FIELD REPORT

MIDTERM EVALUATION OF WATER AND SANITATION ACTIVITIES IN MALAWI:

A Review of Two Components of the "Promoting Health Interventions for Child Survival" Project

WASH Field Report No. 392
May 1993

WATER AND SANITATION for HEALTH PROJECT

Sponsored by the U.S. Agency for International Development
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A Review of Two Components of the "Promoting Health Interventions for Child Survival" Project

Prepared for the Office of Health, Bureau for Research and Development,
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by

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Related WASH Reports

Malawi: Community-Based Maintenance and Cost Recovery of Piped Rural Water Schemes. Field Report No. 309, June 1990. Prepared by Robert A. Gearheart.

Malawi Self-Help Rural Water Supply Program: A Mid-Term Evaluation of the USAID-Financed Project. Field Report No. 105, November 1983. Prepared by Dennis B. Warner, Raymond B. Isely, John Brisco, and Craig R. Hafner.

Malawi Self-Help Rural Water Supply Program: Final Evaluation. Field Report No. 186, August 1986. Prepared by Dennis B. Warner, John Briscoe, Craig R. Hafner, and Bert Zellmer.

Training in Health Education and Sanitation Promotion for Rural Water Projects in Malawi. Field Report No. 99, August 1983. Prepared by Louise McCoy.

Training-of-Trainers in Malawi's Health Education and Sanitation Promotion Program (Phase Two). Field Report No. 185, June 1986. Prepared by Claudia Liebler.

Training-of-Trainers Workshop and Collaborative Efforts in Malawi's Rural Piped Water Program. Field Report No. 174, April 1986. Prepared by Claudia Liebler and John J. Pettit.

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ABOUT THE AUTHORS

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ACRONYMS

ADB	African Development Bank
CDD	Control of Diarrheal Diseases
CS	Child Survival
CWL	Central Water Laboratory
DANIDA	Danish Foreign Assistance Agency
DIP	Detailed Implementation Plan
DOW	Department of Water
FMO	Financial Management Office
GOM	Government of Malawi
HA	Hygiene Assistant
HEU	Health Education Unit
HESP	Health Education and Sanitation Promotion
HIS	Health Information System
HSA	Health Surveillance Assistant
HPN	Health, Population, and Nutrition
IEC	Information, Education, and Communication
LOP	Life of Project
LSHS	Lilongwe School of Health Sciences
MOH	Ministry of Health
MOW	Ministry of Works
O&M	Operation and Maintenance
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PCC	Project Coordinating Committee
PHC	Primary Health Care
PHICS	Promoting Health Interventions for Child Survival
PHN	Population, Health, and Nutrition
PIC	Project Implementation Committee
PP	Project Paper
RWS	Rural Water Supply
SCF-UK	Save the Children Foundation of the United Kingdom
SHRWSP	Self-Help Rural Water Supply Project
VHC	Village Health Committee
WASH	Water and Sanitation for Health Project

EXECUTIVE SUMMARY

USAID/Malawi supports a bilateral health project, "Promoting Health Interventions for Child Survival"(PHICS), designed to increase the institutional capacity of the Government of Malawi (GOM) to deliver child survival and water and sanitation services on a sustained basis and to increase the supply and utilization of these services. The project has several components overseen by Malawi's Ministry of Health (MOH) and Ministry of Works (MOW). WASH was requested to conduct a midterm evaluation of two of these components—rural piped water supply and health education and sanitation promotion (HESP).

A five-person team and two associates representing the Malawian government performed the evaluation from October 19 to November 6, 1992. The team was multidisciplinary, with expertise in institutions, finance, health, and water resources engineering. The evaluation was intended to document progress in meeting project objectives to date and to recommend additions and changes where needed. The team assessed project efficiency in implementing activities, effectiveness of interventions in benefiting the targeted populations, and impacts on health and other areas of interest.

The PHICS project has been underway for 27 months, with completion planned in 1997. The water supply component covers the construction of 13 gravity-fed piped water schemes and the rehabilitation of two old schemes. The MOH is to carry out "health education and sanitation promotion" (HESP) activities and support the construction of latrines and wash slabs. Institution building objectives are to strengthen and expand resources devoted to the delivery of child survival services.

The findings and recommendations of the evaluation team are discussed below under the subjects of rural water supply, HESP, financial management, and institutional strengthening.

RURAL WATER SUPPLY

According to the original project design, the 13 gravity-fed piped systems were expected to serve 245,000 people by the year 2002. In addition, two older schemes were to be rehabilitated. Construction is progressing satisfactorily on five schemes and designs have begun on 10 others.

The schemes under construction face an urgent problem. Many kilometers of trench have been dug by village labor, but because of lack of pipe the work cannot be completed. The trenches are likely to cave in when the imminent rainy season arrives, and much valuable work will be lost unless the procurement of pipe is quickly arranged.

Design Criteria

Partly as a result of a value engineering workshop, work on four sites has been suspended and one site (Chiwawa) has been expanded to encompass four interconnected schemes. Under present plans, 280,292 people will be served at 11 sites (15 schemes) by the end of the project in 1997. By reducing the water quantity delivered from 36 to 27 liters per capita per day, the value engineering study saved about $244,000. According to design cost estimates, the 11 sites can be completed within the original $5.1 million budget. However, because of confusion surrounding expenditures to date, this assertion must be verified.

Water quality standards for Malawi remain provisional and are based on standards appropriate for high-income countries. It is recommended that the standards proposed in the Project Paper be used in determining the need for treatment facilities and in advising water users when further treatment is needed.

Mixed Systems

Malawi has a long and successful history of constructing gravity-fed piped systems with community self-help labor and turning them over to community management. However, questions have been raised about the cost effectiveness of using this technology for new systems, as the best sites have been developed already. Analysis of mixed systems using other appropriate technologies such as boreholes indicates that the construction costs of PHICS schemes average about $22 per capita, while boreholes average $24. The O&M costs can be expected to be lower and the delivered quantity of water higher for gravity-fed schemes. Water quality will usually be better for boreholes, however. In the future, each site within PHICS as well as elsewhere will require a thorough cost analysis before the appropriate technology is selected.

Sustainability

The goal of achieving long-term sustainability is directly tied to a sound O&M program with community management and a stable financial base. The present O&M program is successful as most older rural piped water schemes have operated satisfactorily. But the GOM is interested in increasing community contributions, which presently meet less than a quarter of actual O&M costs. However, studies show that the communities are not able to pay the full costs and that the GOM will have to continue to subsidize them. The large number of boreholes being constructed under emergency drought relief will add significantly to this burden.

HEALTH EDUCATION AND SANITATION PROMOTION (HESP)

The HESP program of the Environmental Health Section of the MOH has been successful in changing behaviors linked to water-related diseases since its initiation in the early 1980s. Previous water projects funded by USAID, and the current Mpira Balaka HESP component, have proven that HESP activities, when well planned, adequately staffed, and properly implemented and evaluated, can enhance the health impacts of improved water on populations they serve. But the lack of an implementation plan for PHICS, which was mutually agreed upon by USAID and the GOM/MOH as necessary, has virtually halted HESP activities. Only 1 percent of HESP construction of latrines and washing slabs has been completed. Little training has taken place because there is no training plan derived from district and regional plans.

HESP activities under PHICS are expected to cover approximately 2.0 million (1991) people in 68 water schemes in 17 districts. Though some districts are active in conducting the HESP program, no national data are available on the extent of current coverage. A monitoring and evaluation plan is needed to ensure program tracking of activities and behavioral change. New HESP staff at the regional and district levels need to be trained and placed. The PHICS project called for an additional 314 staff, of whom only 54 percent have been recruited.

HESP has the background and foundation to be very effective in reducing water-related diseases. However, expanding from a project-specific focus to work at a national level in 17 districts needs good planning, adequately trained staff, timely technical assistance, and an uninterrupted flow of funds. To maximize the health benefits of providing improved water to a large percentage of the Malawian population, it is necessary to complement this component with health education and the construction of sanitation facilities, including latrines and wash basins. Close coordination and joint planning sessions are needed between MOH and MOW in this effort.

FINANCIAL MANAGEMENT

Considerable confusion surrounds the existing financial management system and affects every aspect of project implementation. The absence of reliable information on expenditures to date on both the water and HESP components has effectively paralyzed planning for the future. The Project Paper, noting the extent of project management that PHICS would require, committed AID to providing technical assistance for the design of appropriate project and budget management systems, both at the MOH and in the Health, Population, and Nutrition (HPN) Office, and for training in their use. These systems have not been developed, and therefore no training has been provided.

Budget Categories

USAID has not found ways to allocate resources and attribute costs by ministry and program component. USAID also needs to designate budget categories for project budgets, and design reports for allocations, expenditures, and disallowances, and unobligated, unearmarked, and unexpended balances. As a result, project accounting and financial reporting are unsatisfactory, and financial and economic analyses are not possible.

The GOM categories used by the MOH and the MOW in their budgets for PHICS activities should be adopted as the official line items in future authorizations, obligations, and earmarkings, and also in reporting on expenditures and disallowances, whether these are in Kwacha or in U.S. dollars.

Mutually acceptable written guidelines on what constitutes an allowable or disallowable expenditure should be negotiated by USAID and the GOM.

Plans and Budgets

The MOH has not produced satisfactory annual plans and a corresponding budget. Earmarkings approved annually without adequate work plans have been based upon vague incremental budgets. This has required the USAID HPN to dedicate excessive amounts of time to reviewing and approving requests for advances and expenditures at the task level. The pattern of disallowance resulting from such task-level reviews is inconsistent and lacking in focus, further confirming the image of a project adrift without a rational annual work plan, especially for HESP activities.

The preparation of annual work plans should be given the highest priority and serve as the basis for annual budgets. All USAID earmarkings and direct expenditures for PHICS should be clearly attributable to either MOH or MOW activities, and be supported by documentation of cumulative expenditures and unearmarked and unexpended balances.

