivia: Rainwater Catchment Development** This work is a follow-on to Activity RM #104 above which recommended development of rainwater catchments (See WASH Field Report No. 140). This activity was conducted in two phases. In the first phase a scope of work was prepared for WASH to assist a local PVO (FIDES) in planning and implementing rainwater catchment systems, including training. The second phase executed the scope of work. See WASH Field Report No. 163.

ACT #179 September 1985: Completed Rosensweig

**Togo: Training of Trainers** USAID/Togo requested WASH assistance in furthering the training skills of the social/sanitation agents working in the Rural Water Supply Project. The WASH consultants 1) upgraded skills of project and non-project trainers in designing and conducting training-of-trainers workshops (TOT); 2) reviewed and modified existing project TOT materials; and 3) conducted two one-week TOT workshops. See WASH Field Report No. 168 in two volumes. Also available in French.

ACT #180 September 1985: Completed Yacoub

**Water Supply Development as a Stimulus to Primary Health Care-S&T/H** While potable water supply projects have a direct effect on health, other impacts may be as important. For example, if water supply projects are based on a community participation approach, they may also affect other health outcomes by stimulating the local population to make better use of other primary health care services, such as immunizations for tetanus, measles and diphtheria. The purpose of this Activity was to

develop and apply a methodology for determining whether or not water supply projects based on community participation can have a positive effect on the use of other primary health care interventions such as immunizations. See WASH Technical Report No. 44.

ACT #181 September 1985: Completed Jordan

**Lesotho: Rural Sanitation Project—**

**Financial/Economic Analysis** The Ministry of Health requested USAID/Lesotho to supply planning assistance for the Rural Sanitation Project. The WASH consultant reviewed and analyzed financial and economic information to prepare recommendations for national policy on low cost sanitation in rural areas. He also considered possible financial and resource commitments of the Government, donors and the private sector to subsidization programs. See WASH Field Report No. 167.

ACT #182 September 1985: Completed Jordan

**Oman: Assist in Preparation of Water Resources Project Paper**

As an extension of Activity 132 above, USAID/Oman and the Omani-Joint Commission requested WASH assistance in preparing a Project Paper for the Water Resources Development Project. WASH provided technical support for the water/wastewater engineering, institutional development and economic components of the paper.

ACT #183 September 1985: Completed Beverly

**WASH Audio-Visual Briefing Package—S&T/H**

This Activity did not progress beyond a preliminary design stage and is under further development by the Office of Health.

ACT #184 September 1985: Completed Beverly

**Prepare WASH Communication Strategy**

**Document—S&T/H** This Activity did not progress beyond a preliminary design stage. It is being developed further under Activity #266—Social Marketing Applied to Water Supply and Sanitation.

ACT #185 September 1985: Completed Turner

**Distribution of Water by Vending—S&T/H** Water vending is a common method of water supply and distribution in many developing countries yet has

received very little formal study and evaluation. The purpose of this Activity was to: 1) design, test and apply an evaluation survey to existing water vending systems in urban and village settings; and 2) develop guidelines for governments to improve water quality and quantity delivered by vendors. See WASH Technical Report No. 45.

ACT #186 September 1985: Completed St. Michel

**Advisory Panel on AID Strategies for Water and Sanitation in the Child Survival Program—S&T/H**

This Activity provided inputs for revision of the AID water supply and sanitation strategy. The Advisory Panel reviewed relevant literature and formulated and discussed strategic options for supporting child survival efforts with appropriate water and sanitation interventions.

ACT #187 September 1985: Completed Rosensweig

**Zaire: SANRU (Rural Health) Training Plan**

USAID/Zaire requested WASH assistance for the Rural Water Supply and Sanitation Project. The WASH consultant designed a national training strategy for rural water supply and sanitation for the SANRU Project. He also developed a plan for WASH to assist in implementing the strategy. See WASH Field Report No. 160.

ACT #188 September 1985: Completed Warner

**Kenya/RHUDO: Review of Alternatives to Conventional Sewerage for Small Towns**

The USAID Regional Housing Office in Kenya and the National Housing Corporation of Kenya requested WASH assistance. WASH developed comparative costs of alternative methods for handling sewerage for facilities being constructed under the Kenya Small Towns Shelter Project.

ACT #189 September 1985: Completed Roark

**Botswana: Comparison of Energy Sources for Water Pumping**

USAID/Botswana requested WASH assistance in evaluating water lifting/pumping technologies being tested as part of the BRET Project (Botswana Renewable Energy Technology). Through its subcontractor, Associates in Rural Development, Inc., WASH designed and implemented a comparative test program for the techno-economic evaluation of alternative energy sources for water pumping—wind, solar and diesel. This activity was succeeded by Activity 328. See WASH Field Report 235.

ACT #201      October 1985: Completed      Hafner

**Africa Bureau: WASH Initiatives**

See Activity #125.

ACT #202      October 1985: Completed      Rosensweig

**Asia/Near East Bureau: WASH Initiatives**

See Activities #126 and #128.

ACT #203      October 1985: Completed      Turner

**LAC Bureau: WASH Initiatives**

See Activity #127.

ACT #204      October 1985: Completed      Beverly

**Collaboration with Non-AID Water Supply and Sanitation Related Organizations in US & Overseas-S&T/H** See Activity #148.

ACT #205      October 1985: Completed      Beverly

**WASH Staff Conference Participation-S&T/H**  
See Activity #155.

ACT #206      October 1985: Completed      Rosensweig

**Development of Water Supply and Sanitation Management Training Course-S&T/H** This Activity, requested by the Office of Health, was to develop a 4-5 week course for improving the management skills of mid-and upper level managers, and strengthen water and sanitation institutions through management development. The focus of the activity was changed and was completed under Activities 253 and 345.

ACT #207      October 1985: Completed      Hafner

**Sudan: Training-of-Trainers/Sanitation Workshop**

USAID/Sudan requested WASH assistance to design and implement a two week training-of-trainers workshop on latrine construction in the Sudan using WASH Technical Report #25, "A Workshop Guide for Latrine Construction: A Training Guide." See WASH Field Report Nos. 173 and 180.

ACT #208      October 1985: Completed      Roark

**Domestic Water Supply and Sanitation in Irrigation Projects-S&T/H** The Office of Health requested that WASH review literature, interview key AID, World Bank, and WHO personnel, and prepare a report on the current state-of-the-art on the subject of domestic water supply and sanitation in irrigation projects. WASH has prepared a manual on designing irrigation projects to optimize use of

water for household and sanitation purposes and to combat specific diseases associated with irrigation projects. WASH Field Report No. 237.

ACT #209      October 1985: Completed      Hafner

**Malawi: Training-of-Trainers for Health Education**

USAID/Malawi requested WASH assistance to design and implement two training-of-trainers workshops in community motivation and health education for staff of the Ministries of Health and Work. See WASH Field Report Nos. 174 and 185.

ACT #210      October 1985: Completed      Jordan

**Honduras: Water Supply and Sanitation Project Evaluation**

USAID/Honduras requested WASH to assist the mission and PRASAR (the governmental unit created to manage the project) to evaluate the engineering, project administration, financing and health education aspects of the on-going rural water supply and sanitation project. See WASH Field Report No. 169, available only in Spanish. A summary version of the report (FR 169-s) is available in English.

ACT #211      November 1985: Completed      Jordan

**Papua New Guinea: Evaluation of Rural Water Supply and Sanitation Project**

WASH was requested to assist USAID/Fiji and the Government of Papua New Guinea to evaluate the effectiveness of the ADB I (Asian Development Bank) water project and assist with the design of the new ADB II project water component. Specific attention was given to project administration, financing and community participation in water system operations and maintenance. See WASH Field Report No. 182.

ACT #212      November 1985: Completed      Roark

**Brazil: Disaster Mitigation Assessment-OFDA**

The Office of Foreign Disaster Assistance requested a WASH hydrogeologist to participate in a team that reviewed the drought and flood situation in six areas of Brazil, assessed disaster response efforts, and made recommendations for future disaster and groundwater control operations.

ACT #213      November 1985: Completed      Jordan

**Solomon Islands: Rural Water Supply and Sanitation Project Planning Assistance**

USAID/Fiji requested WASH assistance in the Solomon Islands. WASH assisted in planning community participation, rural water

supply and sanitation system maintenance and information systems, and in identifying types of training programs needed. See WASH Field Report No. 179.

ACT #214 December 1985: Completed Yacoub

**Managing Childhood Defecation in Developing Countries—S&T/H** The Office of Health requested WASH to conduct a two-phase study on the management of childhood defecation. The first phase of the Activity was intended to design a survey and protocol to determine attitudes and practices concerning childhood defecation in developing countries. The second phase implemented the survey and developed and tested appropriate defecation management interventions in the field.

ACT #215 December 1985: Completed Turner

**Tunisia: Regional Housing and Development Office Sanitation Upgrading Project Review** ONAS, the National Sewerage Authority of Tunisia, prepared a \$32 million upgrading project for which the Regional Housing Office requested WASH assistance to review. The WASH consultant reviewed the plans and monitored construction progress in the field.

ACT #216 December 1985: Completed Rosensweig

**Swaziland: Workshop on Community Participation** USAID/Swaziland requested that WASH design and implement a workshop on community participation for 25 people from the Ministry of Health and the Rural Water Supply Board in January 1986. See WASH Field Report No. 176.

ACT #217 November 1985: Completed Warner

**Liberia: Water Supply for Cuttington University College** USAID/Liberia requested WASH to review the wells and water system of the college in relation to future supply and demand, make recommendations for improving operations and equipment and developing new water sources if needed.

ACT #218 December 1985: On-going Roark

**Privatization and Operations and Maintenance—S&T/H** The Office of Health requested that WASH provide an explanation of the conditions and factors that contribute to the success of privatization within the water sector. Guidelines are to be developed on approaches of project planners as to how, and under what conditions, can privatization be effective in rural water supply projects.

Consideration will be given to the role of the private sector in design, construction, installation, operation and maintenance, etc.

ACT #219 December 1985: Completed Hafner

**Zaire: National Rural Water and Sanitation Planning** USAID/Zaire requested that WASH assist the Zairean design team in determining data requirements, identifying analytic variables, developing a planning model applicable to Zaire, and implementing the planning process to produce a national rural water and sanitation plan. See WASH Field Report Nos. 171 and 184. Also available in French.

ACT #220 October 1985: On-going Roark

**OFDA Liaison: Emergency Disaster Assistance—OFDA** This is a continuing Activity to assist the Office of Foreign Disaster Assistance in evaluating emergency requests related to water supply and sanitation and in locating appropriate personnel, equipment, and commodities for use in disaster situations.

ACT #221 January 1986: Completed Rosensweig

**Zaire: Training-of-Trainers—Workshop I** USAID/Zaire requested training assistance from WASH for the SANRU II Project (Rural Water Supply and Sanitation). WASH designed and delivered a two week training-of-trainers workshop for fifteen Zairean trainers, and assisted Zaireans in curriculum development. See WASH Field Report No. 177. Also available in French. Also see Activity #215.

ACT #222 January 1986: Completed Turner

**Financing Methods and Cost Recovery Strategies for Water Supply and Sanitation Programs—S&T/H** The Office of Health requested that WASH conduct a literature search and interviews to serve as a basis for developing financing/cost recovery strategies and preparing guidelines for field use. This activity has been changed to ACT #380 and broadened to include both strategies for cost recovery and tariff design.

ACT #223 December 1985: Completed Jordan

**Development of Additional Operations and Maintenance Assessment Guides—S&T/H** This Activity for the Office of Health continued the work done under ACT #149. Operations and maintenance assessment guides have now been developed for four types of water systems found in

developing countries—handpumps, surface water treatment, groundwater pumping, and gravity systems from springs. See WASH Technical Report No. 35.

ACT #224 January 1986: Completed Jordan

**Zaire: Training of Community Development Workers—SHABA Water Project** USAID/Zaire requested that WASH conduct a three-week community development workshop. The workshop the government's policy and strategy document for prepared community development workers to introduce villages to the advantages and responsibilities of a new water system. See WASH Field Report No. 178.

ACT #225 January 1986: Completed Halner

**Peru: CARE Water/Sanitation Project Management Workshop** USAID/Peru requested that WASH plan and conduct a workshop for CARE Latin America field staff. The workshop was conducted in Trujillo, Peru, April 3-10, on community participation, health education and the management of water supply and sanitation projects. See WASH Field Report No. 193.

ACT #226 January 1986: Completed Rosensweig

**Nepal: Assistance to Save the Children Foundation Project (Phase II)** This is a continuation of Activity #163. WASH designed and delivered a three week training program for 10 Save the Children Foundation staff, and 15 Rapti area overseers on village water supply design, management and training-of-trainers. The workshop was Completed in May 1986. See WASH Field Report No. 190.

ACT #227 February 1986: Completed Turner

**El Salvador: Assessment of Handpump Program** USAID/El Salvador requested that WASH assess the feasibility of a handpump program or other water supply alternatives. The WASH consultant identified training and organizational needs of the project and outlined a recommended water supply development program. See WASH Field Report No. 187.

ACT #228 February 1986: Completed Rosensweig

**Bolivia: Operations and Maintenance Training** USAID/Bolivia requested that WASH implement two workshops on operations and maintenance of rural potable water systems. The first was the design and delivery of a three week workshop on operations and maintenance for twenty-five supervisors, the second was a three week workshop on pump maintenance for the same supervisors. See

WASH Field Report No. 194 on the Operations and Maintenance Workshop and Field Report No. 195 on the pump maintenance workshop. See Activity #260 for two other follow-on training activities.

ACT #229 February 1986: Completed Rosensweig

**Planning for Pan American Health Organization Symposium on Integrating Water Supply and Sanitation into Primary Health Care—S&T/H** The Office of Health requested WASH to assist PAHO in planning the PAHO symposium on the integration of water supply and sanitation into primary health care. WASH assistance consisted of the design of working group sessions, writing a case study, furnishing a symposium presenter, and training working group leaders. The symposium took place in Guatemala in November 1986.

ACT #230 February 1986: Completed Turner

**Rwanda: Ruhengeri Water Resource Study** USAID/Rwanda requested WASH assistance in assessing impacts of watershed development on Ruhengeri water supplies. The consulting team prepared a plan for orderly water supply development, and developed concepts for a quantitative computer model to simulate Ruhengeri River System conditions. See WASH Field Report No. 181.

ACT #231 February 1986: Completed Turner

**Mexico: Water Supply and Technical Assistance to Juarez** USAID/Mexico requested that WASH review the water supply situation in marginal areas of Juarez in support of Project Verdad (PVD) and the local government. The consulting team provided assistance in locating groundwater and developed a water supply plan for the areas not served. See WASH Field Report No. 188.

ACT #232 March 1986: Completed Rosensweig

**Asia/Near East Bureau Water/Wastewater Workshop** The Asia/Near East Bureau requested that WASH assist the water/wastewater committee of the Bureau in the initial planning of workshops for AID mission staff.

ACT #233 March 1986: Completed Warner

**Technical Assistance to Atlanta University African Water Supply and Sanitation Symposium—S&T/H** WASH assisted Atlanta University in planning the Symposium on Water and Sanitation in Africa, held May 3-8, 1987, in Atlanta, Georgia. WASH personnel made presentations and acted as facilitators of the Symposium.

ACT #234 March 1986: Completed Turner

**Asia/Near East Bureau Water/Wastewater Committee Technical Seminars** The Asia/Near East Bureau requested WASH assistance to develop plans for seminars, select speakers, and prepare seminars for the water/wastewater committee March-June 1986.

ACT #235 March 1986: Completed Hafner

**Malawi: Piped Water Project Evaluation** WASH provided a team of specialists to the USAID/Malawi Rural Water Program. They reviewed the progress made in implementing the 1983 evaluation recommendations, conducted the final evaluation, and assisted in formulating plans for future water supply. See WASH Field Report No. 186.

ACT #236 February 1986: Completed Turner

**Technology Transfer for Water and Sanitation Projects-S&T/H** The Office of Health requested that WASH conduct a study of technology transfer for water and sanitation projects. The consultant reviewed literature, defined critical elements of the technology transfer process, and prepared a report which established the need for, and included an outline of, a technology transfer handbook.

ACT #237 March 1986: Completed Rosensweig

**Sri Lanka: First Monitoring/Evaluation of Water Supply and Sanitation Project** USAID/Sri Lanka requested WASH assistance in planning and conducting biannual evaluations of the Water Supply and Sanitation Sector Project. The WASH team assessed the current status of the water supply and sanitation project, particularly in the management/commercial area, and planned and conducted a workshop for contractor government and AID mission staff to discuss problems, issues and possible solutions.

ACT #238 March 1986: Completed Rosensweig

**Burkina Faso: Preparation of Scope of Work for Evaluation of Rural Water Supply and Sanitation Project** USAID/Burkina Faso requested WASH to assist the mission in drafting an evaluation outline and terms of reference for the health component of the USAID-funded Rural Water Supply project.