INSTITUTIONAL STRENGTHENING

The overall purpose of the PHICS project was to strengthen the institutional capacity of the MOH and MOW, but progress to date has been disappointingly slow. Several problem areas have been identified.

Project Management

The PHICS project lacks senior-level involvement, leadership, and management. The Project Coordinating Committee has held only three meetings, and none since September 1990. It is not providing management oversight, monitoring, policy development, interministerial coordination, and problem solving. The Project Implementation Committee has never met.

At the project level, the PHICS Coordinator cannot provide the type of leadership and coordination that the project requires.

It is recommended that the MOH as the principal implementor of this project take action to provide strong, senior-level program management. The project needs leadership that can manage, control, and coordinate the many program elements and resources of this relatively complex project, and integrate project activities into ongoing ministry programs.

Planning and Budgeting

The planning and budgeting systems and procedures of the project need a major overhaul. An overall management plan, annual work plans, and sub-unit implementation plans need to be developed and tied directly to budgets. A system for the timely development, review, and approval of plans and budgets is needed, so that expenditures can be authorized and activities begun with less delay.

It is recommended that USAID provide technical assistance and training to evaluate, redesign, and implement improved planning, budgeting, review, and authorization procedures in the PHICS project.

Manpower

The water component of the project is operating under serious manpower constraints. There is one expatriate advisor, one Malawian engineer, one Chief Water supervisor (working 50 percent of this time in position) and a Chief Civil Engineer for construction (working 25 percent). The pool of engineers has not been expanded although it was reported that six new engineers have recently been recruited.

Within the MOH, only 49 of 146 posts have been filled. Of four central level HESP positions, only one has been filled.

It is recommended that the objectives, scope of operations, and funding of the PHICS project be scaled back to realistically correspond with the available manpower.

Training

Long-term training objectives are not being achieved. Institutional strengthening will not occur unless this situation is rectified. It is recommended that the MOH and the MOW develop plans to implement overseas training for designated personnel.

Chapter 1

INTRODUCTION

1.1 Background to Assignment

USAID/Malawi supports a bilateral health project, "Promoting Health Interventions for Child Survival"(PHICS), which has several components overseen by Malawi's Ministry of Health (MOH) and Ministry of Works (MOW). WASH was requested to conduct a midterm evaluation of two of these components—rural piped water supply and health education and sanitation promotion (HESP).

PHICS originally was designed as an eight-year $15 million project, but since the signing of the agreement in September 1989, several components have been added and the current budget is $23.5 million. Activities did not get underway until January 1990 and completion is planned in 1997. The water supply component of the project covers the construction of 13 gravity-fed piped water schemes and the rehabilitation of two existing schemes. According to MOW reports, the work is behind schedule and requires considerably more financing. The health education and sanitation promotion (HESP) component also has made limited progress, reportedly because of financial management problems. In these circumstances, USAID decided to advance the midterm evaluation to determine if corrective measures are needed.

1.2 PHICS Project Background

The goal of the PHICS project is to improve the health of rural Malawians with emphasis on decreasing child mortality and morbidity. The purpose of the project is to strengthen the institutional capacity of the MOH and MOW to deliver sustained child survival services, and to increase the supply and utilization of these services at the community and family levels.

The Project Paper (PP) outlines five primary project activities:

1. Information, Education, and Communication

   Expand the MOH Health Education Department and strengthen and institutionalize its capacity to develop and disseminate messages leading to the adoption of behaviors and the use of services that improve child survival.

2. Service Delivery Support

   Improve the capacity of the MOH to plan, implement, monitor, and evaluate child survival services by strengthening key MOH operational departments—research, epidemiology, health education, health information, control of diarrheal diseases, malaria, and environmental health (sanitation and health education).

3. Service Delivery

   Assist the MOH to design, implement, evaluate, and replicate a community-based child survival program that has measurable impact on child morbidity and mortality and can be sustained over the long term with resources available to the GOM.

4. Rural Piped Water

   Assist the MOW and rural communities to increase access to safe water through an extension of the gravity-fed piped water system and, in so doing, contribute to the key MOH child survival goal of preventing water-borne diseases, particularly diarrheal diseases, among children.

5. Project Management

   Strengthen the capacity of the MOH Planning Department and Project Implementation Department to plan and manage MOH programs, including the PHICS project.

This evaluation specifically addresses the environmental health aspects of the second and fourth activities but also touches on elements of the other three. Appendix A presents a more detailed summary of the PHICS project.

1.3 Evaluation Team Members

The evaluation team consisted of four persons from WASH, one from the USAID Bureau for Private Enterprise/Capital Projects, and two associates from the Malawian water and health project components:

Phil Roark	Team Leader, Water Engineering/Hydrology
Kate Burns	Health/Sanitation
Janelle Daane	Engineering, PRE/CAP
Bob Holister	Institutions/Human Resources
John Raleigh	Economics/Finance
Gerald Gausi	Engineering, MOW
Ben Chandiyamba	Health/Sanitation, MOH

1.4 Scope of Work

The evaluation was intended to determine the level of success in attaining the project goals and objectives and was conducted in Malawi from October 19 - November 6, 1992. The scope of work is presented in Appendix B.

The team met with USAID staff, with officials from the MOH and MOW, and with representatives of other organizations concerned with water and health to gain access to available data. Field trips to examine conditions at the village level were made to four project sites: Machinga East, Chikwawa, Namitambo, and Mpira Balaka. Persons contacted and documents consulted are listed in Appendices C and D, respectively.

1.5 Methodology

The approach to this evaluation was based on the premise that any significant improvement in health through the provision of water and sanitation systems cannot be achieved without an understanding of hygienic practices, efficient operation and maintenance of the systems, and adequate financial support. The role of the community as beneficiaries and managers and the role of government agencies as monitors and supporters of the systems must be firmly established. An institutional capacity must be developed at the national, regional, and local levels with respect to policy, organizational structure, personnel, training, and financing.

Research has shown that the provision of clean water will significantly reduce water-related diseases but that the addition of health education and sanitation facilities will double the effect in typical low-income communities. For any improvements to be garnered in health, the water and sanitation systems, of course, must be used correctly and properly maintained. Hence there is a need to ensure sustainability through institution building and financial management.

Constructing water and sanitation facilities and carrying out health education are discrete activities within the PHICS project. However, institution building and financial management cut across component boundaries and are not easily separated from the other project activities. Some complications arose because the evaluation covered only two project components involving two different ministries, and it was necessary to artificially divide the evaluation along lines that did not precisely follow discrete PHICS components.

While the efficient execution of project activities to achieve outputs (such as piped water systems, health education campaigns, and training of Malawian professional staff) is important, it is perhaps more important that the outputs be used effectively. Optimizing access to water of adequate quality and quantity, pursuing community understanding and action on health education messages, and ensuring staff utilization of training are typical examples of project effectiveness. Such issues are addressed in Chapter 6. Impacts of the project (on health, the economy, women, and the environment) are discussed in Chapter 7; many can be expected only towards the end of the project and therefore are seen primarily as potential impacts. Chapter 8 provides conclusions and recommendations to improve on-going activities.

Chapter 2

INSTITUTIONAL STRENGTHENING—PROJECT EFFICIENCY

2.1 Introduction

The development and strengthening of Government of Malawi institutional capacity is one of the fundamental aims of the PHICS project. At the outset, it was acknowledged that "Malawi, currently lacks the human and financial resources necessary to sustain child survival services." The inputs provided by the PHICS project—personnel, training, equipment, technical assistance, and commodities—are intended to "strengthen the institutional infrastructure on which qualitative and quantitative improvements in child survival service delivery depend."

The stated purpose of the PHICS project is to "...increase the institutional capacity of the MOH and the MOW to deliver child survival services on a sustained basis, and to increase the supply and utilization of these services at the community and family level."

The goal of the project is "the improved health status of rural Malawians with emphasis on decreasing child morbidity and mortality," and the specific program target is the reduction of the infant mortality rate from an estimated 154/1000 in 1989 to 100/1000 by 1997.

An anticipated output of the project is an increased number of well-trained and adequately supported personnel in organizations committed to deliver an expanded program of child survival services. The project is designed to strengthen key program components—epidemiology, research, health information systems, management information systems, pre- and in-service training institutions, water system design and construction, health education and sanitation promotion, planning—that will build capacity within the MOH and MOW.

Many of the institutional strengthening objectives of the water component of the project are merely implied. Other are couched in general terms such as "...key child survival services and support activities will be institutionalized and the Government of Malawi (GOM) will have substantially increased its long-term commitment of human and financial resources to preventive health and child survival in Malawi."

Because many of the institutional strengthening objectives of PHICS are implied, or stated in such general terms, the evaluation team decided to clearly define what it considered the major institutional strengthening objectives of the water component of the PHICS project. They are:

1. Management systems established or strengthened: planning, design, procurement and inventory control, construction management, management information, financial management, monitoring, operation and maintenance (O&M), evaluation, and reporting.
2. Personnel: a significant increase in personnel in established positions working on the delivery of child survival interventions, including clean water and hygiene/sanitation education.

3. Training: developing or upgrading the professional skills of MOW and MOH personnel through in-service and long-term training. (Tables on pages A 45-48 of Annex A of the Project Paper provide specific targets.)

4. Coordination and project leadership: strong project management in the Ministry of Health; planning and coordination groups active at the national level.

5. Policy and procedures: manuals written and in use.

6. Community management: various groups, including village health committees and tap committees, organized, trained, and active in health education/sanitation activities and operation and maintenance of water systems.

7. Research: studies carried out on manpower and staffing, willingness/ability to pay, low-cost water treatment methods, system reliability/operation and maintenance, and the development of alternative low-cost latrine designs.

8. Monitoring and evaluation: organization charts, work plans, work schedules, and evaluation plans completed and used for goal setting, monitoring, and evaluation.

2.2 Inputs to Institutional Strengthening

2.2.1 Financial and Commodity Inputs

Few of the financial and commodity inputs are directly related to the institutional strengthening objectives of the project. The technical, financial, and health sections of this report provide detailed analyses of these inputs.

2.2.2 Personnel Inputs

The project is to fund 146 new positions at the central, regional, and district levels in the Ministry of Health. In addition, it was originally to fund 250 new health surveillance assistants (HSAs) for the HESP program and 300 for other components of the PHICS project. These targets were subsequently changed through an agreement among USAID, the GOM, and the World Bank under which the World Bank is to include the salaries of 4,000 HSAs and the PHICS project will pay for their pre- and in-service training.

The project is to include five additional engineering positions within the Ministry of Works and perhaps several more identified in a manpower and staffing study to be carried out by the ministry.

2.2.3 Training Inputs

The project is to provide extensive in-service training for almost all operational personnel involved in water supply activities in both the MOH and the MOW. Nine training courses of one to two weeks are to be held for various categories of personnel each year in the MOW. HESP personnel in the MOH are scheduled to receive eight types of in-service training annually. The tables on pages A 45 and A 46 of Annex A of the Project Paper list the titles, lengths, target audiences, and numbers of these courses.

In addition, off-shore training for both MOH/HESP and MOW personnel in the form of regional study tours, year-long management courses in water supply and sanitation, B.Sc. and M.Sc. training for civil engineers, M.Sc. courses in environmental health, and a variety of short courses has been recommended. The same tables provide details. It is expected that MOH and MOW will arrange the training through the HRID project.

2.3 Implementation Activities Related to Institutional Strengthening Objectives

This section summarizes the institutional strengthening activities that have occurred to date under the eight objectives identified earlier.

2.3.1 Management Systems Established or Strengthened

1. Planning and Design: The MOW's Rural Water Supply (RWS) section has effectively planned and designed the water systems under construction, using available (primarily expatriate) manpower and technical resources. Designs are of good technical quality.

   The HESP program in the MOH has not developed acceptable implementation plans for the activities for which it is responsible. (See the health section for details.)

2. Construction Management: The MOW/RWS generally has been effective in managing the construction phase of its activities, despite periodic shortages of materials and equipment. Monthly work plans are developed; technical problems are identified and resolved in a timely manner; and construction is supervised to ensure acceptable standards.

3. Management Information: Management information systems in the MOW/RWS have not been improved. One general use software package (PlanPerfect) has been installed on one computer but is not in widespread use. The MOW used non-PHICS funding to hire an Australian firm, COFFEE, Inc., to study, design, and install a new MIS, and train personnel in its use. The results were entirely unsatisfactory and the evaluation team is aware of no subsequent efforts to address this problem.

4. Procurement and Inventory Control: The PHICS-funded water projects and USAID operate procurement and inventory control systems that are independent of and parallel to those operated by the MOW. Financial management and reporting deficiencies have

resulted in disallowances and delays in procurement. The senior stores officer had no involvement with PHICS-funded activities until June 1992. He wrote a report making a number of recommendations, none of which had been acted upon at the time of this evaluation.

5. Financial Management: There have been severe financial management problems and reporting deficiencies in this project, which are discussed in the financial section of this report. Financial management reporting systems are deficient, guidelines for allowable and disallowable costs are lacking, and standardized procedures are not being followed.

6. Operation and Maintenance: Water systems are still under construction and therefore actual O&M has not begun, although training for two committees at two projects has been completed. However, the planned approach to O&M is based on proven techniques and appears to be on track.

7. Evaluation: The PHICS project has not developed an evaluation plan, nor has it identified progress indicators for use in evaluation. This is a major deficiency. Within the MOWS/RWS, construction activities can be easily evaluated. The HESP component has carried out few activities to date, and no evaluation efforts have been made.

8. Reporting: The MOW/RWS submits quarterly reports to USAID on activities, expenditures, problems encountered, and plans for the next quarter. The HESP component submits reports through the PHICS Coordinator but so far has had very little to report.

2.3.2 Personnel

1. Excluding HSAs, a total of 146 personnel positions in the MOH are to be funded by PHICS. The Manpower Development Unit reported that, as of March 31, 1992, 81 positions had been made established positions. Of these, 49 were filled and 32 were vacant. Within the HESP component, there was to be one position at the central level and one in each of three regional offices. At present there is only one HESP coordinator at the central level, who does not occupy a PHICS-funded position. (See the health section of this report for details of other HESP personnel.)

2. Within the MOW, five Malawian engineers were to be appointed to PHICS-funded water supply projects. To date only one Malawian engineer, one Malawian Chief Engineer (spending 25 percent of his time in the position) and one Chief Water Supervisor (50 percent of his time) work on the PHICS project. The coordination and checking of engineering designs is done by the PHICS-funded senior civil engineer (an OPEX long-term advisor). Designs have been completed by one Malawian engineer and two Peace Corps engineers assigned to the PHICS project.

2.3.3 Training

1. The MOW's training center in Zomba has been able to provide approximately 60 percent of the in-service training called for in the project plan. Training courses offered include:
   - Technical Refresher Courses: about 90 persons trained each year in one- or two-week courses with about 15 participants in each course
   - Supervisors' Workshop: one per year, one week duration, about 15 participants
   - Senior Staff Workshop: one per year, one week duration, about 25 participants
   - Supervisors' Technical Course: has been combined with the Supervisors' Workshop
   - New Operator Training: none carried out under PHICS
   - System Operation and Repair: main committees of about one-half of all completed schemes and two of the new schemes have completed training
   - Local Project Visits: carried out but not paid for by PHICS
   - Training of Trainers (with MOH): none so far
   - Joint Field Training (with MOH): none so far
2. Within the HESP component, a few workshops and meetings have been held, but none of the planned in-service training programs have been designed.
3. Only one of the planned study tours to neighboring countries has occurred: two individuals visited pipe and fitting manufacturing facilities in South Africa. This visit was not funded by the off-shore training funds of PHICS.
4. No MOW/RWS or HESP personnel have been sent abroad for training.

2.3.4 Coordination and Project Leadership

1. A Project Coordinating Committee (PCC) was formed at the inception of the project with membership from the key ministries, USAID, and key project components. Its terms of reference called for the exercise of managerial responsibility:
   - to facilitate interministerial cooperation;
   - to appoint a Project Implementation Committee (PIC) to be "directly involved in matters pertaining to the implementation activities of the project";
   - to review annual work plans, budgets, and progress reports; and
   - to make recommendation on policy issues.

The PCC, which was to have held quarterly meetings, in fact has met only three times and not since September 1990.

2. The PCC did propose the membership of the PIC, whose duties would be to

   - develop implementation plans;
   - prepare budgets;
   - prepare progress reports;
   - identify and resolve implementation issues; and
   - report to senior staff on issues.

   The PIC has never held a meeting.

3. The PHICS Project Coordinator cannot compensate for the failure of these two committees to fulfill their obligations. There is a vacuum in the leadership and management of the PHICS project.

2.3.5 Policy and Procedures

The evaluation team was unable to find any manuals or policy guidelines for the water component that have been developed under this project. However, an operator's manual developed under a previous project continues to be effectively used.

2.3.6 Community Management

1. To date, a total of 12 taps have been installed in PHICS-funded water schemes. The evaluation team was able to talk with members of four tap committees. They had been elected by the village after a briefing by someone from RWS on their duties and responsibilities. Most said they had not yet received training in maintenance procedures because the systems were so new. Members of a village health committee in a village in Machinga district not connected to a piped water scheme said they had received training in hygiene and sanitation, and were able to explain a number of important hygiene messages and concepts.

2. A study commissioned by the MOW/RWS and carried out by the Center for Social Research developed guidelines for community mobilization in the construction and operation and maintenance phases of rural water systems. The study did a good job of explaining the rationale, processes, and procedures for mobilizing communities and of describing the roles and responsibilities of various community groups and government personnel. Unfortunately, this study and its recommendations have not been officially accepted for two main reasons:

   - its inadequate response to the original terms of reference, and

- the controversy over willingness and ability to pay, and the government's policy of not charging user fees in rural water schemes.

Because the study has not been accepted, little progress has been made in community mobilization.

3. Another reason for this slow progress in the training and support of village level committees is the almost complete lack of activity by the HESP component of the PHICS project.

2.3.7 Research

1. Manpower and Staffing: Both the MOW and MOH were to have carried out manpower/staffing studies and made recommendations that would be reflected in the first annual work plans. The MOW has a draft of the terms of reference for such a study dated July 9, 1990. Apparently, a manpower study has been ongoing since August 1991, but early drafts have had limited distribution and were not available to USAID or the evaluation team.

2. Willingness and Ability to Pay: The evaluation team found that, even after two revisions, the study by the Center for Social Research did not fully respond to the ambitious terms of reference, which is one reason it has not been accepted by the MOW. The other reason is that the willingness and ability to pay and the levy of user fees are politically sensitive issues in Malawi. The MOW believes that changing the communities for water used with payments to the MOW could have an adverse effect on community participation in O&M. The MOW recommends that funds collected by the communities should be managed by the communities. These issues must be resolved if long-term answers to sustainable financing of water systems are to be found.

3. Low-Cost Water Treatment Methods: No study has been undertaken under the PHICS project. The MOW/RWS is using the results of studies of the Mpira-Balaka project funded by DANIDA (Danish Foreign Assistance Agency) and the ADB (African Development Bank).

4. Operation & Maintenance and System Reliability: The study by the Center for Social Research touched on some of these issues. The MOW relies on data from the Gearheart study funded and carried out by WASH and on an O & M manual developed by the earlier USAID-funded water project.

5. Low-Cost Latrine Development: Research assigned to the HESP component has not been done.

2.3.8 Monitoring and Evaluation

1. The MOW/RWS uses monthly work plans and work schedules and holds monthly and quarterly meetings to review progress, resolve problems, and discuss upcoming work. These activities are effective in monitoring the work on the water projects.

2. The MOW's organization chart is not up-to-date and hence not useful. Some units shown as "proposed" do not currently exist. Approximately 70 percent of the positions are vacant. Senior level personnel, including many working on PHICS project activities, occupy two, three, or more positions in an "acting" capacity.