ACT #239 March 1986: Completed Campbell

**Sri Lanka: Provision of Information Services to the National Water Supply and Drainage Board** USAID/Sri Lanka requested that WASH purchase and deliver selected information materials to strengthen the information base of the National Water Supply and Drainage Board (NWSDB).

WASH also provided relevant current awareness bulletins of recent literature and information on topics selected by the NWSDB.

ACT #240 April 1986: Completed Turner

**Cost Management: Comparative Performance in Water Supply and Sanitation Systems-S&T/H** The Office of Health requested that WASH review the literature and current practice and develop cost management indicators applicable to water supply and sanitation institutions. As an outcome of the activity, a set of guidelines was developed which provides a rationale for establishing cost centers and indicators to be used in utility cost management.

ACT #241 May 1986: Completed Roark

**Jordan: Program Review of Groundwater Monitoring** USAID/Jordan requested that WASH review the proposed groundwater monitoring program for the Aqaba wastewater treatment facility and assist in further development of the program including training in monitoring procedures and procurement. A working paper was completed for this activity.

ACT #242 April 1986: Completed Jordan

**Honduras: Evaluation of Development Project for the Bay Islands** USAID/Honduras requested that WASH assist the Pan-American Development Fund in an end-of-project evaluation of the integrated development project for the Bay Islands. WASH provided a water systems engineer as part of the two-person evaluation team.

ACT #243 June 1986: Completed Rosensweig

**Burkina Faso: Final Evaluation of Rural Water Supply Project** USAID/Burkina Faso requested that WASH assist the mission in evaluating a rural water supply project for 550 villages and formulating recommendations for future projects. WASH provided two consultants for the six person evaluation team. See WASH Field Report No. 191.

ACT #244 May 1986: Completed Roark

**Uganda: Emergency Water Supply Assessment-OFDA** USAID/Uganda and the Office of Foreign Disaster Assistance requested WASH to assess the current rural water supply situation and the need for rehabilitation and for other water sources. The consultants ascertained interests and capabilities of private voluntary organizations, UNICEF, and the government to undertake water sector rehabilitation, and prepared appropriate recommendations.

ACT #215 July 1986: Completed Rosensweig

**Zaire: Training of Trainers Workshop II** This Activity is a continuation of Activity #221 above. WASH designed and delivered a two-week intermediate training-of-trainers (TOT) workshop for 15 trainers. See WASH Field Report No. 198.

ACT #246 June 1986: Completed Jordan

**Sri Lanka: Operations and Maintenance Efficiency Assessments** This Activity is part of the on-going WASH program for USAID/Sri Lanka. The assessment of the operations and maintenance capabilities and performance of the National Water Supply and Drainage Board focused on the efficiency and effectiveness of plant and workshop staff. The WASH team recommended criteria for establishing staff size for the different types of water supply systems found in Sri Lanka.

ACT #247 June 1986: Completed Jordan

**Oman: Capital Region Septage Study** The Oman Ministry of Environment and Water Resources, through the Joint Omani-American Commission, requested that WASH determine the feasibility of replacing the proposed septage treatment plant with lagoon-type treatment.

ACT #248 June 1986: Completed Jordan

**Oman: Preparation of Revised Feasibility Study of Water Supply Sector** USAID/Oman requested further assistance on water supply planning from WASH. Since less funding will be available for construction, the Ministry of Electricity and Water asked WASH to modify the scope, scale and content of proposed projects in line with new funding levels.

ACT #249 June 1986: Completed Campbell

**Zaire: Design of Information Systems for SANRU II and Societe Nationale D'Hydraulique Rural** USAID/Zaire requested that WASH determine the information requirements of the SANRU II Project (Rural Water Supply and Sanitation), of the Societe Nationale D'Hydraulique Rural, and of the Ministry of Health. The WASH consultant assisted in designing appropriate information systems and training programs for the respective organizations. See WASH Field Report No. 199.

ACT #250 June 1986: Completed Rosensweig

**Philippines: Project Paper for Rural Water Supply and Sanitation Project** USAID/Philippines requested WASH to assist the mission in preparing a project paper for a rural water supply and sanitation project. The project will serve 370,000 people in 168 rural communities and attempt to correct

institutional problems of the Barangay Water Project Phase II. The assignment was carried out in July 1986.

ACT #251 July 1986: Completed Rosensweig

**Nepal: Project Start-up Workshop for Irrigation Management Project** USAID/Nepal requested that WASH assist in the start-up phase of an irrigation management project. The WASH consultant designed and facilitated a four-day workshop using the WASH team planning model and related techniques. The workshop took place in September 1986. See WASH Field Report No. 196.

ACT #252 July 1986: Completed Beverly

**Solomon Islands: Hurricane Disaster Assistance-OFDA** USAID/Fiji and the Office of Foreign Disaster Assistance requested WASH technical support following Cyclone Namu. The WASH consultant assessed the extent of cyclone damage to water supply systems, reviewed proposed housing rehabilitation programs for adequacy of water supply, and made appropriate recommendations.

ACT #253 July 1986: Completed Rosensweig

**Sri Lanka: National Water Supply and Drainage Board Management Training Program** USAID/Sri Lanka requested that WASH design and deliver a three-phase management training program for the top management of the National Water Supply and Drainage Board. The program concentrated on actual work-place needs of managers and included (but was not limited to) such areas as delegation skills, collaborative work planning, meeting effectiveness, employee accountability, time management, monitoring work plans, setting priorities, and decision-making. The program consisted of three workshops over a twelve-month period. See WASH Field Report No. 230.

ACT #254 August 1986: Completed Warner

**Uganda: Emergency Water Supply Projects-OFDA** USAID/Uganda and the Office of Foreign Disaster Assistance requested WASH assistance in preparing required documentation for rural and urban water supply rehabilitation. This work included developing contractual arrangements with private voluntary organizations, in monitoring implementation start-up, and advising on modalities for follow-up monitoring.

ACT #255 August 1986: Completed Warner

**Jordan: Regional Conference on Wastewater Reuse** USAID/Jordan requested WASH assistance in a regional conference on wastewater reuse. WASH

provide an expert to participate in the conference who provided relevant information on wastewater applications to agriculture as practiced in Arizona and California.

ACT #256 August 1986: Completed Jordan

**Yemen: Evaluation of Small Rural Water Systems Project**

USAID/Yemen requested WASH assistance in the evaluation of the Small Rural Wastewater Systems Project. The WASH team evaluated the project and recommended appropriate future actions for the project. See WASH Field Report No. 197.

ACT #257 September 1986: Completed Hafner

**Malawi: Engineering Assessment of Gravity Water Supply Systems**

WASH assisted the Government of Malawi's Water Department of the Ministry of Works and Supplies in determining the potential for future rural piped gravity water supply systems. Nineteen catchment areas were identified as possible sites. The consultant reviewed available information, assisted in the formulation of procedures for preliminary engineering assessment of systems, carried out one or two assessments to train government staff, and returned later to review assessments conducted by government personnel.

ACT #258 September 1986: Completed Roark

**Drilled Water Well Rehabilitation Guidelines—S&T/H**

The Office of Health requested WASH to produce a set of guidelines for procedures for the rehabilitation of drilled wells. The work consists of a literature review, including data from a UNICEF project in Uganda and other countries, analysis of existing approaches, estimation of rehabilitation costs and schedules vs. new well construction, and preparation of the guidelines.

ACT #259 September 1986: Completed Roark

**Water Well Drilling Rig Selection Guidelines—S&T/H**

The Office of Health requested that WASH develop a set of guidelines for selecting drilling rigs and related equipment for construction of village water wells. The task consisted of a literature review, contacting manufacturers, establishing appropriate specifications, and preparing the guidelines. A manual has been completed which outlines selection criteria for light-weight drilling rigs appropriate for rural water needs. See WASH Technical Report No. 42.

ACT #260 October 1986: Completed Rosensweig

**Bolivia: Operations and Maintenance Training: II**

This task is a continuation of work done under Activity #228. It consisted of development of a

three-week community operator training course, design and delivery of a training-of-trainers workshop for 15 rural water supply technicians who received the earlier training, and pilot testing and revision of the Community operator course, which will be used by Bolivians to train at least 125 operators. See WASH Field Report Nos. 202 and 204.

ACT #261 September 1986: Completed Beverly

**Prepare WASH Progress Report No.10—S&T/H**

This edition of the WASH Progress Report updated No. 9 and included summaries of the 70 activities initiated by WASH in FY 1986. The WASH Progress Reports distributed to AID and others involved in water supply and sanitation in developing countries are a primary means of informing others of WASH accomplishments in specific subject areas and countries. The summaries of work done by WASH are also useful for identifying WASH-type tasks and defining proposed scopes of work. Progress Reports also update the WASH Publications List which is cross-referenced by subject, country, Activity Number and author. This task involved reviewing the scope, content and design of the Progress Report with WASH staff and the Office of Health, and writing, editing, printing, and distributing the report.

ACT #262 September 1986: Completed Turner

**Latin America: Evaluation of Catholic Relief Services/AID Matching Grant—FVA/PVC**

The Office of Private and Voluntary Cooperation of the Bureau for Food for Peace and Voluntary Assistance (FVA/PVC) requested that WASH assist in the evaluation of its matching grant to the Catholic Relief Services (CRS). WASH provided two teams, each having an engineer and a community participation specialist, to assess the quality of the CRS water supply projects. Technical, social and organizational aspects were assessed and successful programming thrusts were identified for possible replication elsewhere. Projects were reviewed in the Dominican Republic, Ecuador, Guatemala, Honduras, and Peru. See WASH Field Report No. 201.

ACT #263 September 1986: Completed Jordan

**Handbook for Estimating Operations and Maintenance Costs for Water Supply Projects—S&T/H**

WASH has completed the final draft of a manual to assist project planners to forecast the recurring cost of operating and maintaining a water system. The manual focuses on cost estimating techniques for labor, supplies, spare parts, utilities and transportation. See WASH Technical Report No. 48.

ACT #264      October 1986: Completed      Warner

**Djibouti: Planning Water Supply and Sanitation Upgrading in Peri-Urban Refugee Resettlement Areas** USAID/Djibouti requested WASH to investigate possible WASH technical assistance in the area of training in upgrading the water supply and sanitation infrastructure of Djibouti. Two WASH consultants visited Djibouti in October 1986 and made recommendations regarding an initial planning workshop for GROD officials followed by a series of training-related activities. See WASH Field Report No. 200.

ACT #265      November 1986: Completed      Yacoub

**Guidelines for Planning Water Supply and Sanitation Hygiene Education-S&T/H** The Office of Health requested that WASH develop guidelines to assist district/regional level personnel in planning and implementing hygiene education programs in water supply and sanitation. See WASH Field Report No. 218.

ACT #266      October 1986: Completed      Yacoub

**Social Marketing Applied to Water Supply and Sanitation Projects-S&T/H** The Office of Health requested that WASH examine how social marketing techniques might be applied to water supply and sanitation projects. A number of AID health projects had used social marketing techniques to introduce new behaviors, to change old ones, and to emphasize the continuation of on-going sound health behaviors. Since the linkage between disease and appropriate water and sanitation behavior was not widely understood or applied, this activity studied how hygiene education and the proper use of water and sanitation facilities can be encouraged and accomplished more effectively and widely through social marketing. See WASH Field Report No. 221.

ACT #267      September 1986: Completed      Turner

**Guidelines for Financial Management Assessment of Water Supply and Sanitation Institutions-S&T/H** The Office of Health requested that WASH prepare a set of guidelines for making financial management assessments of water supply and sanitation institutions. This activity is related to other WASH activities on institutional development. It identified key financial management issues relevant to assessing institutional capability to manage the finances of water supply and sanitation projects and programs. Assessment protocols were developed and incorporated into a set of guidelines for future field testing.

ACT #268      September 1986: Completed      Rosensweig

**Development of a Model for Project Start-up Workshops-S&T/H** The Office of Health requested that WASH develop a model for project start-up workshops. The purpose of this activity is to improve the start-up efficiency and effectiveness of long-term projects by ensuring clarity of roles and responsibilities of all parties involved and developing a project start-up action plan. A guide for conducting a project start-up workshop was developed and pilot tested in Renin. See WASH Technical Report No. 41.

ACT #269      September 1986: Completed      Turner

**Guidelines to Improve Planning, Implementation, and Evaluation of Water Supply and Sanitation Projects-S&T/H** The Office of Health requested that WASH develop guidelines to improve the planning, implementation, and evaluation of water supply and sanitation projects. Under this activity WASH produced a paper "WASH Activities to Improve the Sustainability of Water Supply and Sanitation Projects." The paper was given at the Bi-Annual Meeting of AIDIS, the inter-American Sanitary Engineering Association, in March 1987 in Mexico City. Subsequent activities to synthesize WASH materials and products are being carried out under ACT 385.

ACT #270      September 1986: Completed      Beverly

**Egypt Wastewater Treatment Plant Site Visits in the District of Columbia Area: I** USAID/Cairo requested that WASH arrange for wastewater treatment plant site visits in the vicinity of Washington for its technical staff. The purpose of these visits was to orient the visiting engineers on the state-of-the-art of plant designs, operations and maintenance equipment, policies, procedures and practices.

ACT #301      October 1986: Completed      St. Michel

**General Administration-S&T/H**  
See Activity #119.

ACT #302      October 1986: Completed      St. Michel

**General Technical Assistance-S&T/H**  
See Activity #120.

ACT #303      October 1986: Completed      St. Michel

**Preliminary Activity Development-S&T/H**  
See Activity #123.

ACT #304 October 1986: Completed St. Michel

**Provision of Information Services to AID-S&T/H**  
See Activity #129.

ACT #305 October 1986: Completed Hafner

**Africa Bureau: WASH Initiatives**  
See Activity #125.

ACT #306 October 1986: Completed Rosensweig

**Asia/Near East Bureau: WASH Initiatives**  
See Activities #126 and #128.

ACT #307 October 1986: Completed Turner

**LAC Bureau: WASH Initiatives**  
See Activity #127.

ACT #308 October 1986: Completed Warner

**WASH Liaison with Non-regional AID Bureaus**  
WASH developed and reinforced contacts with AID bureaus such as PPC, PRE, and FVA/PCA to keep them informed of WASH operations, to foster WASH involvement at early stages of bureau project development, and to assist in formulating requests for WASH assistance. This work continued as Activity #408 in fiscal year 1988.

ACT #309 October 1986: Completed Campbell

**Collaboration with Non-AID WS&S-Related Organizations in the U.S. and Overseas-S&T/H**  
See Activity #128.

ACT #310 October 1986: Completed St. Michel

**WASH Staff Conference Participation-S&T/H**  
See Activity #155.

ACT #311 November 1986: Completed Yacoub

**Cameroon: Team Planning Meeting for Health CDSS** WASH was requested by the Africa Bureau to conduct a two-day team planning meeting for two consultants going to Cameroon to prepare the country development strategy statement (CDSS). WASH Technical Report No. 32 was used as a guide.

ACT #312 December 1986: Completed Roark

**Cost Effectiveness of WS&S Interventions-S&T/H**  
The Office of Health requested WASH to compare WS&S with other health interventions. It was found that WS&S provides many benefits beyond reductions in morbidity or mortality and comparisons with ORT or immunization programs are sometimes misleading. WS&S is a long-term

investment in preventive health and the costs are not high when all potential benefits are included in the assessment. See WASH Technical Report No. 43.

ACT #313 November 1986: Completed St. Michel

**ANE: Orientation Visits to U.S. WS&S Facilities and Organizations** The purpose of this activity was to arrange meetings and site visits to U.S. water supply and sanitation facilities for personnel from Asia and the Near East. The visits were intended to provide information on current O&M practices and administrative procedures at these facilities.

ACT #314 November 1986: Completed Hafner

**Peace Corps: Program Design Assistance** WASH assisted the Office of Training and Program Support (OTAPS) of the Peace Corps to strengthen WS&S program guidelines and develop a strategy for improving the programming skills of field staff in designing WS&S projects.

ACT #315 November 1986: Completed Hafner

**Africa: World Vision Staff Workshop on WS&S** WASH provided on-going technical assistance to World Vision to improve its capabilities in WS&S program planning and management.

ACT #316 December 1986: Completed Roark

**Pump Selection: A Field Guide for Developing Countries-S&T/H** At the request of the Office of Health, WASH prepared a Pump Selection Manual designed to provide a step-by-step analysis of pumping advantages and disadvantages. Four energy sources were considered—solar, wind, diesel, and hand power. The manual is designed for field technicians to choose water pumping systems based on local water needs, site characteristics, personnel resources, comparative cost, and local operation and maintenance constraints. See WASH Technical Report No. 61.

ACT #317 January 1987: Completed Hafner

**Togo Water Film** WASH provided a technical production assistant to a film maker and USAID/Togo in planning and producing a film on the USAID-supported Rural Water Project in Togo. See WASH Field Report No. 212.