3. The HESP coordinator submitted a 1991/92 work plan in February 1992, and in May was asked to revise it with data from the district level. He resubmitted the plan in June and was not told until early October that his plan was acceptable. This is an example of serious problems in planning, coordination, and communication in the MOH and with USAID that hold up the flow of funds and delay the start of activities.

2.4 Outputs of Institutional Strengthening Activities

Outputs of institutional strengthening activities can be thought of as intermediate products of the project. For example, an improved and standardized monthly reporting form, if properly used, could upgrade the functioning of the Management Information System. At present, there are few such outputs from the water component of the PHICS project. They are summarized under the same eight objectives used above.

2.4.1 Management Systems Established or Strengthened

1. Planning and Design

   - The MOW/RWS has produced acceptable plans and designs for the water systems under construction and planned.
   - The MOW/RWS issues monthly and quarterly progress reports that serve the project and the donor.
   - HESP: inadequate planning

2. Construction Management

Effective management and supervision; system construction proceeding on schedule; five systems in various stages of completion

3. Management Information System

   - No progress within the MOW/RWS toward improvement.
   - No output from the HESP component.

4. Procurement and Inventory Control

   - Financial management inadequacies are causing delays in procurement.
   - Spotty inventory control and record keeping are causing difficulties in tracking some materials. However, stores are managed reasonably well for operational purposes.

5. Financial Management

Inadequate systems and controls are causing major problems and delays.

6. Operation and Maintenance

O & M is on track although there are some questions regarding increased community cash contributions.

7. Evaluation

   - No evaluation plan or indicators have been developed for PHICS.
   - Construction progress in MOW/RWS is easily tracked.
   - HESP has no evaluation plan.

8. Reporting

   - The MOW/RWS is submitting useful monthly and quarterly reports.
   - The limited activity in HESP reduces the present need for reporting.

2.4.2 Personnel

1. The MOH has established 81 of 146 positions at the central, regional, and district levels. Of these, 49 have been filled, 32 are vacant. No PHICS-funded HESP positions have been filled at the central or regional levels, 131 HSAs are working in HESP.
2. No new engineers for PHICS are employed in MOW.

2.4.3 Training

1. About 80 percent of the in-service training by MOW has occurred.
2. HESP has held a few meetings but has conducted no in-service training.
3. Only one of the planned regional tours, involving two people, has taken place
4. No MOW or HESP personnel have been sent abroad for training.

2.4.4 Coordination and Project Leadership

1. The Project Coordinating Committee met twice in 1989 and in September 1990, but not since then and has not carried out its duties and responsibilities.
2. The Project Implementation Committee proposed by the PCC has never met.
3. The PHICS Coordinator cannot compensate for the lack of activity by these committees. Project management systems are not functioning.

2.4.5 Policy and Procedures

Guidelines for roles and responsibilities of community groups have been developed. These guidelines are used in the training of committees.

2.4.6 Community Management

1. Tap committees have been formed for taps that have been installed, and some linkages have been established between the VHCs and these committees. They have been given some training, primarily on their duties.
2. Guidelines for roles/responsibilities of community groups and water personnel have been developed but not yet approved.
3. There are virtually no PHICS-funded HESP activities.

2.4.7 Research

1. Manpower and Staffing: Terms of reference for a study in MOW has been developed but not yet approved.
2. Willingness and Ability to Pay: A study carried out by the Center for Social Research has not been accepted by MOW, and little progress has been made on these important policy questions. A willingness to pay study by Gearhart and graduate students was postponed because of illness. Although the study and its findings have not officially been accepted by the MOW, some of the recommendations, such as training of committees, is being carried out.
3. Low-Cost Water Treatment Methods: No studies have been carried out under PHICS. MOW is relying on studies done at Mpira-Balaka.
4. Operation and Maintenance/System Reliability: Some issues were addressed in the CRS study. MOW is using a manual developed under a previous project and has implemented many of the recommendations on O&M put forth in the Gearhart report.

2.4.8 Monitoring and Evaluation

1. Work plans and schedules are developed in MOW on a monthly and quarterly basis and used effectively.
2. The MOW organization chart has been developed but is out of date and of little value. Many personnel are not in place.
3. Delays in reviewing and approving HESP work plans have virtually brought activities to a halt.

Chapter 3

FINANCIAL MANAGEMENT—PROJECT EFFICIENCY

3.1 Introduction to Financial Management Activities

The evaluation team was unexpectedly pulled up short in attempting to complete its scope of work for finance and economics by the discovery that the project financial management systems and the tracking systems in the HPN Office, MOH, and MOW do not provide enough information on funding flows to a particular water scheme or health program component.

There were not enough data in a form that was readily accessible to conduct financial and economic analyses of efficiency, effectiveness, and impact. Issues relating to recurrent O&M costs, community level finance, and sustainability are addressed in the technical department.

In defining the problem to be addressed by PHICS, the Project Paper stated that:

> "lack of resources and institutional deficiencies are the main constraints which limit the attainment of national health objectives. The National Health Plan identifies insufficient financial and human resources and weak management and implementation capacity as priority problems."

USAID has provided over US$70 million in assistance for six projects in the health sector from the mid-1980s to the late 1990s. Two of these are of broad scope: the Human Resources and Institutional Development (HRID) project (US$18 million) "designed to support, inter alia, the strengthening of the MOH planning and management capability"; and the PHICS project (US$23.5 million).

The others focus on specific interventions or support services and touch on planning, budgeting, financing, cost recovery, and sustainability as these relate to the intervention or support service being developed.

The PHICS project's special contribution is assistance to specific medical interventions and related support services in the Ministry of Health, and calls for inter-ministerial collaboration with the Ministry of Works' Rural Water Supply department. The Project Paper states:

> "The GOM through the MOH and the MOW is responsible for the management and implementation of the PHICS project.... The project will support the addition [to the MOH] of ... a Project Coordinator responsible for overall project implementation and an Accountant responsible for project financial management. These ... and other [MOH] Planning Department staff with part-time responsibilities will receive short-term training in project management, including A.I.D. project procurement and implementation. The Chief Water Engineer and the Rural Water Supply department within the MOW will have primary responsibility for the implementation of the project's piped water component."

"A.I.D. will fund additional project management staff for both MOH and MOW, and short-term training in project and financial management. ... In addition, the project will support the costs of technical assessments, evaluations, and audits necessary to monitor and manage the project."

The project is financed by contributions from USAID, the GOM, and the communities served. The efficient use of those contributions is determined by the design of the financial management systems, the degree to which non-financial management decision makers at all levels have access to accounting and financial information, and the extent to which they are ready, willing, and able to use it to improve productivity.

The Project Paper critiques cost-benefit analysis and cost-effectiveness analysis as methodologies, appearing to dismiss their value in guiding resource allocation during project design and implementation and in assessing project impact ex post facto. It should not be surprising, therefore, that the systems needed to generate the data to conduct such analyses were not put in place.

Regarding the expected microeconomic effects of PHICS, the Project Paper states that "the recurrent cost implications of the PHICS project were analyzed comprehensively... The results indicate that the GOM can afford the recurrent personnel, training, and operational costs related to the PHICS project."

As regards the macroeconomic impact, the Project Paper cites the benefits of decreased childhood mortality and morbidity and states that "there should be little doubt that, generally speaking, benefits such as reduction in pain, anxiety, suffering and the like have substantial economic value—witness the willingness of consumers to make substantial payments to secure benefits of this genre in the medical market place".

3.2 Financial Inputs

USAID has made the major financial contribution to PHICS ($15 million under the original Project Paper). The GOM contribution has covered salaries, facilities, and services ($1.3 million). The community contributions have been largely in the form of labor to lay pipe and assist in the construction and maintenance of filters, intakes, and storage tanks, and funds for minor maintenance and repairs of community taps (estimated at $1.17 million LOP).

3.2.1 USAID Contributions

The USAID contributions have been authorized by A.I.D. through a Project Paper and three supplements, with obligations communicated in a Project Grant Agreement (PROAG) and five amendments with the GOM. Management arrangements were defined, and periodic earmarking of funds clarified, in a series of Project Implementation Letters (PILs) to the MOH, the MOW, and the Lilongwe School of Health Sciences (LSHS). There have been 28 PILs extending up to October 30, 1993. The original Project Paper estimated that approximately

half the A.I.D. contribution (US$7.7 million) would be managed by the GOM, and the rest (US$7.3 million) by USAID, largely for overseas procurements requiring foreign exchange.

The original grant agreement established a 90-day advance of funds to the MOH as working capital—a 30-day routine operating fund, plus a 60-day buffer fund while USAID processed monthly expenditure reports and advance replenishment requests. After the first 90-day advance, the project would submit monthly financial reports beginning 60 days after project startup. Since the central project management was to be in the MOH, the original PROAG planned that the MOH would receive such advances from USAID, while the MOW would operate with its own funds and be reimbursed for PHICS expenditures. However, information provided by the PHICS accountants in the MOH and the MOW indicated that the MOH actually used its own funds for the first six months of project activities, and the MOW spent little or nothing until it received advances in mid 1990.

An overview of project funding flows is provided in Table 1, PHICS Project Financial Status, tracking authorizations, obligations, earmarkings, and expenditures. The information on expenditures came from the PHICS accountants in the ministries, and according to the FMO is believed to be inaccurate.

- Authorizations

The A.I.D. contributions were approved in a Project Paper signed in June 1989 and modified by three supplements. Supplement no. 1 (signed in September 1990) expanded manpower development activities in the MOH; Supplement no. 2 (signed in June 1992) asked the Save the Children Foundation of the United Kingdom to rehabilitate boreholes and install new ones (and is the only authorization not carried over in obligations to the Project Grant Agreement with the GOM; and Supplement no. 3 (signed in August 1992) expanded anti-malarial programs of the MOH, inter alia. The financial data for these supplements are summarized in Table 2, PHICS Project Authorizations.

None of the supplements affected the original Project Assistance Completion Date (PACD) of June 30, 1997, nor the terms of reference, nor funding for activities to be implemented by the Ministry of Works.