ACT #318 January 1987: Completed Roark

**Somalia: Kismayo Water Supply** USAID/Somalia requested that WASH review the Kismayo water supply system and make recommendations regarding its adequacy and technical alternatives.

Preliminary designs were developed which build upon the existing system and minimize sophisticated operation and maintenance procedures. See WASH Field Report No. 211.

ACT #319 December 1986: Completed Hafner

**Kenya: World Vision Planning Workshop** WASH provided a facilitator to design and implement two World Vision planning workshops in the Maasai and Kara Poket regions of Kenya.

ACT #320 January 1987: Completed Rosensweig

**Djibouti: Urban Sanitation Workshop** WASH designed and implemented a workshop for agencies of the Government of Djibouti (GROD). The workshop, which took place in February 1987, was to assist the agencies in defining issues of urban sanitation at the household level and in identifying possible solutions.

ACT #321 January 1987: Completed Hafner

**Rainwater Harvesting Technology—S&T/H** WASH established a rainwater information network to increase awareness of rainwater roof catchment technology and to promote it as a viable component of rural water supply projects.

ACT #322 January 1987: Completed Jordan

**Papua New Guinea: Project Planning Assistance** Under an earlier activity, a WASH team evaluated the water supply and sanitation component of the Asia Development Bank I Project and reported some deficiencies. Under this activity, WASH consultants assisted the Department of Health of the Government of Papua New Guinea in developing an action plan to address these deficiencies. The action plan focused on effective community development techniques particularly as they relate to village responsibilities for water system maintenance. See WASH Field Report No. 208.

ACT #323 January 1987: Completed Yacoub

**Planning and Coordination of Continued Guinea Worm Control Activity—S&T/H** WASH is to continue functioning as the coordinating and public education organization on the subject of guinea worm. Countries suitable for the testing of methodology derived under Phase I of this work were identified.

ACT #324 January 1987: Completed Turner

**Mexico: WFFHA Fifth International Congress** WASH and REACH assisted the Office of Health in planning and delivering a workshop on health costs

and financing. The activity included selection of panelists, preparation of a paper, and delivery of the paper at the Workshop. The Congress was held in March 1987 in Mexico City.

ACT #325 January 1987: Completed Turner

**Haiti: CARE Rural Water Supply Mid-term Project Evaluation** WASH provided a team of French-speaking professionals to perform a mid-term evaluation of the USAID-funded CARE Rural Water Supply Project in Haiti. The final report was delivered to the USAID mission in Haiti and the CARE office. See WASH Field Report No. 205

ACT #326 February 1987: Completed Rosensweig

**Managing Institutional Development Projects—S&T/H** Based on past experience WASH developed a lessons-learned document to assist both headquarters and field staff in designing and implementing institutional development projects. The document offers practical tips to improve institutional development projects.

ACT #327 February 1987: Completed Rosensweig

**Egypt: Design of Local Development II Water Supply Assessment** WASH designed a study to provide specific operational guidance to improve the performance of USAID-funded rural water supply projects. The WASH team recommended a 4-month assessment conducted by a joint expatriate-Egyptian team. See Activity No. 367.

ACT #328 March 1987: Completed Roark

**Botswana: Renewable Energy Project (Extended Economic Analysis with Engineering Support)** WASH performed a comparative economic analysis of pumping systems installed under the Comparative Water Pumping Project (CWPP). Financial and economic analyses of several small-scale water pumping stations were carried out. The results of these studies were incorporated into the final reports being prepared under the CWPP. A synopsis volume of the five-volume set is available as WASH Field Report No. 235.

ACT #329 February 1987: Completed Warner

**Malawi: Piped Water Project Design** A WASH consultant worked with a USAID team in Malawi in February and March 1987 in preparing the background documentation for a health sector grant. This grant, termed MASH (Multiple Assistance Schemes in Health), will contain provision for the continuation of USAID support to the Malawi Rural Piped Water Program.

ACT #330 March 1987: Completed Rosensweig

**Benin: Project Start-up Workshop** WASH designed and delivered a project start-up workshop for the Benin Rural Water Supply Project. The workshop was based on the "Facilitator Guide for Conducting a Project Start-up Workshop" (WASH Technical Report No. 41). The workshop took place in May 1987. See WASH Field Report No. 207.

ACT #331 February 1987: Completed Warner

**Egypt: WS&S Inputs to Schistosomiasis PID** WASH assisted the Vector Biology and Control (VBC) Project by facilitating a team planning meeting for a consultant group preparing a Project Identification Document (PID) for a schistosomiasis research control project in Egypt.

ACT #332 March 1987: Completed Rosensweig

**Development of O&M Supervisors Training Guide-S&T/H** WASH revised an O&M supervisors training guide which was developed for a workshop conducted for USAID/Bolivia (see Activity #268). The draft was translated into English from Spanish and has been revised to make it appropriate for use in other countries. A revised draft is now available for pilot testing. The guide is for a two-week workshop to assist extension-level personnel in setting up a community-based O&M system.

ACT #333 March 1987: Completed Turner

**Belize: Mid-term Evaluation of CARE WS&S Project** WASH provided a two-person team to do a mid-term evaluation of the CARE Village-Level Water and Sanitation Project. WASH assessed the effectiveness of this project in meeting the goal of providing increased access to safe water and sanitation. The final report was delivered to the Belize mission and CARE. See WASH Field Report No. 206.

ACT #334 March 1987: On-going Turner

**LAC Bureau: Planning for Central America WS&S Programs** In 1987 the LAC Bureau requested that WASH prepare a report on the level of funding required from USAID and other donors and national sources to expand water supply and sanitation coverage in Central America to meet the objectives of the Central American Initiative (CAI). WASH completed an update of this report (Field Report No. 209) in 1989.

ACT #335 March 1987: Completed Halner

**Israel: Environmental Assessment in West Bank/Gaza** WASH undertook an on-site environmental assessment of the effects of four proposed slaughterhouse operations in the West Bank/Gaza Strip.

ACT #336 March 1987: Completed Yacoub

**Integrating WASH into UNDP Training for Women in WS&S Irrigation** This activity promoted long-term substantive collaboration between WASH, UNDP, USAID, and WID offices and regional officers. See WASH Field Report No. 220 and Technical Report No. 52 (co-sponsored by UNDP/PROWESS—Promotion of the Role of Women in Water and Environmental Sanitation Services).

ACT #337 March 1987: Completed Yacoub

**Thailand: Hygiene Education Strategies and Techniques** WASH was asked to assist the Sanitary Division of the Ministry of Public Health in developing new hygiene education approaches by reviewing existing materials and interviewing regional staff. A report was prepared which outlines specific hygiene education approaches for Region 1. See WASH Field Report No. 210.

ACT #338 March 1987: Completed Rosensweig

**Somalia: TPM for Mid-term Evaluation** WASH was asked to conduct a team planning meeting (TPM) for a mid-term evaluation of the Juba Valley Analytical Studies Project. The intent of the evaluation was to check on the project progress to date and to determine any necessary changes or adjustments. The TPM was conducted in March 1987.

ACT #339 March 1987: Completed Halner

**Guinea Worm Information Network-S&T/H** WASH developed and is maintaining a database of AID and non-AID projects with guinea worm control potential. The purpose is to increase the efficiency in gathering, disseminating, and coordinating this information among USAID missions and other agencies.

ACT #340 March 1987: Completed Campbell

**Information Support to UNEP-S&T/H** WASH provided information support to UNEP (United Nations Environment Programme) users in the area of water and sanitation. WASH responded to information requests from UNEP through its database system (INFOTERRA) for appropriate documents or sources of information.

ACT #341 March 1987: Completed Halner

**World Vision: Ghana and Senegal Project Assessments** WASH provided two consultants as part of a four-person team to assist World Vision in a rural water project assessment in Ghana and Senegal.

ACT #342 April 1987: Completed Rosensweig

**Sri Lanka: Second Monitoring Evaluation** WASH assessed the current status of the Water and Sanitation Sector Project in Sri Lanka with special focus on the area of personnel management. WASH also planned and conducted an annual monitoring/evaluation workshop for the National Water Supply and Drainage Board, USAID, and contractor staff following the assessment. The assignment took place in May and June 1987.

ACT #343 May 1987: Completed Hafner

**Peace Corps: Improving Water and Sanitation Programming—S&T/H** WASH assisted the Peace Corps Office of Training and Program Support (OTAPS) in improving water and sanitation programming. WASH trained OTAPS staff in the team planning meeting process, assessing Peace Corps projects, and assisting OTAPS on consultant briefings and debriefings. WASH also provided two consultants to facilitate a Peace Corps staff workshop on evaluation in Ghana in March 1988. See WASH Field Reports Nos. 236 and 239.

ACT #344 May 1987: Completed Jordan

**Lesotho: Privatization Study** WASH was asked by the USAID Mission in Lesotho to assess the feasibility of privatizing the construction, operation, and maintenance of rural water supply systems. The WASH team evaluated several possible scenarios and recommended a suitable course of action to USAID and the Government of Lesotho. It was found that privatization offered advantages in several operational phases but that government oversight must be continued. See WASH Field Report No. 215.

ACT #345 May 1987: On-going Rosensweig

**Management Development Program—S&T/H** WASH has prepared a management development program for WS&S institutions. A training guide for a three-workshop program is now being edited.

ACT #346 May 1987: Completed Roark

**Somalia: Drought Needs Assessment** USAID/Somalia requested WASH to do a baseline study to assess the emergency drought needs in Somalia. WASH was to determine the water needs and available local water supplies, evaluate capabilities of local organizations, and recommend donor assistance programs. The WASH consultant was part of a six-person team which evaluated various drought problems.

ACT #347 May 1987: Completed Hafner

**Swaziland: Water Evaluation Design** A WASH evaluation consultant/water specialist assisted the

Rural Water Supply Board in developing an on-going evaluation/assessment system as a basis for improving water supply and sanitation sector activities.

ACT #348 May 1987: Completed Roark

**O&M Costs for Water Supply Projects—S&T/H** WASH consultants collected and analyzed actual O&M cost data from LDCs and prepared a report giving general conclusions with respect to O&M costs for different types of water systems. One major conclusion from this work is that O&M costs are not consistently collected, and another is that actual recurrent costs of water projects are difficult to determine. A working paper was completed for this study.

ACT #349 May 1987: Completed Yacoub

**Swaziland: Health Education Evaluation** USAID/Swaziland asked WASH to assist in strengthening the capability of the Health Education Unit (HEU) of the Ministry of Health. The WASH consultant designed an assessment system to use with all health education materials produced by the HEU, and also designed a KAP study to evaluate the sanitation messages used by the HEU staff. See WASH Field Report No. 219.

ACT #350 April 1987: On-going Burns

**WS&S as a Stimulus to ORT Knowledge in Togo and Indonesia** WASH is to test the hypothesis that villages involved with participatory water supply projects will have a higher percentage of mothers who know how to administer ORT than villages involved in non-participatory water supply projects.

ACT #351 May 1987: Completed Turner

**Honduras: Project Paper for Health Sector II** USAID/Honduras asked WASH to provide a three-person team to assist the mission in writing an interim project paper report for the water supply and sanitation component of the Health Sector II Project.

ACT #352 May 1987: Completed Hafner

**Sierra Leone: CARE Community Participation Assessment** WASH assisted CARE in identifying why community participation on CARE WS&S projects has not been achieved. WASH and CARE staff developed a strategy for follow-on activities to improve CARE WS&S projects in Sierra Leone. See WASH Field Report No. 217.

ACT #353 June 1987: On-going Warner

**Nigeria: Willingness to Pay Field Studies** The World Bank is undertaking a major field study of

willingness to pay for water supply services in developing countries. In light of WASH experience in conducting such studies, the World Bank has requested WASH collaboration in the Nigerian study. WASH will be working with Nsukka University in the field implementation of the study.

ACT #354 June 1987: Completed Rosensweig

**Swaziland: Manpower Assessment** WASH carried out an assessment of the availability of manpower at the professional, technical, and craftsman levels in the water and sanitation sector in Swaziland. WASH identified areas of shortages and recommended training methods and programs. The assessment was carried out in September 1987. See WASH Field Report No. 238.

ACT #355 June 1987: Completed Rosensweig

**Zaire: Training of Trainers—Workshop III** WASH designed and implemented a two-week advanced training-of-trainers workshop for 13 Zairian water supply and sanitation trainers. This workshop was a follow-on to Activities 221 and 245. The workshop took place in August 1987. See Field Report No. 216.

ACT #356 June 1987: Completed Yacooq

**Domestic Sanitation and Child Survival** WASH synthesized the findings and research conducted under WASH Activity #214 in rural Kenya and produced a document useful to USAID missions for hygiene education programs. The second phase of the activity will delineate behavior changes in water use and sanitation practices which are required for improved health and child survival in urban and peri-urban communities.

ACT #357 June 1987: Completed Rosensweig

**Development of Debriefing Model—S&T/H** The purpose of this activity was to develop guidelines for conducting a debriefing with WASH consultants that captures the lessons learned and issues relevant to the work that was conducted. This model is used by WASH activity managers and is a complement to the team planning meeting. See WASH Technical Report No. 32, Supplement.

ACT #358 June 1987: Completed Turner

**Belize: Redesign and Technical Assistance for IPTBH Project** WASH provided a two-person team to assist USAID/Belize with the redesign of the Improved Productivity Through Better Health (IPTBH) water and sanitation project and to provide recommendations for the selection of drilling equipment.

ACT #359 July 1987: Completed Jordan

**Thailand: Wastes Management Program Design** WASH provided expert technical support for the preparation of the program design for the waste management element of the Natural Resources for Sustainable Development Project in Thailand. A two-person team—a WASH consultant and a consultant from the World Environment Center—carried out this assignment. The results of their work have been published as WASH Working Paper No. 54.

ACT #360 July 1987: Completed Jordan

**Thailand: Wastewater Assessment in Coastal Areas** WASH assessed the wastewater collection, treatment, and disposal practices and alternatives in the coastal areas of Thailand. WASH identified possible areas of intervention through demonstration projects, institutional development, and training. WASH Working Paper No. 55 presents the findings, conclusions, and recommendations of this activity.

ACT #361 July 1987: Completed Rosensweig

**Honduras: Well Improvement Workshop** Peace Corps requested that WASH conduct a field test of the Well Improvement Training Guide (Activity #116) for Peace Corps Volunteers and counterparts. Seventeen participants were trained to assist communities in organizing and implementing well improvement projects. See WASH Field Report No. 222.

ACT #362 July 1987: Completed Rosensweig

**Thailand: Asia-Pacific Regional Water Supply Conference** Thai Waterworks Association (TWWA) requested WASH assistance in designing and implementing the 6th Asia-Pacific Regional Water Supply Conference and Exhibition to be held in December 1987. WASH's goal was to help make the conference more participatory. A WASH consultant was provided to assist in the planning phase in July 1987 and also to help in the implementation of the actual conference in December 1987.

ACT #363 July 1987: Completed Hafner

**World Vision: Africa Water Program Workshop—FVA/PVC** WASH assisted World Vision in planning and conducting a workshop for World Vision Africa country managers of water projects, their regional technical teams and other World Vision staff to familiarize them with the African Water Program and other RWS&S projects in Africa.

ACT #364 July 1987: Completed Yacoub

**Pakistan: Field Test of Cost-Effective Methods of Guinea Worm Control** In collaboration with the Centers for Disease Control, WASH was requested to assist the Government of Pakistan in developing a cost-effective strategy for the control of guinea worm. Phase II of the activity will be actual testing of the strategy, and Phase III includes the development of a user's guide for planning a national program for the control of guinea worm. See WASH Field Reports Nos. 231 and 233.

ACT #365 August 1987: Completed Turner

**PPC/CDIE: Sustainability of USAID Investments in Guatemala** WASH provided a staff member to assist PPC/CDIE in a study of the sustainability of AID investments in the health sector in Guatemala. The team identified the characteristics of projects that have resulted in the continuation of project activities and benefits after disbursement of project funds.

ACT #366 September 1987: Completed Yacoub

**Djibouti: Water Decade Planning Workshop** USAID/Djibouti and WHO/Djibouti collaborated in the organization and facilitation of a Water Decade planning workshop which was held in Djibouti in October 1987. Two WASH consultants participated in the planning and facilitation of the workshop. See WASH Field Report No. 225.

ACT #367 August 1987: Completed Rosensweig

**Egypt: LD I Rural Water Supply Assessment** USAID/Egypt requested WASH assistance in conducting an assessment of the Local Development I (LD I) Rural Water Supply Systems to provide improved guidelines for future LD II water supply activities. This assignment was the implementation of the assessment which WASH designed under Activity #327. The work took place November 1987 to March 1988.

ACT #368 September 1987: Completed Yacoub

**Guidelines for Guinea Worm Component in Existing WS&S Projects** This activity developed guidelines for adding a guinea worm component to existing water supply and sanitation projects, using the USAID-funded Togo Rural Water Supply Project as a case study. See WASH Technical Report No. 51.

ACT #369 September 1987: Completed Yacoub

**Components of Successful Water Supply and Hygiene Education Programs** This activity identified the key areas which cause the success or failure of integrating hygiene education programs into water supply and sanitation projects and

prepared an outline of preliminary guidelines using selected case studies. See WASH Technical Report No. 55.

ACT #370 August 1987: Completed Turner

**Nigeria: Collaboration with World Bank on Water Vending Studies** Based on the water vending studies carried out by UNC under Activity #185, the World Bank requested WASH assistance to start water vending studies in the state of Anambra, Nigeria. The studies recommended improvements to existing water vending operations and provided information to the local utility and the World Bank for designing a tariff system.

ACT #371 August 1987: Completed Rosensweig

**Bolivia: Project Review Workshop** USAID/Bolivia requested WASH assistance in designing and conducting a project review workshop for the CARE Water and Sanitation/Child Survival Project. WASH used its project start-up model to conduct the project review. The workshop took place in October 1987. See WASH Field Report No. 226.

ACT #372 August 1987: Completed Roark

**Yemen: Demonstration Handpump Project** USAID/Yemen requested WASH to assist in developing a demonstration program to study the use of handpumps to provide water needs for Yemeni villages and to assess the feasibility of in-country manufacturing or assembly of the pumps. Recommendations were provided on appropriate handpumps and approaches in fostering the development of these pumps. See WASH Field Report No. 224.

ACT #373 September 1987: Completed Rosensweig

**Revision of HRD Planning Guidelines—S&T/H** Under Activity #354, WASH used the HRD Planning Guidelines in a manpower assessment in Swaziland. WASH revised the guidelines based on the results of the Swaziland activity. See WASH Technical Report No. 20.

ACT #374 September 1987: On-going Roark

**Guidelines for the Evaluation of Water Supply and Sanitation Projects—S&T/H** This study will review the WASH (and AID) experience in WS&S evaluation, identify useful models for future evaluations, and prepare preliminary guidelines for operational use by WASH, AID, and AID contractors.

ACT #375 March 1987: Completed Yacoub

**Nigeria: Training Modules on Guinea Worm Prevention** Two training modules resulted from this activity. The first is a training module for high

school teachers in Nigeria as part of family life education implemented by CEDPA (Center for Development in Population Activities). The second training module, which is to be implemented by the University of Ibadan, is for training community level health workers, teachers, and extension agents in guinea worm prevention. See WASH Technical Report No. 50 and Field Report No. 223.

ACT #376 September 1987: Completed Sarai

**Prepare Progress Report No. 11-S&T/H** This edition of the WASH Progress Report updated No. 10 and included summaries of the 86 activities initiated by WASH in FY 1987. This task involved reviewing the scope, content, and design of the Progress Report with WASH staff and the Office of Health and writing, editing, printing, and distributing the report.

ACT #377 September 1987: On-going Warner

**Lessons Learned in the WASH Project-S&T/H** Under this activity, WASH staff have identified the key findings or lessons learned for water supply and sanitation development during the course of eight years of WASH technical assistance activities. The findings will provide the subject matter for a report on the approaches that WASH has evolved for its technical assistance.

ACT #378 September 1987: Completed Jordan

**Solomon Islands: Development of Technical Assistance Needs** USAID/Suva requested that WASH provide further assistance to the Government of the Solomon Islands (SIG) in developing an action plan for more effectively executing its rural water supply and sanitation program, resulting in the construction of water and sanitation systems. Under this activity, WASH prepared the terms of reference for a subsequent visit. The second visit, during which the WASH consultants participated in a national conference on rural water supply systems, resulted in the preparation of a national policy for maintenance of rural water systems.

ACT #379 September 1987: Completed Sarai

**Pakistan: Collaboration with World Bank on Willingness-to-Pay** The World Bank and WASH collaborated on a willingness-to-pay study in Pakistan. WASH assisted with field support expenses for the principal investigators.

ACT #380 September 1987: On-going Johnson

**Strategies for Cost Recovery and Tariff Design** This activity is producing a primer that identifies and discusses a wide range of issues involved in cost recovery and tariff design. The study report also

presents a detailed sample problem to illustrate how the issues can be handled analytically, under varying policy conditions.

ACT #381 September 1987: Completed Hafner

**WHO Consultation-S&T/H** WASH participated in an international conference sponsored by the Swiss Development Cooperation Agency and the World Health Organization which focused on development concepts related to the provision of support programs. A report entitled the Interlaken Report was produced by the World Health Organization.

ACT #382 October 1987: On-going Campbell

**Guidelines for Organizing Technical Information Systems of Water/Wastewater Institutions-S&T/H** This activity will provide guidelines to assist organizations in establishing and organizing databases, records and filing systems. Proper organization of records and information will assist in developing an institutional memory.

ACT #383 September 1987: Cancelled Turner

**Developing Community-Oriented WS&S Management Guidelines-S&T/H** The purpose of this activity was to develop a set of guidelines for use by implementing agencies and PVOs to produce written materials for villages to guide their water supply and sanitation system management. It was cancelled because of reduced funding at the closeout of WASH II.

ACT #384 September 1987: On-going Turner

**Application of Water Vending Lessons** WASH is conducting a study of water vending in Guatemala with the purpose of improving water supply services in peri-urban slums and shanty towns. The information obtained will also be used in the planning of water service and tariff design in an upcoming project.

ACT #385 September 1987: On-going Turner

**Synthesis and Packaging of Existing WASH Products and Materials-S&T/H** WASH has produced a catalog which features summaries of existing reports that have wide applicability. The catalog is organized by general content areas, such as health education, engineering, etc.

ACT #386 September 1987: Completed Warner

**IRC/The Hague: Information Exchange for WS&S** A working meeting on information exchange for WS&S was held in The Hague under the sponsorship of the International Reference Centre for Water Supply and Sanitation. The meeting was used to develop a framework for organizing and strengthening information services in developing countries.

ACT #401    October 1987: Completed    St. Michel

**General Administration** See Activity #119.

ACT #402    October 1987: Completed    St. Michel

**General Technical Assistance** See Activity #120.

ACT #403    October 1987: Completed    St. Michel

**Preliminary Activity Development**

See Activity #123.

ACT #404    October 1987: Completed    Campbell

**Provision of Information Services to AID and AID-Related Agencies** See Activity #129.

ACT #405    October 1987: Completed    Hafner

**Africa Bureau: WASH Initiatives**

See Activity #125.

ACT #406    October 1987: Completed    Rosensweig

**Asia/Near East Bureau: WASH Initiatives**

See Activities #126 and 128.

ACT #407    October 1987: Completed    Turner

**Latin America/Caribbean Bureau: WASH Initiatives** See Activity #127.

ACT #408    October 1987: Completed    Warner

**WASH Liaison with Non-Regional AID Bureaus** See Activity #308.

ACT #409    October 1987: Completed    Campbell

**Collaboration with Non-AID WS&S Related Organizations in US & Overseas**

See Activity #148.

ACT #410    October 1987: Completed    St. Michel

**Staff Conference Participation** See Activity #155.

ACT #411    October 1987: Completed    Hafner

**Preliminary Activity Development Buy-Ins** This activity, initiated at the request of S&T/Health, captured all time used by activity managers and subcontractor staff and consultants in preparing the activity papers and scopes of work prior to the issuance of authorized activities for buy-in requests for WASH II in FY 1988.

ACT #412    October 1987: Completed    Hafner

**Sudan/CARE: Evaluation of Water Project**

CARE/SUDAN, through USAID/Sudan, requested technical assistance in conducting an end-of-project evaluation of CARE's Interim Water Supply and Management Project. The evaluation had two purposes: to evaluate the Interim Project from a

technical standpoint (including an assessment of water extension curriculum planning) and to review a draft project proposal for continued water development assistance to the Kordofan Region. See WASH Field Report No. 227.

ACT #413    October 1987: Completed    Hafner

**Togo: Rural Water Project Evaluation** A five-person team of WASH staff and consultants and Togolese conducted a final evaluation of the USAID/Togo Rural Water Supply and Sanitation Project at the request of the USAID Mission in Togo. The evaluation provided a general overview of inputs, outputs, and results obtained for the project since the mid-term evaluation in 1983. The following aspects of the project were examined: administration and management, training and human resources development, community development, construction, maintenance, and water quality. See WASH Field Report No. 228.

ACT #414    October 1987: Completed    St. Michel

**Evaluation of WASH II—Involvement of WASH Staff**

WASH provided assistance and information to the WASH II project evaluation team from October 1987 to January 1988, as requested by S&T/Health.

ACT #415    October 1987: On-going    Yacoub

**Djibouti: Socio-Cultural Training Study**

At the request of USAID/Djibouti, a WASH consultant assisted the National Committee for Water, Sanitation, and Hygiene of Djibouti to design, implement, and analyze a sociocultural survey of household water use and sanitation practices in Djibouti City. The sociocultural data collected will be used in establishing criteria for upgrading the water and sanitation services of certain old quarters of the city and to improve the environmental health conditions of the inhabitants. See WASH Field Reports Nos. 214 and 242.

ACT #416    October 1987: Completed    Rosensweig

**Zaire: Review of SANRU II WS&S Training Plan**

USAID/Zaire requested WASH to assess the overall effectiveness of the training plan for SANRU II (Rural Health). (The training plan for the water supply and sanitation component of SANRU II was developed by WASH in November 1985 (see ACT #187), and three training-of-trainers workshops were conducted by WASH as part of the plan (see ACT #221, #224, and #245).) In addition to the assessment, WASH made recommendations for revisions in the strategy, helped define the role of the National Training Team, and observed a workshop conducted by National Training Team trainers.

ACT #117    November 1987: On-going    Rosensweig

**Development of Training Guide on Hygiene Education** As part of its training guide series, WASH has developed a draft training guide on hygiene education for water supply programs. The guide is intended for field workers who have responsibility for rural water supply and sanitation, i.e., health promoters, nurses, health assistants, and rural development workers. The guide, which will emphasize how to plan and implement a hygiene education program in the community, will be field tested by the Peace Corps in Ecuador and possibly Nigeria.

ACT #118    November 1987: Completed    Roark

**Solomon Islands: Development of National Policy for Maintenance** At the request of the AID Mission in the Solomon Islands, WASH assisted the Solomon Islands Government in developing a national policy for maintaining rural water systems. The system is based on the concept of community management of water supply systems. The WASH visit was timed so that the two consultants could also participate in a national conference on the Solomon Islands' Water Supply and Sanitation Program. See WASH Field Report No. 234.

ACT #119    November 1987: On-going    Roark

**Field Test of O&M Cost Estimating Guide** WASH field tested the final draft of a report on estimating costs for operations and maintenance of water supply and sanitation systems in Ivory Coast. The results of the field test were used to modify the report and as a case study. See WASH Technical Report No. 18.

ACT #120    November 1987: Completed    Yacoub

**Ghana: International Guinea Worm Conference** At the request of USAID, representatives from WASH participated in the planning and implementation of the Second Regional Workshop on Guinea Worm, March 14-18, 1988, in Accra. The workshop was sponsored by the World Health Organization/Africa Regional Office, WASH, and Global 2000 of the Carter Center in Atlanta, Georgia. The theme of the conference was community mobilization for safe drinking water and guinea worm eradication. WASH representatives made a number of presentations at this conference. See WASH Field Report No. 240.

ACT #121    November 1987: On-going    Roark

**Development of Training Materials for Maintenance Managers in LDCs** In many developing countries, the need for effective maintenance programs is well understood, but the

knowledge required to develop and implement a maintenance management system is lacking. WASH is now developing a series of training aids for use in developing countries. These aids will cover the important elements of a maintenance program, such as work order systems, equipment inventory, management reports, training needs, etc. After the aids have been developed, WASH consultants will use them to carry out a one-week training program for maintenance managers responsible for the maintenance of urban water supply systems.

ACT #122    November 1987: Cancelled    Jordan

**Effective Water Supply Maintenance Programs for Rural Communities** Preliminary planning was carried out for a project to develop a maintenance plan that could be used successfully for several types of water supply systems in different social and physical environments. Reductions in funding for WASH led to cancellation of this activity.

ACT #123    November 1987: Completed    Turner

**Bolivia: PID for Child Survival/WS&S Project** At the request of USAID/Bolivia, WASH participated on a team of specialists responsible for developing a project implementation document for a child survival/water supply and sanitation project. The project consisted of various child survival interventions (oral rehydration therapy, growth monitoring, malaria prevention, etc.) with a water and sanitation component integrating the overall effort. WASH provided a team leader, a team planning meeting facilitator, and a water engineer. Specialists in child survival and health education from REACH, PROTECH, and HEALTHCOM were also on the team.

ACT #124    December 1987: Completed    Yacoub

**Nigeria: Maternal Morbidity Guinea Worm Research** WASH designed and carried out a pilot study to determine the impact of guinea worm disease (dracunculiasis) on maternal and child health. The study was carried out in two areas in Nigeria where guinea worm is endemic: Idere Town in Oyo State (with the affiliation of the University of Ibadan) and several small villages in Asa and Moro Local Government Areas in Kwara State (with the affiliation of the University of Ilorin). Forty-two mothers were interviewed for the study. See WASH Field Report No. 232.

ACT #125    December 1987: Completed    Turner

**Belize: Technical Assistance for Well Drilling Program** As a follow-up to ACT #358, USAID/Belize requested additional assistance in its well drilling program. WASH helped the Belize Mission to develop a scope of work for the

driller/trainer adviser, to formulate the specifications for well drilling equipment, and to review bids.

ACT #426 December 1987: Completed Turner

**Malawi: World Vision Project Design** At the request of FVA/PVC, WASH provided one professional to participate as a member of a six-person interdisciplinary project design team to assist the World Vision regional technical team and Malawi staff in preparing a design for a rural water project in Malawi. Tasks included reviewing the project identification document and terms of reference, facilitating a team planning meeting, and participating in the preparation of the project paper.

ACT #427 January 1988: Completed Turner

**Senegal: World Vision Community Participation Evaluation** At the request of FVA/PVC, WASH sent one person to participate in a three-person overall evaluation of the World Vision Senegal Rural Water Project in Louga and its impact on the community. Other members of the team were from World Vision headquarters and from its Africa Water Program staff. The evaluation was the first phase of a two-phase effort to determine the future direction of the project. (In 1987, WASH participated in a rapid assessment of this project—see ACT #341.)

ACT #428 January 1988: Completed Roark

**Botswana: Drought Relief** The USAID Office of Foreign Disaster Relief requested the assistance of WASH to assess drought conditions in Botswana and recommend emergency relief actions to provide water in the most expeditious manner. The focus was on identifying short-term emergency assistance projects which the OFDA could fund. In addition, the team of consultants identified some potential programs of a medium- or long-range nature. See WASH Field Report No. 229.

ACT #429 March 1988: Completed Roark

**Oman (Salalah): Septage Disposal Study** The Omani-American Joint Commission received a request from the Dhofar municipality for information and recommendations on options for treating wastewater that was being discharged in Wadi Sahalnaut. The options studied addressed urgent short-term solutions that could be quickly implemented and, if possible, incorporated into the master plan for water and wastewater for Salalah. See WASH Field Report No. 243.

ACT #430 March 1988: On-going Roark

**Botswana Emergency Technical Assistance** The USAID Office of Foreign Disaster Assistance requested WASH to provide two consultants and well drilling and field operations liaison to assist the Botswana Department of Water Affairs in emergency drought relief. The field assistance extended over a period of nine months. Assistance was provided in planning water development, rig repair, commodity procurement, and well drilling.

ACT #431 April 1988: Completed Warner

**Visit of Egyptian Officials to U.S. Wastewater Facilities** Responding to a request from USAID/Egypt, WASH assisted with the planning, logistics, and visits of two senior Egyptian officials to U.S. wastewater facilities in the Washington, D. C., and Orlando, Florida, areas.

ACT #432 April 1988: Completed Turner

**Bolivia: Project Paper Team for Child Survival/WS&S Project** WASH was requested by USAID/Bolivia to provide three members of the pre-project and project paper teams and to draft the project paper for a new child survival/ water supply and sanitation project. In addition, WASH coordinated the efforts of the other centrally funded projects and facilitated a three-day team planning meeting in Bolivia. (See Activity #423.)

ACT #433 April 1988: Completed Warner

**WHO/Geneva: International Consultation on Cost Recovery** WHO/Geneva held the Third Informal Consultation on Institutional Development/Cost Recovery in Community Water Supply and Sanitation in Geneva April 11-15, 1988. A representative from WASH participated in the general sessions and discussed the methods used by AID and WASH for applying cost recovery principles.