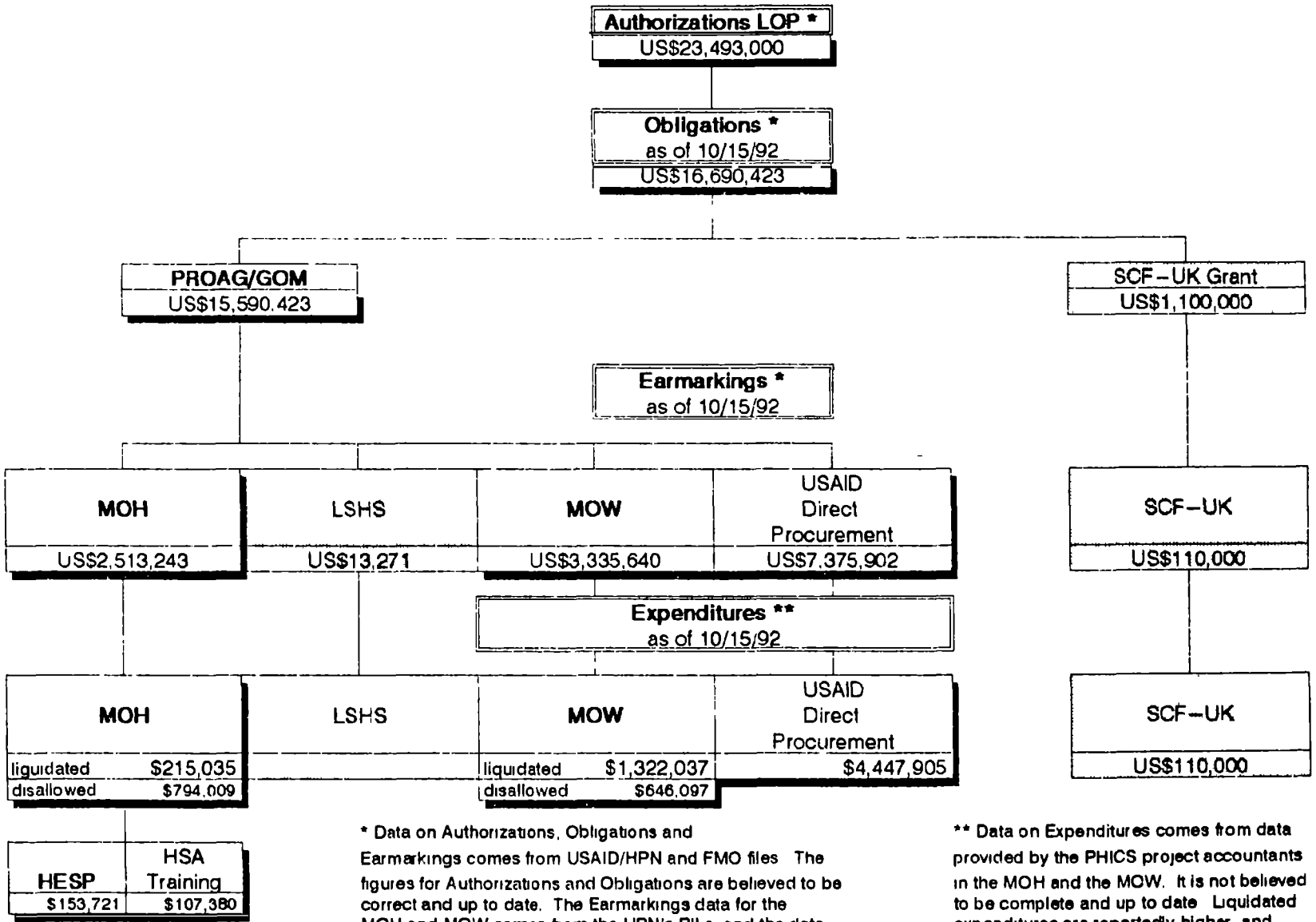
- Obligations

The initial PROAG (signed in September 1989) was amended five times, twice to reflect expansions of the project scope resulting from the supplements, in addition to the annual increase of funds available through new obligations. The financial details are summarized in Table 3, PHICS Project Obligations.

After the Second Project Supplement, a Grant Agreement was signed with the Save the Children Foundation of the United Kingdom (SCF-UK). The status of obligations reports in the HPN (Health, Population, and Nutrition) office reflect a jump of US$1.1 million in

Table 1

PHICS Project Financial Status



* Data on Authorizations, Obligations and Earmarkings comes from USAID/HPN and FMO files The figures for Authorizations and Obligations are believed to be correct and up to date. The Earmarkings data for the MOH and MOW comes from the HPN's PILs, and the data on PIO/Ts, PIO/Cs, and DOs is extrapolated based on the difference between the total of the PILs and FMO figures on total earmarkings

** Data on Expenditures comes from data provided by the PHICS project accountants in the MOH and the MOW. It is not believed to be complete and up to date Liquidated expenditures are reportedly higher, and disallowances have been resubmitted, with most if not all having been cleared up in recent weeks

Table 2

PHICS Project Authorizations *
(U.S.$)

Project Element	Original Authorized Life of Project Budget	Project Supplement No. 1 (9/25/90)	Revised Authorized Life of Project Budget	Project Supplement No. 2 (6/21/92)	Revised Authorized Life of Project Budget	Project Supplement No. 3 (8/31/92)	Revised Authorized Life of Project Budget
1 Technical Assistance	2,340,000	1,750,000	4,090,000		4,090,000		4,090,000
2 Training	1,959,000	3,151.000	5,110,000		5,110,000	424,000	5,534,000
3 Commodities	6,148,000	382,000	6,530 000		6,530,000	105,000	6,635,000
4 Operating Expenses	3,491,000	130,000	3,621,000		3,621,000	831,000	4,452,000
5 Evaluation and Audits	340,000		340,000		340,000		340,000
6 AID Direct Grant to SCF–UK				1,100,000	1,100,000		1,100,000
7. NGO Grants						400.000	400,000
8 Construction						190,000	190,000
9. Contingencies	722,000	30,000	752,000		752 000		752,000
TOTAL	15,000,000	5,443,000	20,443,000	1,100,000	21,543,000	1,950,000	23,493,000
		Health Manpower Development		drought relief borehole drilling		Malaria Program Expansion	

* (Authorization increases add to MOH and NGO components, but not to MOW/RWS)

"obligations to date" between the fourth and the fifth PROAG amendments which is unexplained in the summaries on file. A careful review of the source documents and discussions with the FMO (Financial Management Office) made clear that this leap in obligations is attributed to the grant to SCF-UK.

The total of obligations to date presented in Table 3 is confirmed by the computerized database in the FMO. However, the allocations to individual line items appear to have changed occasionally without clear explanation. The last amendment to the project agreement, for example, showed the total of obligations to technical assistance as US$3,440,000, while the FMO database showed US$4,040,000. Obligations to technical assistance, training, and operating expenses apparently were increased by decreasing the obligations to commodities and allocating funds from the contingencies line item. The summary data in the HPN files, the amended project grant agreement, and information provided by the project accountants do not explain how, why, and when such reallocations took place. This undermines the ability of project managers to determine what resources they have available and to plan for their use.

- Earmarkings

Project funds have been earmarked through numbered PILs to the MOH, MOW, and LSHS for funds managed by the GOM, mainly for small local currency expenditures but occasionally for large local procurements including at least one involving foreign exchange. In addition, funds have been earmarked through PIO/Ts, PIO/Cs, and Delivery Orders (DOs) for funds managed by USAID, principally for direct overseas procurements.

PIL nos. 4,6,21, and 26 earmark the bulk of the funds for the MOH, and PIL nos. 3, 9, 15, 22, and 27 do the same for the MOW. Most of the other PILs either de-earmark funds, make minor adjustments, or explain rules and procedures. A note in the files explains that PIL no. 20 was never issued. PIL no. 2 is missing from both the HPN and the FMO files, with no explanation. PIL no. 3 begins by citing previous earmarkings of US$1.37 million; these may have been in PIL no. 2, or could have been the result of miscellaneous PIO/Ts, PIO/Cs, or DOs issued prior to January 1990.

Even if the second assumption is correct, given the time available, the exact total of earmarkings effected through PIO/Ts, PIO/Cs, and DOs could only be estimated through extrapolation. This is because the HPN files are poorly organized; it is difficult to determine whether the files are complete since the PIOs and DOs are not numbered in a project-specific sequence like the PILs; and summary sheets on "earmarkings to date" (similar to those attached to PILs) appear with only about half the instruments on file.

The estimated total of earmarkings, therefore, is US$2,513,243 to the MOH; US$3,335,640 to the MOW; and US$13,271 to the Lilongwe School of Health Sciences. The remainder (US$7,375,902) is assumed to be funds directly managed by USAID. The financial details appear in Table 4, PHICS Project Earmarkings.