ACT #434 April 1988: Completed Hafner

**RHUDO/Abidjan: Preparation of ADB WS&S Policy Paper** RHUDO/Abidjan requested assistance from the WASH Project to review and revise the African Development Bank's draft policy paper on water supply and sanitation. A two-person team and four subject-area specialists completed the assignment. The paper was intended to help in sectorial planning and to provide the ADB with the means to review proposed WASH projects.

ACT #435 April 1988: Completed Rosensweig

**El Salvador: Project Paper Amendment** USAID/El Salvador requested WASH to evaluate a pilot program and develop

inputs for a Project Paper amendment for the Potable Water and Environmental Support Component of the Public Services Restoration Project. The pilot project, which had been underway for about two years, was based on recommendations from a previous WASH consultancy. Before considering an extension of the project activities in 1989, USAID/El Salvador required an evaluation of the pilot program, including any recommendations for changes.

ACT #436 April 1988: On-going Hafner

**Ghana: World Vision Training** World Vision/Ghana requested the assistance of the Africa Water Program's Regional Technical Team and WASH to help develop an integrated training plan for project staff responsible for the community participation and hygiene education components of World Vision's large-scale water supply and sanitation project. The WASH consultant worked with a team of training specialists to review the current and proposed community participation and health education components of the project, assess the training needs, develop a preliminary annual training plan for staff, review what resources were available to carry out the plan, design and implement the first workshop, and prepare a final report.

ACT #437 March 1988: Completed Warner

**WSS Workshop at 1988 NCIII Annual Conference** S&T/II asked WASH to hold a one-day workshop to assist representatives of private voluntary and other donor organizations to understand the health linkages within community water supply and sanitation projects and to apply this understanding in the design and implementation of projects. The workshop was held in conjunction with the annual meeting of the National Council for International Health.

ACT #438 May 1988: Completed Rosensweig

**Benin: Project Review Workshop** USAID/Benin requested WASH to conduct a project review workshop for the AID-funded rural water supply project. During the three-and-a-half day workshop, the 54 participants (representatives from USAID, UNICEF, the Peace Corps, and the Government of Benin) reviewed project progress to date and planned for the upcoming year. The workshop was conducted with the assistance of the long-term contractors, Pragma Corporation and Medical Care Development. See WASH Field Report No. 241.

ACT #439 May 1988: On-going Roark

**Jordan: Water Sector Analysis** At the request of the USAID Mission in Jordan, WASH organized a

four-person team to assess Jordan's water and wastewater sector. The objectives are to determine the impacts of AID's assistance and to prepare recommendations concerning AID's future role based on lessons learned. See WASH Field Report No. 241.

ACT #440 May 1988: Completed Rosensweig

**Sri Lanka: Third Monitoring/Evaluation** At the request of the USAID Mission in Sri Lanka, a WASH consultant carried out a monitoring/evaluation visit for the Water and Sanitation Sector Project in Sri Lanka. This, the third such visit, focussed on the theme of decentralization. The consultant planned and implemented a problem-solving workshop attended by appropriate staff from the ministries involved and from USAID. The agenda of the workshop was based on issues that arose from the monitoring.

ACT #441 May 1988: Completed Hafner

**Malawi: Promoting Health Interventions for Child Survival PID** WASH assisted USAID/Lilongwe by providing a water/sanitation engineer to prepare the water supply, waste disposal, and village hygiene components of the Project Paper for a primary health care project co-sponsored by the Ministry of Health and the Ministry of Works and Supplies. The aim of the project is to reduce maternal and child mortality and morbidity. In addition, the WASH consultant, in collaboration with the health specialists on the Project Paper team, assessed the possible reasons why mortality rates in areas already served by improved water supplies have not yet shown expected declines.

ACT #442 May 1988: On-going Hafner

**World Vision Collaboration** World Vision requested WASH assistance in providing on-going general planning, information support, and liaison activities for its Africa Water Program staff. The World Vision African Water Program is a three-year effort in Ghana, Senegal, Kenya, Ethiopia, and Malawi. This is a continuation of Activity #315, which was initiated in FY 1987. WASH has also provided this project with technical assistance for staff development, project assessments and evaluation, planning workshops and information.

ACT #443 May 1988: On-going Yacoub

**Towards Community Management: A Guide to Integrating Behavioral Sciences and Engineering Technology in WS&S Projects** WASH, at the request of S&T/II, is developing a guide and reference manual to help planners and practitioners develop a community management approach that

includes community development, health education, and engineering technology into water and sanitation programs. The guide consists of a step-by-step check list. The aim of the activity is to increase the health benefits of water, sanitation, and health projects. It has been shown that such projects, when fully integrated, can reduce diarrheal diseases by as much as 60 percent.

ACT #444      June 1988: Cancelled      Roark

**Cost Indices of WS&S Projects** The purpose of this activity was to provide guidelines concerning the efficient distribution of resources in water and sanitation projects. Successful projects tend to place more resources into community development, training, and health education than previously thought necessary. The guidelines were to provide cost data based on functional divisions including construction, operation and maintenance, health education, community participation, and project administration, with specific reference to certain technologies, including boreholes, springs, piped systems, latrines, roof-top catchments, etc. This activity was cancelled but will be carried out later under WASH III.

ACT #445      June 1988: On-going      Hafner

**Tanzania: Willingness to Pay for O&M**

**Costs** USAID/Tanzania requested WASH Assistance to estimate the willingness of households to pay for the operation and maintenance costs of various kinds of rural water systems. A team of consultants, headed by a water resources economist, carried out a contingent valuation study in which community members were interviewed about what they would pay for various kinds of service. The results of the study should assist UNICEF and possibly USAID with the design and implementation of projects in the water sector in Tanzania and should also be of use to the Government of Tanzania as it sets policies on cost recovery for rural water systems.

ACT #446      July 1988: On-going      Yacoub

**Ecuador: TA for Communications for Water and Sanitation** USAID/Quito requested WASH assistance in devising a major social marketing and communications campaign to encourage people to adopt behaviors related to the decrease of diarrheal diseases. USAID has financed the construction of over 170 rural water supply and sanitation systems in Ecuador, and this social marketing campaign should complement the construction projects and insure that they make a positive impact on health. See WASH Field Report No. 245.

ACT #447      August 1988: On-going      Campbell

**World Vision/AWP: Development of Information System** WASH is working with World Vision to develop an information system on water supply activities for the organization's field staff in Africa. The system should contribute to the effectiveness of World Vision's Africa Water Project, a large-scale water and sanitation program for five countries. The information center will be based initially in the Washington, D.C., area but may be established in country locations at a later date.

ACT #448      August 1988: On-going      Hafner

**World Vision: Development of Strategic Training Plan for AWP** At the request of FVA/PVC, WASH is assisting World Vision in developing an overall training strategy and plan for the organization's Africa Water Project staff. The activity includes developing training materials and methodologies as well as developing country-specific training strategies. Training is required in the following areas: organizational development, training-of-trainers, project design and management, health education, project promotion, operation and maintenance, etc. The training will be structured to promote cross-fertilization of ideas among countries and among projects within the same countries.

ACT #449      August 1988: On-going      Hafner

**Africa Bureau: Planning for Africa WS&S Programs**

The Africa Bureau requested assistance from WASH to determine the level of funding required from USAID, other donors, and national sources to expand water supply and sanitation coverage in 20 sub-Saharan African countries. The countries chosen are those earmarked by USAID for special emphasis on child survival interventions or those that already have USAID water and sanitation projects. The study profiled the water and sanitation situation in each of the countries, with a focus on what is needed to fulfill the country's plan for the International Drinking Water Supply and Sanitation Decade. Additionally, it made some recommendations to USAID on the general outline of a strategy for water supply and sanitation for the Africa Bureau. The countries covered were Kenya, Nigeria, Malawi, Niger, Senegal, Sudan, Mali, Zaire, Liberia, Ivory Coast, Guinea, Burundi, Rwanda, Benin, Burkina Faso, Cameroon, Swaziland, Tanzania, Togo, and Uganda.

ACT #450      August 1988: Completed      Rosensweig

**Brazil: PAHO Symposium** WASH assisted the environmental health division of the Pan-American

Health Organization to plan and implement its biannual water and sanitation symposium. The theme of this meeting, which involved participants from about 30 countries in Latin America and the Caribbean, was chemical substances and environmental health. WASH designed the working group sessions, prepared the group leaders' guide, trained the group leaders, and functioned as a coordinator for the group leaders during the symposium.

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ACT #451 August 1988: On-going Rosensweig

**Bolivia: Project Review Workshop for CARE CS & WSS Project** CARE and USAID/Bolivia requested WASH assistance in conducting a project review workshop for the CARE Child Survival and Rural Sanitation Project. This workshop had been recommended a year earlier by WASH (see ACT #371). Before the workshop was held, the consultants interviewed the project staff to determine the major issues; the workshop then aired these issues and made recommendations on how to resolve them. See WASH Field Report No. 248.

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ACT #452 August 1988: On-going Roark

**Egypt: Evaluation of O&M Interventions of Cairo Sewerage I Project** WASH will assist USAID/Cairo in evaluating the effectiveness of operation and maintenance interventions under the Cairo Sewerage I Project. This project was designed to improve the functioning of Cairo's existing sewerage system, to design its expansion, and to improve wastewater disposal in Cairo's unsewered areas. Training in O&M done under the program appears to have been successful. This evaluation will look at what effect the training has had on improving the actual operation and maintenance of the sewerage system.

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ACT #453 August 1988: On-going Rosensweig

**Benin: Evaluation of Rural Water Project** USAID/Benin requested WASH assistance in evaluating the Benin Rural Water Project. This project, which got underway in 1987, aims to assist the Government of Benin to improve the health practices of, and the adequacy and quality of water supply and sanitation facilities available to the rural population in selected districts of central Benin. The evaluation reviewed the implementation of all project elements, identified any problems in the planning and management of project activities, and proposed possible solutions. The activity also included an examination of the project monitoring system, including data collection. See WASH Field Report No. 252.

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ACT #454 September 1988: Completed Rosensweig

**Sri Lanka: Design of NWSDB Strategic Planning Unit** At the request of USAID/Colombo, a WASH consultant assisted the National Water Supply and Drainage Board in forming a strategic planning unit. The consultant worked with the planning unit, concentrating on policy/procedure issues such as staffing resources, reporting relationships, annual work plans, and giving advice on specific strategies that might be adopted in the areas of collection enhancement and cost reduction.

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ACT #455 August 1988: On-going Hafner

**World Vision: Organizational Assessment of Kenya Field Office** At the request of FVA/PVC, WASH is providing assistance to World Vision in conducting an organizational assessment of the World Vision/Kenya field office. Areas to be addressed are organizational structure, reporting and communication patterns, rewards and incentives, career development, etc. WASH also developed preliminary lessons learned that can be applied to other private voluntary and non-governmental organizations with regard to organizational development.

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ACT #456 September 1988: On-going Rosensweig

**Tunisia: RHUDO Study on Low Cost Sewage Disposal Methods** At the request of the USAID Regional Housing and Urban Development Office (RHUDO) in Tunis, WASH was requested to assist in developing a national sewage disposal strategy for areas not served by the Tunisian National Office of Sanitation. In Phase I, WASH conducted an exploratory study; in Phase II, WASH assisted a Tunisian committee in examining alternatives for sewage disposal, selecting the most appropriate methods, and setting forth a strategy for implementing the selected methods. In Phase III, a workshop will be held to consider various technical alternatives. See WASH Field Report No. 249.

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ACT #457 September 1988: On-going Turner

**Urbanization Study for PRE/Housing Bureau** PRE/Housing has requested that WASH conduct a desk-top study that outlines the impact of urbanization on water supply and sanitation in developing countries and presents options for AID assistance. The study will be used to prepare a report on urbanization for the House Appropriations Committee of Congress.

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ACT #501 October 1988: Completed Turner

**General Administration—WASH II**  
See Activity #119.

ACT #502      October 1988: Completed      Turner

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**General Technical Assistance—WASH II**  
See Activity #120.

ACT #503      October 1988: Completed      Turner

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**Preliminary Activity Development—WASH II**  
See Activity #123.

ACT #504      October 1988: Completed      Hafner

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**Provision of Information Services to AID and AID-Related Agencies** See Activity #129.

ACT #510      October 1988: Completed      Turner

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**WASH Staff Conference Participation—WASH II**  
See Activity #155.

ACT #512      October 1988: Cancelled      Rosensweig

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**InterAction: WS&S Workshop for PVOs**

InterAction requested WASH assistance in carrying out a workshop on basic issues in water supply and sanitation projects for the U.S. staff of its member organizations; however, the activity was cancelled by InterAction.

ACT #513      October 1988: Completed      Rosensweig

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**Guatemala: Mid-Term Evaluation of Environmental Sanitation Component**

USAID/Guatemala requested WASH to conduct an evaluation of the environmental sanitation component of the Community-Based Integrated Health and Nutrition Systems Project and to determine whether the project's achievements had met its intended objectives. This was the mid-term evaluation of the project. In addition to looking at the status of project implementation, the evaluation determined whether or not project targets could be raised without an increase in loan financing and assessed the feasibility of reintroducing a health education component into the project. See WASH Field Report No. 251.

ACT #514      October 1988: Completed      Sarai

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**The Hague: International Consultation on WS&S Programs** WASH was invited to participate in an International Consultation for the Coordination of Drinking Water Supply and Sanitation Programs in The Hague, November 2-4, 1988. The purpose of the meeting was to finalize the collaborative framework which was proposed in Interlaken in 1987. (See Activity #381.) In addition, the meeting provided an opportunity to review potential collaborative activities and develop work programs. A WASH representative attended the general session and worked with other participants in developing collaborative work plans.

ACT #515      November 1988: On-going      Sarai

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**Peace Corps: Water Programming Workshop** In collaboration with the Peace Corps's Office of Training and Program Support, WASH conducted a regional workshop in Niamey, Niger, in January 1989, on water and sanitation programming for Peace Corps country directors and programming and training officers. The goal of the workshop was to improve the programming skills of Peace Corps personnel—particularly in the realm of water and sanitation in Africa—and learn how to use the new Water and Sanitation Programming Guidelines for the Peace Corps.

ACT #516      December 1988: Completed      Rosensweig

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**Community Management Workshop with the World Bank**

The World Bank/UNDP Water and Sanitation Program asked WASH to jointly organize a workshop on community management of water supply and sanitation services. There is a growing acceptance of the importance of community management in water and sanitation programs. The approach being accepted more and more is that communities should manage their own services on a local level, while the government supplies credit, advisory services, and incentives for the private sector to make goods and services available. Nonetheless, there remain a number of questions about the role of national agencies vis-a-vis communities. The purpose of this workshop, which was held in December 1988 in Washington, D.C., was to explore such issues.

ACT #517      December 1988: On-going      Rosensweig

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**Guidelines for Evaluating HRD Projects** WASH is working jointly with GTZ (West Germany) and IRC to develop a methodology for evaluating human resource development projects in the water supply and sanitation sector. The methodology is to include both individual and organizational performance and will deal with the following kinds of questions: What type of training programs give the best result? What training approaches work? Is offshore training a good use of funds? It is hoped that these guidelines will provide a valuable tool to determine the effectiveness of human resources development and eventually contribute to a better understanding of what interventions are best.

ACT #518      December 1988: On-going      Hafner

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**Swaziland: Master Planning Sectoral Development**

USAID/Swaziland has requested that WASH assist the Government of Swaziland in developing a sector plan for water supply and sanitation. The plan, which will serve as a guide over the next three years, will address all areas covered by

water supply and sanitation plus additional needs that might be identified when the country's progress in the sector is being reviewed.

ACT #519      December 1988: On-going      Rosensweig

**Sri Lanka: Management Development Follow-Up** USAID/Sri Lanka has requested WASH assistance to design and deliver a five-day management development workshop in January-February 1989 for the National Water Supply Development Board. This workshop will be a follow-up to three other management development workshops conducted by WASH. (See Activity #253.) These workshops, attended by the top 30 managers of the Board, focused on such topics as collaborative work planning, running effective meetings, performance monitoring and feedback, and developing performance indicators. A summary of these workshops can be found in WASH Field Report No. 230.

ACT #520      December 1988: On-going      Hafner

**Swaziland: Case Study of Rural Water-Borne Disease Project** The Government of Swaziland and USAID have requested WASH assistance in preparing a case study of the development of the water supply and sanitation sector in Swaziland. The development of the sector in Swaziland closely matches a World Bank Strategy presented at the Sixth World Congress on Water Resources in May 1988. The study will be submitted to the World Bank as a case study for the process of sectoral development which other countries may benefit from and possibly use as a model.

ACT #521      January 1989: On-going      Andrews

**Translations of WASH II Reports** Because of the increasing demand for WASH products in Spanish, French, and Arabic, WASH has embarked on translating some of its key documents into these languages. The following reports, all with wide

relevance, are to be translated: Guidelines for Institutional Assessment (Technical Report 37), Managing Institutional Development Projects (Technical Report 49), New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects (Technical Report 52), the Value of Water Supply and Sanitation in Development (Technical Report 43), and What Makes Hygiene Education Successful? (Technical Report 55).