Table 3

PHICS Project Obligations

(U.S $)

Project Element	Original PP Authorized Life of Project Budget	Obligations in the Original PROAG	Obligations PROAG Amendment No 1	Total Obligations to Date	Obligations PROAG Amendment No 2	Total Obligations to Date
Date	6/29/89		1/31/90		3/26/90	
1. Technical Assistance	2,340,000	875,000	1,000,000	1,875,000	465,000	2,340,000
2. Training	1,959,600	695,000	75,000	770,000	250,000	1,020,000
3. Commodities	6,148,000	2,560,000	600,000	3,160,000	535,000	3,695,000
4. Operating Expenses	3,491,000	750,000	500,000	1,250,000		1,250,000
5. Evaluations and Audits	340,000					
6 AID Direct Grant to SCF – UK						
7. NGO Grants						
8. Construction						
9. Contingency	722,000	240,000	200,000	440,000		440,000
TOTAL	15,000,000	5,120,000	2,375,000	7,495,000	1,250,000	8,745,000

Project Element	Revised LOP Authorization PP Supplement No 1	Obligations PROAG Amendment No 3	Total Obligations to Date	PROAG Amendment No 4	Total Obligations to Date
Date		9/25/90		3/5/91	
1 Technical Assistance	4,090,000	624,000	2,964,000	476,000	3,440,000
2. Training	5,110,000	1,188,000	2,208,000	840,684	3,048,684
3. Commodities	6,530,000	578 000	4 273,000	415,611	4,688,611
4. Operating Expenses	3,621,000	295,000	1,545,000	374,705	1,919,705
5 Evaluations and Audits	340,000			100,000	100,000
6. AID Direct Grant to SCF – UK					
7. NGO Grants					
8. Construction					
9. Contingency	752,000	400	440 400	3,000	443 400 0 0 0
TOTAL	20,443,000	2 685 400	11 430 400	2 210 000	13 640 400

Project Element	Revised LOP Authorization PP Supplement No 2	Obligations SCF – UK Grant Agreement	Revised LOP Authorization PP Supplement No 3	Obligations PROAG Amendment No 5	Total Obligations to Date	Balance to be Obligated
Date		6/23/92		6/31/92		
1. Technical Assistance	4,090,000		4,290,000		3,440,000	850,000
2. Training	5,110,000		5,534,000	424,000	3,472,684	2,061,316
3. Commodities	6,530,000		6,635,000	105 000	4,793,611	1 841,389
4. Operating Expenses	3,621,000		4,452,000	831,000	2,750,705	1,701,295
5. Evaluations and Audits	340,000		340,000		100 000	240,000
6. AID Direct Grant to SCF – UK	1,100,000	1,100,000	1,100,000		1,100,000	0
7. NGO Grants			400,000	400,000	400,000	0
8 Construction			190,000	190,000	190,000	0
9 Contingency	752,000		552,000		443,400	108,600
TOTAL	21,543,000	1,100,000	23,493,000	1,950,000	16,690,400	6,802,600

- Advances

The initial grant agreement called for the MOH to operate with funds advanced by USAID and for the MOW to use its own funds and get reimbursed. Project accounts, although reportedly not complete or accurate, showed that the MOH operated for six months with its own funds before asking to be reimbursed for about US$145,000 in expenditures, and that the MOW began spending only about mid 1990.

The MOH accountant provided records showing US$2,641,385 in PHICS advances from September 1990 to July 1992 compared with earmarkings of US$2,513,243 for that period, suggesting that the MOH exceeded its budget for the year. Yet it is generally believed that the MOH has been hampered in the use of PHICS funds and that funding flows have been slow. Other financial information available and discussions with the FMO (though inconclusive) suggest that the MOH advances may have been overstated (possibly due to non-PHICS deposits made to the project account in the Bank of Malawi).

Table 5, MOH Advances, Expenditures, and Disallowances (in kwacha), was created by the team after a time-consuming effort of assembling and analyzing raw data provided by the PHICS accountant (vouchers, advance requests, bank deposit slips, and expenditure liquidation and disallowance forms). Many of the advance request and expenditure report forms were not signed and dated, so it was not certain whether they were final documents that entered the system, rough drafts that were changed later, or even fabrications (which is unlikely) put together after the event. For all its inaccuracies, however, the table can serve as a model for a summary of funding flows that the project accountants should be providing project management.

The MOW accountant showed PHICS advances totalling US$1,034,818 for 1990-93, compared with earmarkings of US$3,335,640 for the same period. This contradicts the prevailing impression that MOW expenditures under PHICS have been too fast and risk depleting the budget. Other financial information and discussions with the FMO (though inconclusive) suggested that the MOW record may have omitted expenditures incurred against USAID advances.

Because of disallowances and inadequate controls on PHICS procured inventories, the FMO suggested an audit of the project in March 1992 and simultaneously halted USAID advances to the MOW.

- Expenditures

The PHICS project accountants in both the MOH and the MOW reported that their ministries have had difficulty getting USAID approval for certain expenditures before the fact and for liquidating a significant portion of expenditures after the fact. This is one of many financial management problems that can be traced to the lack of adequate systems as designed, the lack of training, the lack of annual budgets, the absence of written guidelines on disallowances, and poor communication between the project and the HPN office.

Table 4

PHICS Project Earmarkings

(U.S. $)

Project Element / Date / Ministry	Earmarkings PIL No. 1 11/30/89 MOH	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date	Earmarkings PIL No. 3 1/23/90 MOW	Cumulative Earmarkings to Date	Earmarkings PIL No. 4 1/29/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 5 5/7/90 MOH	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date
1 Technical Assistance			794,000	794,000		794,000		794,000		794,000	873,600	1,667,600
2 Training					17,800	17,800	46,100	63,900		63,900	3,095	66,995
3 Commodities			572,300	572,300		572,300	10,200	582,500		582,500	407,500	990,000
4 Operating Expenses					46,600	46,600	40,100	86,700		86,700		86,700
5 Evaluations and Audits												
6 AID Direct Grant to SCF – UK												
7 NGO Grants												
8. Construction												
9 Contingency												
TOTAL			1,366,300	1,366,300	64,400	1,430,700	96,400	1,527,100		1,527,100	1,284,195	2,811,295

Project Element / Date / Ministry	Earmarkings PIL No 6 5/1/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 7 5/7/90 MOW/MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 8 6/22/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No 9 7/16/90 MOW	Cumulative Earmarkings to Date	Earmarkings PIL No 10 7/23/90 MOW/MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 11 8/20/90 MOH	Cumulative Earmarkings to Date
1 Technical Assistance		1,667,600		1,667,600		1,667,600		1,667,600		1,667,600		1,667,600
2. Training	43 200	110,195	5,000	115,195		115,195	28,570	143,765	5,000	148,765		148,765
3 Commodities	35,100	1,025,100		1,025,100		1,025,100	197,240	1,222,340		1,222,340		1,222,340
4 Operating Expenses	389,000	476,700		475,700		475,700	207,330	683,030		683,030		683,030
5 Evaluations and Audits												
6 AID Direct Grant to SCF – UK												
7 NGO Grants												
8. Construction												
9. Contingency												
TOTAL	467,300	3,276,595	5,000	3,283,595		3,283,595	433,140	3,716,735	5,000	3,721,735		3,721,735

* PIL No 2 is missing from both the HPN and FMO files

PHICS Project Earmarkings

(U.S. $)

(continued)

Project Element / Date / Ministry	Earmarkings PIL No. 12 8/23/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 13 9/10/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 14 10/10/90 MOH	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date	Earmarkings PIL No. 15 10/16/90 MOW	Cumulative Earmarkings to Date	Earmarkings PIL No. 16 11/1/90 MOH	Cumulative Earmarkings to Date
1. Technical Assistance		1,667,600		1,667,600		1,667,600		1,667,600		1,667,600		1,667,600
2. Training	2,800	151,565	(28,875)	122,690		122,690		122,690		122,690		122,690
3. Commodities		1,222,340	(10,200)	1,212,140		1,212,140	81,200	1,293,340	1,430,000	2,723,340		2,723,340
4. Operating Expenses		683,030	(40,100)	642,930		642,930		642,930		642,930		642,930
5. Evaluations and Audits												
6. AID Direct Grant to SCF-UK												
7. NGO Grants												
8. Construction												
9. Contingency												
TOTAL	2,800	3,724,535	(79,175)	3,645,360		3,645,360	81,200	3,726,560	1,430,000	5,156,560		5,156,560

Project Element / Date / Ministry	Earmarkings PIL No. 17 8/23/90 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 18 1/31/91 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 19 3/26/91 LSHS	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date	Earmarkings PIL No. 21 5/3/91 MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. 22 5/8/91 MOW	Cumulative Earmarkings to Date
1. Technical Assistance		1,667,600		1,667,600		1,667,600	1,034,476	2,702,076		2,702,076		2,702,076
2. Training		122,690	208,316	331,006	13,271	344,277	621,316	965,593	945,500	1,911,093	35,920	1,947,013
3. Commodities		2,723,340	11,389	2,734,729		2,734,729	113,947	2,848,676	124,000	2,972,676	204,020	3,176,696
4. Operating Expenses		642,930	(219,705)	423,225		423,225		423,225	618,800	1,042,025	463,160	1,505,185
5. Evaluations and Audits												
6. AID Direct Grant to SCF-UK												
7. NGO Grants												
8. Construction												
9. Contingency												
TOTAL		5,156,560	0	5,156,560	13,271	5,169,831	1,769,739	6,939,570	1,688,300	8,627,870	703,100	9,330,970

* PIL No. 20 was never issued

PHICS Project Earmarkings

(U.S $)

(continued)

Project Eleme Date Ministry	Earmarkings PIL No 23 5/20/91 MOW	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date	Earmarkings PIL No 24 4/6/92 MOW/MOH	Cumulative Earmarkings to Date	Earmarkings PIL No 25 7/8/92 MOH	Cumulative Earmarkings to Date	Ei Pl 7/ M	Cumulative Earmarkings to Date	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings to Date	Earmarkings PIL No. 27 9/1/92 MOW	Cumulative Earmarkings to Date
1 Technical Assistance		2,702,076	1,226,536	3,928,612		3,928,612		3,928,612		3,928,612	(227,543)	3,701,069		3,701,069
2 Training		1,947,013	748,177	2,695,190		2,695,190	(147,556)	2,547,634	***	3,039,634	(230,167)	2,809,467	15,000	2,824,467
3 Commodities		3,176,696	3,109,200	6,285,896		6,285,896	(306,081)	5,979,815	***	6,059,815	(2,906,455)	3,153,360	329,000	3,482,360
4 Operating Expenses		1,505,185	5,700	1,510,885		1,510,885	(221,745)	1,289,140	***	1,725,140	9,000	1,734,140	356,000	2,090,140
5 Evaluations and Audits											40,000	40,000		40,000
6 AID Direct Grant to SCF-UK											1,100,000	1,100,000		1,100,000
7 NGO Grants														
8. Construction														
9 Contingency														
TOTAL		9,330,970	5,089,613	14,420,583		14,420,583	(675,382)	13,745,201	**	14,753,201	(2,215,145)	12,538,056	700,000	13,238,056

Project Element	Cumulative Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative Earmarkings by PIL to the MOH	Cumulative Earmarkings by PIL to the MOW	C E b to	Cumulative Earmarkings to Date
1 Technical Assistance	3,701,069				3,701,069
2 Training	1,142,421	1,358,169	102,290	***	2,616,151
3 Commodities	1,377,712	141,335	2,160,260		3,679,307
4 Operating Expenses	14,700	1,233,444	1,073,090		2,321,234
5 Evaluations and Audits	40,000	(219,705)			(179,705)
6 AID Direct Grant to SCF-UK	1,100,000				1,100,000
7 NGO Grants					
8 Construction					
9 Contingency					
TOTAL	7,375,902	2,513,243	3,335,640	**	13,238,056

Table 5

MOH
Advances, Expenditures, and Disallowances in Kwacha

PL No.	advances requested			advances received		#	expenditures reported		expenditures liquidated		disallowed	#
	date	for the period	amount	date	amount	days	date	Amount	date	Amount	Amount	days
6								46,818	5/29/90	46,818		
6								50,719	8/9/90	50,719		
6								40,949	9/7/90	40,949		
6							7/26/90	6,957	9/8/90	6,957		43
							Subtotal	145,444		145,444		
6	?	9/1/90 - 9/30/90		?	241,400	?	10/12/90	39,940				
6	?	10/1/90 - 10/31/90		10/1/90	120,700	?						
6		10/1/90 - 10/31/90					11/26/90	35,459				
6		11/1/90 - 11/30/90					12/10/90	37,814				
6		12/1/90 - 12/31/90					1/29/91	44,629				
6	10/11/90	1/1/91 - 1/31/91	152,032	12/11/90	104,181	30						
6		1/1/91 - 1/31/91					1/29/91	258,168				
6		2/1/91 - 2/28/91					3/28/91	50,870				
6	?	3/1/91 - 3/31/91		3/5/91	222,530	?	5/15/91	221,101				
6		3/1/91 - 3/31/91					5/24/91	20,873				
6		3/1/91 - 3/31/91					5/24/91	14,277				
6		3/1/91 - 3/31/91					7/2/91	42,243	9/17/91	38,106	3,137	75
6		3/1/91 - 3/31/91					8/14/91	32,819	10/21/91	32,819		67
6		3/1/91 - 3/31/91					10/21/91	4,034				
6		3/1/91 - 3/31/91					12/9/91	3,623				
	Subtotals		152,032		688,811			805,849		70,925	3,137	
21	5/7/91	4/1/91 - 4/30/91	737,165	–	–							
21		5/1/91 - 5/31/91					6/10/91	27,044				
21		6/1/91 - /6/30/91					7/2/91	66,785				
21	?	6/91 - 7/91	737,165	5/7/91	715,365	?						
21		7/1/91 - 7/31/91					8/14/91	97,137				
21		8/1/91 - 8/31/91					9/26/91	184,787				
21		9/1/91 - 9/30/91					10/21/91	115,368				
21		10/1/91 - 10/31/91					11/7/91	201,481				
21		10/1/91 - 10/31/91					3/14/92	34,131				
21	10/15/91	11/1/91 - 11/30/91	1,000,000	11/6/91	500,000	21	12/9/91	102,815				
21		12/1/91 - 12/31/91					1/212/92	108,233				
21	12/9/91	1/1/92 - 1/31/92	496,000	1/17/92	150,000	38	2/12/92	345,653				
21		2/1/92 - 2/28/92					3/4/92	207,605				
21		3/1/92 - 3/31/92					4/14/92	187,989				
21		3/1/92 - 3/31/92					5/1/92	95,906	6/8/92	92,130	3,776	37
21		3/1/92 - 3/31/92					5/12/92	138,730	7/5/92	128,711	10,019	53
21		3/1/92 - 3/31/92					5/19/92	3,776	?	95,906		
21		3/1/92 - 3/31/92					5/21/92	77,629	7/8/92	75,188	2,441	47
21		3/1/92 - 3/31/92		6/15/92	36,133	?	7/27/92	36,081	8/24/92	36,801		27
21		3/1/92 - 3/31/92					8/14/92	2,496				
21		3/1/92 - 3/31/92					8/26/92	7,562				
21		3/1/92 - 3/31/92					9/30/92	34,630				
21	4/2/92	5/92 - 6/92	1,064,901	4/15/92	400156 7	13						
	Subtotals		4,035,231		1,801,654			2,075,839		428,737	16,236	
26												
26				4/28/92	203,665	?						
26				5/13/92	416,297	?						
26	7/15/92	8/1/92 - 8/31/92	648,844	7/30/92	648,844	15						
	Subtotals		648,844		1,268,806	Avg # 23 4						Avg # 49 8
	GRAND TOTAL		4,836,107		3,759,271			3,027,133		645,106	19,373	
	Approximate US dollars		$1,812,036		$1,253,090			$1 009,044		$215,035	$6,458	

- MOH

Records provided by the PHICS accountant showed the MOH had reported US$1,009,044 to USAID in project expenditures, of which only US$215,035 had been liquidated. The FMO suggested this information was inaccurate, possibly because recent liquidations of resubmitted expenditures were not shown. Prior to the team's departure, the accountant did provide additional information on disallowed expenditures resubmitted for liquidation to USAID; however, this was not included in the analysis because of time constraints.

- MOW

Similarly, records provided by the PHICS accountant showed the MOW had reported US$1,974,661 in project expenditures, of which US$1,322,037 had been liquidated, leaving US$646,097 in outstanding disallowances.

- Other

Besides the expenditures incurred by the MOH and the MOW, USAID procures goods and services in foreign exchange in support of the project. PHICS expenditures are also expected to be incurred by the Lilongwe School of Health Sciences (LSHS), and the Save the Children Foundation of the United Kingdom (SCF-UK).

- USAID

Expenditures on direct USAID procurement should be calculated as total expenditures minus expenditures reported by the MOH, MOW, LSHS, and SCF-UK, which is how Table 1, PHICS Project Financial Status, was assembled. But this table is inaccurate because the MOH and MOW expenditures are inaccurate. No attempt was made to prorate USAID expenditures on rural water schemes or HESP activities based on LOP (life of project) budget proportions because the margin of error would have been too great to make the information useful.

- LSHS

Though funds have been earmarked for the LSHS, its activities are not covered by this evaluation since the team could not determine whether funds had been advanced or expended.

- SCF-UK

SCF-UK has received a 10 percent mobilization advance on a US$1.1 million contract. Though work has begun, further disbursements are not required until work is successfully completed in February 1993.

- Disallowances

Monthly reports on project expenditures are reviewed by the HPN office, which may disallow items that appear to be inconsistent with the PROAG, that exceed the budgetary allotments (authorized, obligated, and earmarked), or that raise questions about the legitimacy of the documentation.

Disallowances can cause unnecessary friction between a project and the mission, when a temporary decision pending more detailed information is mistakenly interpreted as reneging on a commitment or questioning some individual's integrity. Both MOH and MOW personnel expressed some confusion about the rules and standards used to determine disallowances.

When expenditures submitted to USAID are disallowed, the MOH and the MOW may either resubmit them with better documentation or use GOM funds to cover them. Disallowances should require reimbursements to the PHICS project bank account if the expenditures were made with funds advanced by USAID. Thus, the total outstanding disallowances reported by the MOW (US$94,325) do not represent the difference between total expenditures (US$1,968,134) and liquidated expenditures (US$1,322,037). According to the data provided by the PHICS accountant (MOW), the Rural Water Supply department of the MOW incurred expenses of US$551,771, which were disallowed by USAID and will not be resubmitted for liquidation. A similar analysis of disallowed MOH expenditures could not be made in the time available.

Tracking expenditures for purposes of project management appears to be impossible. The line items used to liquidate or disallow expenditures are the same half dozen proposed in the Project Paper. The MOH and the MOW indicated that they could provide information on how much was spent on a specific water scheme or MOH project component, but only after a laborious search of source documents. Even then, more than half the expenditures for PHICS are managed directly by USAID, and the accountants cannot provide complete, timely, or accurate information on how those expenditures track to a particular water scheme or MOH program component.

The number of disallowances of PHICS expenditures has been large enough for the USAID/HPN and FMO to call for an audit in March 1992. According to the FMO, the most frequent instances have related to insufficiently justified cash disbursements for training events and conferences held in the interior, gas consumption in the MOH, and inventory control on pipes and fittings in the MOW.

A team of auditors from Peat Marwick, under an IQC from REDSO/ESA in Nairobi, has made several trips to Malawi to inspect the PHICS project books and records, primarily in the MOH and MOW, and to visit construction inventory depots at the five water schemes in Sekwa, Usisya, Ruarwe, Chikwawa, and Namitambo. The auditors were still in Malawi while this evaluation was being written and had not yet issued their report. However, informal discussions with them and the USAID/FMO yielded the following observations:

- MOH

The accounting systems, in both design and execution, and the budgetary controls are adequate. Disallowances may largely be due to the fact that MOH project managers and the PHICS accountant are not clear as to what constitutes an allowable expense and what receipts should accompany expenditure reports.

The MOH motor pool is particularly well run, and documentation on gasoline consumption and vehicle repairs is detailed and easily accessible on computer.

- MOW

The accounting systems have been significantly improved with the assistance of a short-term USAID consultant in late 1991 and early 1992 (the consultant is now working for the FMO) but fall short in execution. This is true both at the administrative level (the timeliness of recording transactions and the orderliness and accessibility of files) and at the managerial level (enforcing controls on inappropriate encumbrances and expenditures).

The disallowances can be attributed to inadequate supporting documentation, arising not from a misunderstanding of what was needed but from poor records, and to lax enforcement of budgetary controls, resulting in the authorization of encumbrances and expenditures without sufficient funds in the necessary line items.