ACT #522      January 1989: On-going      Burns

**Dominican Republic: Final Evaluation of CARE Rural Water Project** CARE/Dominican Republic requested WASH assistance to evaluate the CARE Rural Water Project. This project, which is being partially supported with funds from USAID, aims to establish new or improved water and sanitation facilities in 50-70 communities in the southwestern provinces and to teach the inhabitants through health education to use their new resources properly. The expected number of project beneficiaries is estimated at 33,000 to 41,000. The purpose of the evaluation is to review the implementation status of all project elements and suggest solutions for existing problems in the planning and management of project activities.

ACT #524      February 1989: On-going      Yacoub

**Rwanda: CARE Water Supply and Sanitation Community Participation Evaluation** At the request of S&T/H, WASH will conduct an evaluation of the community participation component of the CARE/Rwanda water and sanitation project. In addition to assessing this component, the evaluation will determine the appropriateness of the model being employed and make recommendations on the future orientations of the project. The main focus of the CARE project is to develop functional, self-managing water-user associations responsible for continued operation and maintenance of the new water systems.

## WASH III (October 1988 to February 1989)

TAS #001      October 1988: On-going      Turner

**General Administration** This general administration activity provides overall coordination; professional, secretarial and clerical support; administrative database management; office space and equipment; telecommunications and telephone equipment; document production facilities; main frame computer usage; and consumable office supplies required to support WASH III in fiscal year 1989.

TAS #002      October 1988: On-going      Turner

**General Technical Assistance** General technical assistance includes all Washington, D.C., staff activities for WASH III in fiscal year 1989 involving the delivery of technical services or products to AID which are not specifically authorized under other activities, such as general technical meetings, visitor briefings, routine project correspondence, document review, and other tasks of a technical nature necessary to operate and maintain the Washington office.

TAS #003      October 1988: On-going      Turner

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**Preliminary Task Development** This task captures all time used by the task managers and appropriate subcontractor staff and consultants during WASH III, fiscal year 1989, in preparing the annual plan, task papers, and scopes of work prior to the issuance of an authorized task.

TAS #004      October 1988: On-going      Hafner

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**Provision of Information Services** This service activity for WASH III, fiscal year 1989, aims to provide AID and AID-assisted organizations with relevant information on all aspects of the water supply, sanitation and environmental health sector, WASH Project activities, and other topics as requested by AID. Activities include managing the library and distribution center, maintaining and acquiring accessions and mailing lists, mailing reports, preparing special reports and synthesis documents, maintaining liaison with U.S. and foreign water supply and sanitation information agencies, briefing visitors, preparing exhibits and briefing packages, and maintaining water supply and sanitation country planning data bases.

TAS #005      October 1988: On-going      Hafner

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**Africa Bureau: WASH Initiatives** Under this task, a WASH staff person is designated to maintain liaison with the AID Africa Bureau for WASH III, fiscal year 1989. This involves developing and reinforcing contacts between WASH and the Africa Bureau and missions, identifying Bureau needs in the water supply and sanitation sector, informing Bureau and mission officials of WASH resources, formulating preliminary WASH responses to Bureau and mission needs, and targeting high priority missions where WASH has not provided assistance.

TAS #006      October 1988: On-going      Rosensweig

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**ANE Bureau: WASH Initiatives** Under this task, a WASH staff person is designated to maintain liaison with the AID Asia/Near East Bureau for WASH III, fiscal year 1989. This involves developing and reinforcing contacts between WASH and the Asia/Near East Bureau and missions, identifying Bureau needs in the water supply and sanitation sector, informing Bureau and mission officials of WASH resources, formulating preliminary WASH responses to Bureau and mission needs, and targeting high priority missions where WASH has not provided assistance.

TAS #007      October 1988: On-going      Burns

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**LAC Bureau: WASH Initiatives** Under this task, a WASH staff person is designated to maintain liaison

with the AID Latin America/Caribbean Bureau for WASH III, fiscal year 1989. This involves developing and reinforcing contacts between WASH and the Bureau for Latin America and the Caribbean and its missions, identifying Bureau needs in the water supply and sanitation sector, informing Bureau and mission officials of WASH resources, formulating preliminary WASH responses to Bureau and mission needs, and targeting high priority missions where WASH has not provided assistance.

TAS #008      October 1988: On-going      Sarai

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**WASH Liaison with Non-Regional AID Bureaus** Under this task, during fiscal year 1989, WASH III will continue to develop and reinforce existing contacts with nonregional AID bureaus, such as PPC, PRE, and FVA/PVC, to keep them informed of WASH operations, to foster WASH involvement at early stages of bureau project development, and to assist in the formulation of requests for WASH services, such as methods of developing field reference guides.

TAS #009      October 1988: On-going      Hafner

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**Collaboration with Non-AID WS&S-Related Organizations** A designated WASH staff person will establish and maintain working relationships, collaborative efforts, and information exchange with non-AID water and sanitation sector organizations for WASH III during fiscal year 1989. Private voluntary, multilateral, bilateral, and private sector organizations are all included.

TAS #010      October 1988: On-going      Turner

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**WASH Staff Conference Participation** This task represents a basic communications function of the WASH professional staff. Under this task, during fiscal year 1989, WASH III staff attend selected conferences, seminars, and briefings as presenters or participants to foster understanding, collaboration, and information exchange in the water supply and sanitation sector for AID and WASH.

TAS #012      October 1988: On-going      Turner

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**WASH III Implementation** The WASH III Project will obtain nonexpendable equipment, commodities and office furniture necessary to start up and operate the WASH III Project. Final configurations for automated office setup will be designed and implemented. WASH Operations Center staff will be trained in the use of computer hardware and software.

TAS #013      October 1988: On-going      Hafner

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**Project Start-Up Workshop/Annual Plan for FY 1989** The WASH staff started off the WASH III Project with a workshop which was modeled after WASH Technical Report No. 41 (Facilitators Guide for Conducting a Project Start-Up Workshop). The workshop provided an opportunity to build a project team and to develop a strategy for WASH III. All the organizations that make up the project were represented. In addition, this activity included all work required to prepare the FY 1989 annual plan, which was submitted to AID on January 3, 1989.

TAS #014      November 1988: On-going      Yacoub

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**Tunisia: Health Education Technical Assistance** At the request of USAID/Tunis, a WASH consultant is working with the health and sanitation education divisions of North Gafsa and Kasserine to review the progress of the on-going health education program, paying special attention to the training of the extension workers. In addition the consultant will be involved in identifying needs, developing curricula, producing materials and training modules, and training local persons in improved health and sanitation practices related to the provision of potable water.

TAS #015      November 1988: On-going      Roark

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**Yemen: O&M Service Facilities** At the request of USAID/Yemen, WASH is preparing a strategy and implementation plan for operation and maintenance services in support of rural water projects. In addition, a list of the tools and equipment required for an O&M workshop will be compiled. The work will be done in cooperation with and under the supervision of the Confederation of Local Councils for Cooperative Development.

TAS #016      December 1988: Completed      Rosensweig

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**WHO: HRD Case Studies** The World Health Organization and the Swedish International Development Agency (SIDA) are collaborating on a project to prepare a compendium of human resources development case studies with the aim of sharing successful interventions with a broader audience. WASH has agreed to write two case studies. The first will describe the management development program carried out by WASH in Sri Lanka in 1987-88 (see WASH Field Report No. 230) and the second the training of trainers effort for SANRU II in Zaire in 1986-87 (see WASH Field Reports Nos. 177, 198, and 216.).

TAS #017      January 1989: On-going      Yacoub

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**Tunisia: Mid-Term Evaluation of Rural Potable Water Institutions Project** USAID/Tunisia has requested WASH assistance in conducting a mid-term evaluation of the Rural Potable Water Institutions Project. The evaluation, which was carried out in February 1989 by a five-person team, assessed the extent to which the project's goals and purposes were being met and provided the Government of Tunisia and the USAID Mission with guidelines for possible changes in the project design. The project is unique in Tunisia because it emphasizes beneficiary involvement in the management and financing of recurrent costs of potable water points. If this project is successful, the government will adopt the model nationally and seek financing from other donors.

TAS #018      January 1989: On-going      Mattson

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**Jamaica: National Water Commission Assistance** WASH will assist USAID and the Jamaica National Water Commission in the technical design and institutional requirements for implementation of the RHUDO/Jamaica Shelter and Urban Services Program. Under this program, a number of water and sanitation projects of critical need have been identified: revolving funds to enhance the affordability of household water and sewer connections, off-site infrastructure development, leak detection and system maintenance, construction of communal water supply systems on a cost-recoverable basis, and minor water supply systems extension.

TAS #019      January 1989: On-going      Mattson

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**ANE Natural Resource Issue Papers** WASH will assist the Asia/Near East Bureau with the production of the Asia/Near East Natural Resource Issue Papers by writing two of the papers and providing input for others. One of the papers is on rural water supply and environmental issues and the other is on the environmental aspects of rapid urbanization and industrial growth. The purpose of the papers is to assist the Bureau to redefine its natural resources strategy to achieve maximum advantage with available funds.

TAS #020      January 1989: On-going      Rosensweig

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**Morocco: Review of TOR for Sewage Master Plan** At the request of RHUDO/Morocco, WASH will assist in a review and analysis of the draft terms of reference for the Master Plan for Sewerage for the Municipality of Tetouan. The sanitary engineer designated by WASH for this assignment will work with the USAID Regional Housing Project Advisor and Environmental Officer, the engineering staff of the Municipality of Tetouan, a representative from

the Ministry of Interior, and the engineering staff of the Tetouan Regional Public Utility Authority. The engineer will determine whether the draft includes sufficient information to permit an environmental impact assessment, assure technical accuracy, verify that the format and presentation of the report are appropriate for U.S. and Moroccan engineering consulting firms, and evaluate the human and material resources to be provided by the Municipality of Tetouan.

TAS #021      January 1989: On-going      Sarai

**Haiti: Assessment of CARE Water User Education Program** WASH will assist USAID/Haiti by providing the technical assistance required to assess the USAID/CARE Community Water Systems Development Project. When this project was evaluated at mid-term, it was recommended that the user education program be expanded. Thus, the intent of this task is to make recommendations for improvements of user education activities.

TAS #022      January 1989: On-going      Hafner

**Participation in Decade Working Group for Communication of Information** WASH has been asked by the IRC, on behalf of the Water Supply and Sanitation Decade Collaborative Council, to participate in a Temporary Working Group on Communication of Information. The working group will meet twice, starting in February 1989 in Geneva. The group will discuss four areas: public information/promotion, project/sector information, management information systems at the country level, and the exchange of technical information. At the end of the meetings, the group will develop an action plan to be submitted to the 1990 Committee by April 30, 1989.

TAS #023      January 1989: On-going      Rosensweig

**Ecuador: Housing Financial and Institutional Assessments** USAID/Ecuador and RHUDO/SA are developing a supplemental program to an existing Housing Guaranty Program in Ecuador called the National Shelter Delivery System Program. An important aspect of this program is residential water and sanitation upgrading. To carry out this part of the program, AID requested WASH assistance in providing a more complete picture of the institutional and financial capabilities of municipalities to undertake sound cost recovery practices as well as the capabilities of the technical and financial service organizations to support the municipalities when necessary.

TAS #024      January 1989: On-going      Sarai

**WHO Collaboration in O&M** WASH will participate in an informal working group of external

agencies on operation and maintenance sponsored by the World Health Organization. WASH will be responsible for preparing the terms of reference for operation and maintenance, elaborating project proposals and a working plan for joint cooperation, and revising guidance materials for case studies. Working group meetings have been held in November 1988 and February 1989; follow-up collaborative activities will take place from February to September 1989. It is expected that as a result of these meetings an ongoing operation and maintenance collaboration will be established.

TAS #025      January 1989: On-going      Rosensweig

**World Bank: Concept Paper on Community Management** At the request of S&T/H, WASH will prepare a concept paper on community management in collaboration with the UNDP/World Bank Program on water and sanitation. The paper will define community management, identify the important issues and set out a research agenda for the Program and WASH, including activities that can be undertaken jointly by the two organizations.

TAS #026      January 1989: On-going      Hafner

**Temporary Working Group on Applied Research** In November 1988, the International Consultation on Water Supply and Sanitation Programs recommended the establishment of the 1990 Committee Temporary Working Group on Applied Research. The Working Group was formalized in a meeting in Paris in December 1988 with a core group consisting of USAID/WASH, IDRC, and the UNDP/World Bank Program. (See Activity #514). USAID/WASH was selected as the lead agency or secretariat. In this role, USAID/WASH will coordinate the activities of the working group, whose mandate is to identify gaps and develop a research priority list with emphasis on practical goals for project planners and managers. A report will be submitted to the 1990 Committee by April 30, 1989.

TAS #027      February 1989: On-going      Rosensweig

**Institutional Framework for Rural Water Supply and Sanitation** At the request of S&T/H, WASH will develop guidelines to determine the optimum division of institutional responsibilities for rural water supply. The institutional arrangements for the delivery of rural water and sanitation have been a recurring problem. The crux of the problem is that most existing institutional structures are overly centralized. And this over-reliance on centralized structures has often resulted in projects that fail to involve the community and thus are not sustained after the systems are constructed. It is hoped that the guidelines will present a range of successful institutional models.

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### 3. WASH REPORTS

This chapter lists all WASH Technical and Field Reports and gives the number of the task assignment to which they relate. Two indices, one by subject and the other by author, follow the list. This year the subject index was completely revamped; the many new headings and subheadings should make it much more useful.

#### Technical Reports

- TR 1 *Triocide Questions and Answers*. November 1980. Prepared by Peter J. Kolsky.
- TR 2 *Possible Disinfection of Oral Rehydration Solutions*. November 1980. Prepared by Raymond B. Isely, Richard Cash, and Lincoln Chen. OTD #7.
- TR 3 *Training of Rural Community Development Workers in Health Education, with Special Reference to Water Supply Protection and Use/Maintenance of Sanitation Facilities*. March 1981. Prepared by Guy Stewart and Carla Rull. C-Task #49.\*
- TR 4 *Evaluation Methods for Community Rural Water Supply and Sanitation Projects in Developing Countries: A Synthesis of Available Information*. March 1981. Prepared by Robert J. Struba. C-Task #47.
- TR 5 *The Choice of Health Status Indicators to Evaluate Water and Sanitation Projects in North Cameroon: A Synthesis of Available Information*. April 1981. Prepared by Robert J. Struba and Raymond B. Isely. C-Task #49. Also available in French.
- TR 6 *Women, Water, and the Decade. Presented at the International Affairs Session of the American Water Works Association, St. Louis, Missouri, June 9, 1981*. June 1981. Prepared by Mary L. Elmendorf. OTD #35.
- TR 7 *Facilitation of Community Organization: An Approach to Water and Sanitation Programs in Developing Countries*. June 1981. Prepared by Raymond B. Isely. C-Task #91.
- TR 8 *Integration de L'Approvisionnement en Eau et de L'Assainissement du Milieu dans les Programmes de Soins Primaires*. October 1981. Prepared by Raymond B. Isely. OTD #52. Available in French only.
- TR 9 *Toward an Asia Bureau Water and Sanitation Policy Statement*. September 1981. Prepared by James F. Thomson. C-Task #98.
- TR 10 *Social and Economic Preconditions for Water Supply and Sanitation Programs*. September 1981. Prepared by Dennis B. Warner.
- TR 11 *The Role of Women as Participants and Beneficiaries in Water Supply and Sanitation Programs*. December 1981. Prepared by Raymond B. Isely and Mary L. Elmendorf. C-Task #51. Available in French and Spanish.
- TR 12 *Measuring and Evaluating Diarrhea and Malabsorption in Association with Village WS&S. (Guatemala)*. December 1981. Prepared by Branko Cujetanovic, Lincoln Chen, Richard Kronmal, Charles Rohde, Robert Suskind, Robert J. Struba, and Kenneth McElroy.
- TR 13 *Participants Manual for Sessions on WS&S: USAID Workshop on Primary Health Care in Africa*. February 1982. Prepared by Raymond B. Isely, Craig R. Hafner, Daniel A. Okun, Morris A. Shiffman, Thomas Talbert, and Marjorie L. Kupper. OTD #57.
- TR 14 *WS&S in Rural Development: Proceedings of a Conference for Private and Voluntary Organizations, December 1-4, 1981*. December 1981. Prepared by WASH staff. OTD #57.
- TR 15 *Application of Health Education to Water Supply and Sanitation Projects in Africa: A Discussion Paper*. October 1982. Prepared by Raymond B. Isely and Kathleen A. Parker. C-Task #176.
- TR 16 *Relating Improvements in Water Supply and Sanitation to Nutritional Status*. October 1982. Prepared by Raymond B. Isely. C-Task #309.
- TR 17 *Water and Sanitation-Related Health Constraints on Women's Contributions to the Economic Development of Communities*. October 1982. Prepared by Mary L. Elmendorf and Raymond B. Isely. C-Task #310.
- TR 18 *Community Participation and Women's Role in Water Supply and Sanitation in Developing Countries: A Three-Part Bibliography by Author, Subject and Country*. November 1982. Prepared by Ellen Kendall. C-Task #235.
- TR 19 *Africa Bureau Domestic Water and Sanitation Strategy Statement*. January 1983. Prepared by John B. Tomaro and Raymond B. Isely. OTD #107.

\*During WASH I a few preliminary or exploratory tasks were called C- or B-Tasks. These are not listed in Chapter 2.

- TR 20 *Human Resource Development Planning: Guidelines for the Water Supply and Sanitation Sector*. July 1988. Prepared by J. E. S. Lawrence and J. B. Tomaro. ACT #373.
- TR 21 *Women's Roles in Water and Sanitation in Developing Countries: A Four-Part Bibliography by Author, Subject, Phase of Development, and Country*. February 1981. Prepared by Alice J. Smith. B-Task #410.
- TR 22 *Human Resource Development: A Selected and Annotated Bibliography for Use in the Water Supply and Sanitation Sector*. February 1981. Prepared by Vernon Razak. C-Task #266.
- TR 23 *Hydropneumatic Pump System Development*. April 1981. Prepared by Yaron M. Sternberg and Jonathan French. OTD #68.
- TR 24 *Pretesting and Revising Visual Materials for Water Supply and Sanitation Programs*. September 1981. Prepared by Lamar Cox, Ralph Wileman, and Raymond B. Isely. B-Task #399.
- TR 25 *A Workshop Design for Latrine Construction: A Training Guide*. June 1981. Prepared by Maria LeClere and Keith Sherer. OTD #122.
- TR 26 *A Workshop Design for Handpump Installation and Maintenance: A Training Guide*. June 1981. Prepared by P. Alan Pashkevich and Claudia Liebler. OTD #122.
- TR 27 *A Workshop Design for Rainwater Roof Catchment Systems: A Training Guide*. June 1981. Prepared by Daniel B. Edwards, Kent Keller, and David L. Yohalem. OTD #153.
- TR 28 *A Workshop Design for Spring Capping: A Training Guide*. September 1981. Prepared by Wilma Gormley, David R. Goff, and Carl R. Johnson. OTD #154.
- TR 29 *Surface Water Treatment for Communities in Developing Countries*. September 1981. Prepared by Daniel A. Okun and Christopher Schulz. OTD #89.
- TR 30 *Developing and Using Audio-Visual Materials in Water Supply and Sanitation Programs*. October 1981. Prepared by Barry Karlin and Raymond B. Isely. OTD #165.
- TR 31 *Linking Water Supply and Sanitation to Oral Rehydration Therapy in the Control of Diarrheal Diseases*. July 1985. Prepared by Raymond B. Isely. ACT #112.
- TR 32 *A Facilitator Guide for Conducting a Team Planning Meeting*. December 1985. Prepared by Wilma Gormley and Fred Rosensweig. ACT #115.
- TR 32 (Supplement) *Guide for Conducting a Debriefing*. July 1988. Prepared by Fred Rosensweig. ACT #357.
- TR 33 *A Workshop Design for Community Participation, Volume I—Starting Work with Communities, and Volume II—Planning and Implementing Sustainable Projects*. December 1988. Prepared by Raymond B. Isely and David L. Yohalem. ACT #121.
- TR 34 *A Workshop Design for Well Improvement: Protecting Open Wells*. May 1988. Prepared by Maria Nagorski, Charles S. Pinco, Scott Loomis, and Oscar Larrea. ACT #116.
- TR 35 *Assessment of the Operations and Maintenance Component of Water Supply Projects*. June 1986. Prepared by James K. Jordan, Peter Buijs, and Alan S. Wyatt. ACT #223.
- TR 36 *Water Supply and Sanitation in the Health Sector in the Asia Region: Information Needs and Program Priorities*. February 1986. Prepared by John Briscoe. ACT #111.
- TR 37 *Guidelines for Institutional Assessment: Water and Wastewater Institutions*. February 1988. Prepared by Donald E. Cullivan, Bruce Tippet, Daniel B. Edwards, Fred Rosensweig, and James McCaffery. ACT #116.
- TR 38 *Cost-Effective Approaches to the Control of Dracunculiasis*. September 1986. Prepared by John E. Paul, Raymond B. Isely, and Gary M. Ginsberg. ACT #110.
- TR 40 *Framework and Guidelines for CARE Water Supply and Sanitation Projects*. June 1986. Prepared by Raymond B. Isely, Scott Fajia, John Ashworth, Richard Z. Donovan, and James T. Thomson. ACT #139.
- TR 41 *Facilitator Guide for Conducting a Project Start-Up Workshop*. March 1988. Prepared by Daniel B. Edwards and John J. Pettit. ACT #268.
- TR 42 *The Selection of Drilling Rigs for Rural Water Supply*. April 1988. Prepared by Ralph E. Preble and Philip Roark. ACT #259.
- TR 43 *The Value of Water Supply and Sanitation in Development: An Assessment of Health-Related Interventions*. September 1987. Prepared by Daniel A. Okun. ACT #312.
- TR 44 *Community Participation in Water Supply Projects as a Stimulus to Primary Health Care: Lessons Learned from AID-Supported and Other Projects in Indonesia and Togo*. May 1987. Prepared by Eugenia Eng, John Briscoe, and Anne Cunningham. ACT #180.
- TR 45 *Water Vending and Development: Lessons from Two Countries*. May 1988. Prepared by Dale Whittington, Donald T. Lauria, Daniel A. Okun, and Mu Niming. ACT #185.

TR 48 *Estimating Operations and Maintenance Costs for Water Supply Systems in Developing Countries*. January 1989. Prepared by James K. Jordan and Alan Wyatt. ACT #263.

TR 49 *Managing Institutional Development Projects: Water and Sanitation Sector*. May 1988. Prepared by Daniel B. Edwards. ACT #326.

TR 50 *Workshop on Guinea Worm Control at the Community Level: A Training Guide*. January 1988. Prepared by William Brieger and Fred Rosensweig. ACT #375. Also available in French.

TR 51 *Adding Guinea Worm Control Components: Guidelines for Water and Sanitation Projects*. May 1988. Prepared by Agma Prins and May Yacoub. ACT #368.

TR 52 *New Participatory Frameworks for the Design and Management of Sustainable Water Supply and Sanitation Projects*. November 1987. Prepared by Paula Donnelly-Roark. ACT #336.

TR 55 *What Makes Hygiene Education Successful? Experience from Togo, Sri Lanka, and Yemen and Its Relevance for Project Design*. September 1988. Prepared by Barbara Pillsbury, May Yacoub, and Peter Bourne. ACT #369.

TR 61 *Pump Selection: A Field Guide for Developing Countries*. January 1989. Prepared by Richard McGowan and Jonathan Hodgkin. ACT #316.

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FR 1 *Socio-Cultural & Economic Characteristics of Conditions in Ancash and La Libertad, Peru: Questions to be Considered in an Evaluation of CARE-Sponsored Water, Sewage and Health Projects*. November 1980. Prepared by Charlotte D. Miller. OTD #6.

FR 2 *Review of AID Rural Potable Water Programs—Haiti*. January 1981. Prepared by James Arbutnot. OTD #9.

FR 3 *Feasibility of Local Manufacture of the AID Hand-Operated Water Pump, and Other Technology Appropriate for Rural Water Supply Programs in the Philippines*. April 1979. Prepared by Phillip W. Potts, Robert Knight, and Yaron M. Sternberg. OTD #11.

FR 4 *Tunisia—Aspects of Well Drilling Rural Potable Water Project—Report on a Field Trip*. January 1981. Prepared by Michael Glaze. OTD #15.

FR 5 *Dominican Republic Consultations on the Health Sector Loan II. Report of a Field Trip*. January 1981. Prepared by Dennis B. Warner. OTD #21.

FR 6 *Report on the Peru Rural Water Systems and Environmental Sanitation Project*. January 1981. Prepared by Harold Shipman. OTD #18.

FR 7 *Tanzania—A National Environmental Sanitation Education Master Plan, A Preliminary Review*. February 1981. Prepared by Dennis B. Warner and Kenneth Woolf. OTD #26.

FR 8 *Tanzania—Health and Environmental Monitoring Project (HEMP): Recommendations for Project Paper Design Team*. March 1981. Prepared by Dennis B. Warner and Kenneth Woolf. OTD #2.

FR 9 *Contaminacion Ambiental en Ecuador*. March 1981. Prepared by Paul C. Dreyer. OTD #14. Available in Spanish only.

FR 10 *Lebanon—Technical Recommendations for Wastewater Treatment Demonstration (Pilot) Plants for Lebanon*. March 1981. Prepared by A.A. Kalinske. OTD #20.

FR 11 *Mauritania—Public Health Assessment of Proposed Dams, Water-Related Diseases and Community Water Supplies*. March 1981. Prepared by Emil Malek and David R. Goff. OTD #16.

FR 12 *Ecuador—Institutional Development for IEOS: Instituto Ecuatoriano de Obras Sanitarias*. March 1981. Prepared by Charles S. Pineo, Henry Van, and Guillermo Orozco. OTD #11.

FR 13 *Proyecto de Sistema de Entrega de Salud Rural Integrado—Saneamiento Rural*. March 1981. Prepared by Gonzalo Medina. OTD #24. Available in Spanish only.

FR 14 *Targets of Opportunity for WASII: Report of a Reconnaissance Visit to India and Bangladesh, February 20-March 7, 1981*. March 1981. Prepared by Raymond B. Isely. OTD #28.

FR 15 *Guatemala—XIII Central American Congress of AIDIS, Guatemala City, March 15-20, 1981*. March 1981. Prepared by Charles S. Pineo. OTD #30.

FR 16 *Indonesia—Rural Sanitation and Manpower Development Project (RS&MD). The Development of Appropriate Technology and the Improvement of Curricula for Training of Sanitarians*. March 1981. Prepared by Robert A. Gearheart and Clarence E. Gilbert. OTD #25.

- FR 17 *Jordan—Recommended Wastewater Treatment Guidelines for the Hashemite Kingdom of Jordan*. April 1981. Prepared by Harris F. Seidel. OTD #31.
- FR 18 *Coordination of WASH Information Activities and Exchange with International Information Centers, Holland and England, April 5-17, 1981*. April 1981. Prepared by James E. Beverly. OTD #32.
- FR 19 *Village Water Supply and Sanitation in Northeastern Thailand*. July 1981. Prepared by James Arbutnot and Robert H. Thomas. OTD #38.
- FR 20 *Technical Assistance in the Manufacture and Quality Control of the AID/Battelle Handpump in the Dominican Republic*. June 1981. Prepared by Robert Knight. OTD #1.
- FR 21 *Plan for a Health Education Component for the Health Sector II Bilateral Assistance Project in the Dominican Republic*. July 1981. Prepared by Charles Llewellyn. OTD #21.
- FR 22 *Evaluation of Yemen Water Supply Systems Management Project*. September 1981. Prepared by Martin Lang and Clarence E. Calbert. OTD #39.
- FR 23 *Plan for the Health Impact Evaluation of the Health Sector II Bilateral Assistance Project in the Dominican Republic*. July 1981. Prepared by Paul F. Howard and Robert J. Struba. OTD #21.
- FR 24 *Community Water Supply and Sanitation in Burundi: Report of an Evaluation Team*. October 1981. Prepared by Raymond B. Isely, David R. Goff, and Herbert Blank. OTD #36.
- FR 25 *Water and Sanitation Alternatives for Southern Italy Disaster Relief*. December 1980. Prepared by David R. Goff and Michael A. Kostur. OTD #13.
- FR 26 *Appropriate Technology for Rural Water Supply and Sanitation in El Salvador: A Brief Review and Bibliography*. September 1981. Prepared by Charles S. Pineo. OTD #17.
- FR 27 *Strategy for Implementation and Evaluation of the Togo Rural Wells and Sanitation Project*. October 1981. Prepared by Felix Awantang. OTD #45.
- FR 28 *Rural Sanitation and Manpower Development Project: Appropriate Technology and Information Dissemination*. October 1981. Prepared by Robert A. Gearheart. OTD #44.
- FR 29 *Integration de L'Approvisionnement en Eau et de L'Assainissement du Milieu Dans les Programmes de Soins Primaires. Presented in Sousse, Tunisia, August 31, 1981*. October 1981. Prepared by Raymond B. Isely. OTD #52.
- FR 30 *UNICEF/PAHO Joint Workshop on Drinking Water and Sanitation in Rural and Urban Slum Areas—Lima, Peru. November 17-22, 1980*. December 1981. Prepared by Emil T. Chanlett. OTD #5.
- FR 31 *Intensive Session on Water Sanitation and Health Education: A Workshop Held at UNICEF Headquarters, New York, April 22-23, 1981*. December 1981. Prepared by Raymond B. Isely. OTD #37.
- FR 32 *Hydrogeological Reconnaissance of the Yelimare-Tambacara Area of Mali with Reference to the Village Wells Project*. February 1982. Prepared by George Taylor. OTD #64.
- FR 33 *Environmental Health in Egypt: A Sectoral Assessment and Recommendations*. April 1982. Prepared by Dennis B. Warner and David Donaldson. OTD #62.
- FR 34 *A Proposed Action Plan for a National Training Program in the Water Sector for the Hashemite Kingdom of Jordan*. September 1982. Prepared by John H. Austin, Kenneth Woolf, and Walter Pinto-Costa. OTD #55.
- FR 35 *Scope of Work for the Health Outcome Evaluation of the Health Sector II Project in the Dominican Republic*. February 1982. Prepared by Kenneth R. McLeroy. OTD #58.
- FR 36 *Municipal Water Conservation in Jordan: Report of a Seminar*. February 1982. Prepared by James L. Ogilvie. OTD #59.
- FR 37 *Community Water Supply and Sanitation in Sudan*. April 1982. Prepared by Charles G. Chandler, Frank P. Araujo, and Eddy K.C. Lo. OTD #60.
- FR 38 *Recommendations for the Rural Water and Environmental Sanitation Project in Peru*. April 1982. Prepared by Charles S. Pineo and David Donaldson. OTD #74.
- FR 39 *Integration of Health Education in the CARE Water and Sanitation Project in Indonesia*. April 1982. Prepared by David Drucker. OTD #73.
- FR 40 *Para Village Water Supply: Pre-feasibility Report*. April 1982. Prepared by William M. Turner. OTD #66.
- FR 41 *Testing of the Portable Water Purification and Disinfection Units of the Office of Foreign Disaster Assistance (OFDA)*. April 1982. Prepared by WASH Staff. OTD #83.

- FR 42 *Water Supply and Sanitation and Diarrheal Disease Control in the Comprehensive Health Improvement Project—Province Specific (CHIPPS) in Indonesia*. April 1982. Prepared by James T. Thomson. OTD #79.
- FR 43 *Technical Training of Peace Corps Volunteers in Rural Water Supply Systems in Morocco*. May 1982. Prepared by Keith Sherer. OTD #61.
- FR 44 *Evaluation of Practical Training of Sanitation Agents: Sine- Saloum, Senegal Primary Health Care Project*. June 1982. Prepared by Thomas C. Leonhardt and Felix Awantang. OTD #78.
- FR 45 *Training-of-Trainers Workshop for Technical Training in Water Supply and Sanitation*. June 1982. Prepared by James A. Carney and Louise McCoy. OTD #80.
- FR 46 *Proposed Measures for Reducing Costs in Infra-structure and Urbanization Projects for Low Income Housing in Honduras*. June 1982. Prepared by Octavio Gordon. OTD #91.
- FR 47 *Reprogramming of the Rural Sanitation Project in Bolivia*. August 1982. Prepared by Charles S. Stevens. OTD #93.
- FR 48 *Coordination of WASH Information Activities and Exchange with International Information Centers (PAHO/CEPIS-Peru) Trip Report #2*. July 1982. Prepared by James E. Beverly. OTD #32.
- FR 49 *An Assessment of the Method of Training Promoters of the Ecuadorian Institute of Sanitary Works, Ambato, Ecuador, May 17 to June 4, 1982*. July 1982. Prepared by Hortense Dicker. OTD #96.
- FR 50 *Well Drilling Assistance for the Health Sector Loan II Project in the Dominican Republic*. July 1982. Prepared by William M. Turner. OTD #97.
- FR 51 *A Rural Water Supply and Sanitation Training Course for Peace Corps Volunteers in Togo*. July 1982. Prepared by Yolande Mosseau-Gershman. OTD #45.
- FR 52 *Implementation Plan for Unsewered Areas Demonstration Project in Greater Cairo*. September 1982. Prepared by Dennis B. Warner, James Arbuthnot, Leo A. St. Michel, and Richard Sullivan. OTD #77.
- FR 53 *Recommendations for Initial Water and Sanitation Decade Planning Activities in the Central African Republic*. September 1982. Prepared by Dennis B. Warner. OTD #106. Also available in French.
- FR 54 *Philippine Handpump Program*. August 1982. Prepared by Tyler E. Gass and P. Alan Pashkevich. OTD #40.
- FR 55 *Night Soil Disposal and Effluent Reuse in Maseru*. September 1982. Prepared by Daniel A. Okun and John Briscoe. OTD #88.
- FR 56 *Selection of Alternatives to Gravity Flow Systems for Rural Communities: A Workshop to Train Guatemalan Engineers in Pumping Technology*. September 1982. Prepared by Daniel B. Edwards. OTD #76.
- FR 57 *Evaluation of Level III—A Pilot Water System in the Philippines*. September 1981. Prepared by Emmett F. Lowry. OTD #43.
- FR 58 *Environmental Sanitation Master Plan for Training and Education in Tanzania*. September 1982. Prepared by Robert A. Gearheart, John Briscoe, and Eugenia Eng. OTD #75.
- FR 59 *Implementacion al Proyecto. Santa Elena Meals for Millions, Ecuador*. November 1982. Prepared by Victor E. Aguayo. OTD #102. Available in Spanish only.
- FR 60 *Second Training-of-Trainers Workshop for Technology Transfer in Water Supply and Sanitation*. November 1982. Prepared by James A. Carney and Fred Rovensweig. OTD #90.
- FR 61 *In-Service Technical Training and Program Review of Peace Corps Volunteers in Rural Water Supply Systems in Morocco*. November 1982. Prepared by Keith Sherer. OTD #111.
- FR 62 *Training of Trainers for SANRU-86 Health Project, Kinshasa, Zaire, July 13-August 13, 1982*. September 1982. Prepared by Jocelyn Carlson. OTD #100.
- FR 63 *A Workshop for the Design of Low Cost Water Systems in Ecuador*. November 1982. Prepared by Donald T. Lauria. OTD #105.
- FR 64 *Coordination of WASH Information Activities and Exchange with International Information Centers, Trip Report #3, Asia*. December 1982. Prepared by James E. Beverly. OTD #32.
- FR 65 *Feasibility of Rural Groundwater Development in Honduras*. December 1982. Prepared by William M. Turner. OTD #115.
- FR 66 *Water and Waste Needs of Metropolitan Beirut and Surrounding Areas*. December 1982. Prepared by Robert H. Thomas, Robert J. Kachinsky, and Max S. Clark. OTD #124.
- FR 67 *Organization of a Colloquium on Rural Water Supply and Sanitation, Kasserine, Tunisia. November 23-26, 1982*. January 1983. Prepared by Fred Rovensweig and Raymond B. Isely. OTD #92.
- FR 68 *A Workshop for the Provincial Waterworks Authority of Thailand: Team Building for Management, November 1-5, 1982*. January 1983. Prepared by Daniel B. Edwards. OTD #123.

- FR 69 *Diagnosis and Recommendations for Rural Water and Sanitation Systems in Honduras*. January 1983. Prepared by Charles S. Pinco and Henry Van. OTD #101.
- FR 70 *Training of Indian Health Service Engineers and Sanitarians as Trainers for the Peace Corps: Workshop Report and Trainer Guidelines*. February 1983. Prepared by Wilma Gornley. OTD #121.
- FR 71 *Evaluation of Foster Parents Plan's Water Supply and Sanitation Projects in Yogyakarta, Indonesia*. February 1983. Prepared by Shirley Buzzard and Robert A. Gearheart. OTD #117.
- FR 72 *Formulation of National Water Supply and Sanitation Strategies in the Central African Republic*. March 1983. Prepared by Rifat Barokas, Pierre R. Leger, Dennis B. Warner, and Thomas C. Leonhardt. OTD #106. Also available in French.
- FR 73 *Training in Spring Capping for Field Agents in Zaire*. March 1983. Prepared by David R. Goff. OTD #100.
- FR 74 *Emergency Water Supply Assistance During Floods in Ecuador, December 1982–January 1983*. March 1983. Prepared by Fred Reiff. OTD #12.
- FR 75 *Formulation of the CARE Multi-Year Plan for Water Supply and Sanitation in Cameroon*. March 1983. Prepared by John B. Tomaro and Elizabeth Heilman. OTD #118.
- FR 76 *A Technical Managerial Review of AID Handpump Programs Including Those in Sri Lanka, the Philippines, the Dominican Republic and Honduras*. March 1983. Prepared by David Donaldson. OTD #113.
- FR 77 *Seminar on Rural Water Supply and Sanitation for Private and Voluntary Agencies in Haiti*. March 1983. Prepared by David I. Yohalem. OTD #129.
- FR 78 *Burundi Community Water Supply and Sanitation Project*. March 1983. Prepared by Felix Awantang. OTD #137.
- FR 79 *Development of a Short-term Plan for Solid Waste Management in Greater Beirut*. March 1983. Prepared by Max S. Clark. OTD #131.
- FR 80 *Comparative Costs of the AID Type Pump Fabricated in the Dominican Republic and the U.S. Manufactured Moyno-Pump*. April 1983. Prepared by Justin H. Whipple. OTD #130.
- FR 81 *Diagnostico y Plan de Trabajo para La Construccion de Pozos e Instalacion de Bombas Manuales para Agua en Honduras*. April 1983. Prepared by Henry Van. OTD #135. Available in Spanish only.
- FR 82 *Evaluation of the Togo Rural Water Supply Project: Observations of a WASH Participant*. May 1983. Prepared by Raymond B. Isely. OTD #115.
- FR 83 *Evaluation of CARE/Indonesia Water Supply Projects*. May 1983. Prepared by Robert A. Gearheart. OTD #136.
- FR 84 *Evaluation of Health and Social Benefit of Springs Capped for Irrigation, Further Adapted for Domestic Use in Central Tunisia*. May 1983. Prepared by Raymond B. Isely. OTD #120.
- FR 85 *Technical Assistance to Manufacturers of AID Handpumps and Roboscreens in Honduras: Phase I*. May 1983. Prepared by Ben E. James. OTD #29.
- FR 86 *An Assessment of the Water and Sanitation Sector in the Peace Corps Program: Role of the Office of Program Development*. May 1983. Prepared by John B. Tomaro. OTD #109.
- FR 87 *Testing Training Manuals for Rainwater Roof Catchment and Spring Capping Systems in Workshop for Togolese Development Agents*. June 1983. Prepared by Henry L. Jennings. OTD #116.
- FR 88 *Preliminary Planning for Rural Water Supply Alternatives in Zaire*. June 1983. Prepared by David R. Goff. OTD #111.
- FR 89 *Evaluation of the Feasibility of Manufacturing and Marketing the AID-Design Handpump and Roboscreen in Peru*. June 1983. Prepared by WASH Staff. OTD #114.
- FR 90 *The Minyambou Community Development Water Project and Water Supply in Irian Jaya*. June 1983. Prepared by Scott Faria. OTD #133.
- FR 91 *A Workshop on Sanitation in Bakel, Senegal, April 20–May 4, 1983 and an Assessment of Environmental Health Conditions*. June 1983. Prepared by Fred Rosensweig and Thomas Talbot. OTD #117. Also available in French.
- FR 92 *Public Health Education for Low-Cost Sanitation in Tanzania*. June 1983. Prepared by John W. Hatch. OTD #112.
- FR 93 *Latrine Construction Workshops, Las Mata de zocfan, Dominican Republic, April 4-15, 1983, April 25-May 6, 1983*. June 1983. Prepared by Winanne Kreger and Henry Van. OTD #143.
- FR 94 *A Workshop for the National Water Supply and Drainage Board of Sri Lanka, June 6-10, 1983*. August 1983. Prepared by Daniel B. Edwards. OTD #138.
- FR 95 *Sanitation Feasibility for Kanye Village, Botswana*. July 1983. Prepared by Joseph Gadek and Hildegard M. Vanlankveld. OTD #95.
- FR 96 *Water Supply Program of Foster Parents Plan in Haiti*. July 1983. Prepared by Donald T. Lauria. OTD #140.

- FR 97 *A Seminar on Water Supply and Sanitation Strategies in the Central African Republic*. July 1983. Prepared by Thomas C. Leonhardt. OTD #106. Also available in French.
- FR 98 *Status of AID Type Handpumps in the Dominican Republic*. July 1983. Prepared by Fernando Pareja-Gil and Henry Van. OTD #143.
- FR 99 *Training in Health Education and Sanitation Promotion for Rural Water Projects in Malawi*. August 1983. Prepared by Louise McCoy. OTD #144.
- FR 100 *USAID Handpump Program in Tunisia*. September 1983. Prepared by Phillip W. Potts. OTD #63. Also available in French.
- FR 101 *Technical Assistance for Handpump Component of the Health Sector Loan II Project in the Dominican Republic*. January 1984. Prepared by Paul F. Howard and Robert Knight. OTD #48.
- FR 102 *Endurance Tests of Robovalves*. September 1983. Prepared by Yaron M. Sternberg and Robert Knight. OTD #71.
- FR 103 *Evaluation of Locally Available Handpumps in Honduras*. October 1983. Prepared by Terrence L. Moy. OTD #85.
- FR 104 *Assessment of the Environmental Sanitation Construction Component: Integrated Health and Systems Project in Guatemala*. November 1983. Prepared by Henry Van. OTD #150.
- FR 105 *Malawi Self-Help Rural Water Supply Program: A Mid-Term Evaluation of the USAID-Financed Project*. November 1983. Prepared by Dennis B. Warner, Raymond B. Isely, John Briscoe, and Craig R. Halner. OTD #149.
- FR 106 *Evaluation of the CARE Water Supply Program in Kenya*. February 1984. Prepared by David Donaldson. OTD #157.
- FR 107 *Evaluation of the Technical and Community Participation Approach of CARE-Assisted Rural Water Supply Project in Indonesia*. February 1984. Prepared by Robert A. Gearheart and Subiarto Martono. OTD #155.
- FR 108 *Strengthening the Management of the Public Health Inspectorate of Swaziland*. December 1983. Prepared by Harry Phillips and Eva Salber. OTD #131.
- FR 109 *An Assessment of the Office Nationale de l'Assainissement (ONAS) Thirty Cities and Greater Tunis Complementary Project*. February 1984. Prepared by John B. Tomaro, John H. Topik, and Thomas M. Zalla. OTD #158.
- FR 110 *A Workshop on Handpump Installation and Maintenance in Riobamba, Ecuador, October 17-27, 1983*. January 1984. Prepared by Andrea L. Jones and P. Alan Pashkevich. OTD #82.
- FR 111 *Health Information System Development in the Dominican Republic*. January 1984. Prepared by Kenneth R. McLeroy and Michael C. Connelly. OTD #99.
- FR 112 *The Effect of Drought Conditions upon Village Water Supply and Public Health in Mauritania*. January 1984. Prepared by Ralph E. Preble. OTD #172.
- FR 113 *Evaluation of the Third Housing Guaranty Project in the Ivory Coast*. February 1984. Prepared by Joseph Haratani and Harvel Sebastian. OTD #164. Also available in French.
- FR 114 *Latrine Construction Workshop, Gerihun, Sierra Leone, 28 November-9 December 1983*. January 1984. Prepared by Vernon Razak and Max Kroschel. OTD #166.
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**Yanogo, Joseph**, FR-191  
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**Yonli, Raymond**, FR-191  
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## Appendix: WASH Evaluations and Assessments

### EVALUATIONS

#### 1980

- FR 1 *Socio-Cultural and Economic Characteristics of Conditions in Ancash and La Libertad, Peru: Questions to Be Considered in an Evaluation of CARE-Sponsored Water, Sewage and Health Projects.*

#### 1981

- FR 22 *Evaluation of Yemen Water Supply Systems Management Project.*  
FR 24 *Community Water Supply and Sanitation in Burundi: Report of an Evaluation Team.*  
FR 27 *Strategy for Implementation and Evaluation of the Togo Rural Wells and Sanitation Project.*

#### 1982

- FR 35 *Scope of Work for the Health Outcome Evaluation of the Health Sector II Project in the Dominican Republic.*  
FR 38 *Recommendations for the Rural Water and Environmental Sanitation Project in Peru.*

#### 1983

- FR 69 *Diagnosis and Recommendations for Rural Water and Sanitation Systems in Honduras.*  
FR 71 *Evaluation of Foster Parents Plan's Water Supply and Sanitation Projects in Yogyakarta, Indonesia.*  
FR 82 *Evaluation of the Togo Rural Water Supply Project: Observations of a WASH Participant.*  
FR 83 *Evaluation of CARE Indonesia Water Supply Projects.*  
FR 84 *Evaluation of Health and Social Benefit of Springs Capped for Irrigation, Further Adapted for Domestic Use in Central Tunisia.*  
FR 96 *Water Supply Program of Foster Parents Plan in Haiti.*  
FR 105 *Malawi Self-Help Rural Water Supply Program: A Mid-Term Evaluation of the USAID-Financed Project.*

#### 1984

- FR 106 *Evaluation of the CARE Water Supply Program in Kenya.*  
FR 107 *Evaluation of the Technical and Community Participation Approach of CARE-Assisted Rural Water Supply Project in Indonesia.*  
FR 120 *Swaziland Rural Waterborne Disease Control Project: A Mid-Term Evaluation.*  
FR 127 *Evaluation of the SEDRI/IEOS Rural Water Supply and Sanitation Program in Ecuador.*  
FR 129 *Operation and Maintenance of Rural Drinking Water and Latrine Program in Honduras.*  
FR 133 *A Study of the Problems of High Groundwater Levels in Nile Delta Villages.*  
FR 134 *A Summary of the Progress Evaluation of the Rural Water Systems Environmental Sanitation Project—Peru.*

#### 1985

- FR 139 *Field Evaluation of Steel Fabricated Handpumps for the USAID/Dominican Republic Health Sector II Project.*  
FR 154 *Plan for Evaluating Some Health Impacts of the USAID/CARE Community Water System Project in the Republic of Haiti.*  
FR 156 *Evaluation Plan for CARE and Government of Sierra Leone and Rural Water Programs.*

#### 1986

- FR 162 *CARE/Bolivia Water Supply and Small Scale Irrigation Program: A Final Evaluation of the USAID-Financed Project.*

- FR 166 *Evaluation Plan for the Rural Water Supply and Sanitation Program within the Health Sector Loan II Project—Dominican Republic.*
- FR 169 *Evaluacion del Proyecto de Agua y Saneamiento Rural en Honduras.*
- FR 182 *Evaluation of the Water Supply and Sanitation Component of the ADB-Sponsored Rural Health Services Project in Papua New Guinea.*
- FR 186 *Malawi Self-Help Rural Water Supply Program: Final Evaluation.*
- FR 191 *Final Evaluation USAID-Burkina Faso Rural Water Supply Project.*
- FR 197 *Small Rural Water Systems Project in the Yemen Arab Republic: A Midterm Evaluation.*
- 1987**
- FR 205 *Mid-Term Evaluation of the USAID/CARE Community Water System Project in the Republic of Haiti.*
- 1988**
- FR 201 *Final Evaluation of USAID/Catholic Relief Services Water and Sanitation Program in Ecuador, Peru, Guatemala, Honduras and the Dominican Republic.*
- FR 227 *Evaluation of the CARE Sudan Interim Water Supply and Management Project.*
- FR 228 *Final Evaluation of the USAID Togo Rural Water Supply and Sanitation Project.*
- 1989**
- FR 251 *Evaluation of the Environmental Component of the Community-Based Integrated Health and Nutrition Project in Guatemala.*

#### ASSESSMENTS

- 1982**
- FR 33 *Environmental Health in Egypt: A Sectoral Assessment and Recommendations.*
- 1983**
- FR 75 *Formulation of the CARE Multi-Year Plan for Water Supply and Sanitation in Cameroon.*
- FR 86 *An Assessment of the Water and Sanitation Sector in the Peace Corps Program: Role of the Office of Program Development.*
- FR 101 *Assessment of the Environmental Sanitation Construction Component: Integrated Health and Systems Project in Guatemala.*
- 1985**
- FR 153 *Proposed Water Supply and Sanitation Strategies for the Ministry of Public Health in Thailand's Sixth Five-Year Plan, 1987-1991.*
- FR 157 *Assessment of Save the Children Federation (USA) Rural Water Supply Systems and Training Needs in Nepal.*
- 1986**
- FR 35 *Assessment of the Operations and Maintenance Component of Water Supply Projects.*
- 1987**
- FR 206 *Mid-Term Evaluation of the CARE Water Supply and Sanitation Project in Belize.*
- FR 215 *Privatization Study of the Village Water Supply and Sanitation (VWSS) Project, Lesotho.*
- FR 217 *CARE/Sierra Leone Community Participation Assessment.*