3.2.2 GOM Contributions

The financing plan counted on a GOM contribution equivalent to US$1.3 million, mostly in the shape of office space and stores facilities, equipment and vehicles, and the prorated value of staff time in the MOH and the MOW. The PP did not break down the contribution by ministry, and there has been no attempt to account for the actual value of the contribution to date.

- MOH

The national HESP coordinator indicated that he spends only about 3 percent of his time on PHICS activities, whereas the planned financial inputs to HESP would represent half its annual

budget if funds were released. Poor plans are responsible for blocking USAID funding of this component, which in turn has led the HESP staff to turn their time and attention to activities funded by other donors.

- MOW

Project progress to date would suggest that the MOW has contributed time sufficient to keeping the construction of PHICS planned water schemes on schedule (with allowances for design changes influencing the size and number of schemes being targeted).

3.2.3 Community Contributions

The PP estimated the equivalent of US$1.17 million from the communities to be served by PHICS, mostly in corvé labor for construction and maintenance of the water schemes, washing slabs, and latrines, and in small contributions to a water tap maintenance (replacement and repair of tap aprons and washing slab) fund in each village.

- Corvé Labor

Corvé labor is work in lieu of taxation to build or maintain a public good. It differs from volunteer labor in that the fruits of volunteer labor can be restricted to those who provide it (e.g., in a cooperative). The distinction appears arcane to many involved in the project now, but should be made and explained to the most senior project managers in the GOM and USAID, as it will be useful later for serious economic analysis. A village tap is a public good, which means that it would be difficult or costly to restrict access to the water to those who volunteered their labor. Therefore, as a public good, it should be paid for by taxation instead of by a consumption fee (as is done in urban areas). Since the villagers are considered too poor to pay a tax, they provide labor in lieu. This is what is meant by a self-help program.

Crews of unskilled labor for PHICS projects are assembled under the direction of MOW project site engineers in collaboration with Area Action Committees and the constituent Department Committees, and in close coordination with chiefs and other traditional leaders at the village level. Generally, villages contribute workers in rotation, so that the commitment of a year's labor may not require a villager to work more than one day per week. Thus, agricultural and other activities are not greatly disrupted.

The value of a day's labor in laying pipe and constructing the filters, intakes, and water storage tanks has been estimated at 1.50 kwacha per person. The number of hours or person-days of labor contributed has not been recorded, though apparently they have been sufficient to keep abreast of construction schedules. In fact, so far, contributed labor has been more reliable than the arrival of financing and commodities such as pipes and fittings.

- Tap Funds

Each village that has a water tap installed under PHICS owns the tap, the apron surrounding it, and the underground pipe within a denominated radius. When these elements need repair or maintenance, the community is responsible for paying for the parts (taps and cement for aprons and washing slabs) and for providing unskilled labor. If skilled labor is required, the MOW monitoring assistant or the department repair team generally makes the repair. Pipes are provided by the MOW.

In theory, monthly payments into tap funds are based on an estimate of the annual maintenance expenses divided by 12 months, divided by the number of households in a village.

Village Tap Committees are expected to collect the funds to maintain and repair water taps in each village served by PHICS. Discussions with several tap committee members at project sites revealed that most committees had only recently been formed. Very few had more than a few months of experience in collecting contributions and none had yet made any expenditures. This should not be surprising since only 12 of the 1,100 taps planned have been installed by PHICS to date.

- Community Development (HESP) Activities

The communities have further volunteered time to form village health committees to learn and pass along health and sanitation messages, to improve latrines, make washing slabs and dish racks, and to exercise vigilance in changing routine behaviors for improved health. None of these activities has been valued, nor have data been collected and aggregated to add to an estimation of the total value of community contributions to PHICS. Nor is it clear that this needs to be done, at least for community development activities.

3.3 Financial Management Systems Design

In the interest of sustainability, the PHICS project was designed to integrate project management and administrative and support functions with those of the GOM; thus no separate PHICS accounting or financial management systems were established. A coordinator from the MOH Planning Unit was sent to the U.S. to attend a short general course in project management. USAID reviewed the MOH accounting system and procedures as a condition precedent to advancing funds. PIL no. 1 provided the MOH with the formats for, and explanations of, SF-4206 (Advance Request Form) and SF-1034 (Report on Expenditures), along with a summary of AID procurement regulations. PIL no. 1 further indicated that a representative of the USAID/FMO had certified that the MOH accounting system was capable of managing advances from USAID consistent with U.S. government rules and procedures, as specified in the conditions precedent.

Apparently, the MOW was not given similar information and a certification of its accounting system, since it was not expected to receive advances. In August 1990, however, the MOW requested to be allowed to switch from operating on a reimbursement basis to operating on an advance of funds, like the MOH. In PIL no. 11 (8/20/90), USAID earmarked funds under an advance system and provided the MOW with the same forms and explanations given the MOH in PIL no. 1. The HPN files did not show whether a certification review of its accounting system was conducted prior to the issuing of advances. But the FMO indicated that the accounting system was reviewed and certified in December 1990, three months after the first advance.

3.3.1 Planning, Budgeting, and Budgetary Management

Both the MOH and the MOW operate on the GOM schedule, using a program year beginning on April 1 and ending on March 31. They prepare drafts of the next year's budget in November or December and submit them to the Ministry of Finance (MOF) for compilation into a total GOM budget, which is printed and issued in March.

The PHICS Coordinator in the MOH and the Rural Water Supply Department of the MOW submit draft budgets for PHICS activities to their respective ministries, and await the issuance of the GOM national budget prior to submitting their PHICS budgets to USAID. This has meant that PILs earmark funds retroactively for the April 1 to March 31 project year, based on cost estimates developed six months earlier, submitted to USAID in April or May, and not approved until some time between May and July. Annual plans should be based on life-of-project implementation estimates, which either do not exist or are not being used. The budgets should flow from the plans, and the delay between estimating budgets and approving the release of funds should be as brief as possible. This is to provide the implementation manager some flexibility, especially where costs may change quickly because of exchange rate fluctuations and inflation.

The formats for GOM budgeting differ greatly from those for submissions to USAID. The MOW budgets provide object-of-expenditure line items (in kwacha) for the Rural Water Supply HQ office and for each water scheme. The MOH budgets provide object-of-expenditure line items (in kwacha) for the PHICS Coordinator's office and five program departments. The submissions to USAID contain similar details, but the PILs earmark funds in dollars, providing the kwacha equivalent for reference, without breakdowns by program department for the MOH, or by site for the MOW.

The confusion in defining line items and budget formats makes it difficult to track expenditures to a specific water scheme and calculate unexpended balances. This is especially so because USAID, which manages more than half the expenditures, does not use the GOM categories for direct expenditures and recognizes them only as unofficial, untracked, illustrative kwacha budgets in the PILs earmarking funds managed by the ministries.

- MOH

The PHICS Coordinator indicated that work plans are not prepared prior to submitting budget estimates to her superiors in the MOH. However, as a result of USAID requests for further justification and explanation of how funds would be used, the PHICS management department and the other PHICS program components (IEC, OR, HIS, CS, and HESP) began to develop individual work plans that are consolidated by the PHICS Coordinator for submission to USAID.

Ideally, the development of work plans should precede the development of budgets. However, since this is not done, the budgets cannot be used later to compare actual activities and their costs with what was planned in order to improve efficiency. There was some indication that the PHICS program component managers in the MOH would not be interested in, or capable of, participating in a joint planning and budgeting exercise. This cannot be accepted. The plans and budgets must be developed by the program managers themselves as essential management tools. If they are incapable, they should be given training. If they are unwilling, they should be replaced or funding terminated.

The PHICS accountant in the MOH indicated that both he and the Coordinator had proposed, early in the first project year, a joint planning and budgeting workshop for all PHICS components in both the MOH and the MOW, but that the USAID/HPN project officer at that time (1989) felt it was unnecessary. If this is true, the project officer was responsible for a serious failure to support rational project and financial management.

- MOW

The PHICS activities of the Rural Water Supply department have primarily involved the construction of new, and the rehabilitation of existing, water schemes. This phase is expected to be followed by an operation and maintenance (O&M) phase beginning prior to the completion of PHICS funding and continuing for the normal operating life of the schemes.

The host country and expatriate engineers engaged in construction are well qualified to prepare detailed plans and cost estimates. Variances between cost estimates and actual expenditures were reportedly not due to improper planning and budgeting or procedures.

It was not clear what planning and budgeting procedures will be used during the O&M phase of the project. Nor can the skills of those involved be judged, since there will be significant staff changes in the transition between phases.

3.3.2 Encumbrances

Encumbrances refer to commitments made against budgeted line items in a fund accounting system. In theory, the standard GOM systems provide for comparing vouchers with budgetary balances prior to authorizing commitments (contracts, purchases orders, etc.). The design of the MOH accounting system, which was reviewed and certified by the USAID/FMO prior to advancing funds at project startup, does not differ significantly from that of the MOW. In practice, there are wide divergences in the manner in which GOM policies and procedures are implemented.

- MOH

When the PHICS Coordinator or the program managers want to commit or spend project funds, they submit a voucher to the PHICS accountant signed by their line supervisor in the MOH, along with written justification that the activity it is intended to fund has been approved by USAID. In most cases the annual work plan, if sufficiently detailed and approved by the USAID project officer, is accepted by the PHICS accountant as adequate justification. If, however, the voucher is for an unforeseen activity or not clearly enough authorized by the work plan, the Coordinator and the accountant may choose to refer the program manager back to the USAID/HPN office for specific approval. Such approval may come in a PIL or a less formal letter confirming the activity's appropriateness.

Since the focus of this evaluation was primarily on the HESP component, no determination was made of how well this stage of funding has operated in the other components. However, for HESP it appears that significant slowdowns in project spending have occurred because of frequent disagreements on work plans and the identification of appropriate PHICS activities, not because of a lack of project funds at USAID or in the MOH PHICS accounts at the Bank of Malawi. Adequate and timely obligations, earmarkings, and advances were made to cover encumbrances.

- MOW

The systems used by the MOW for authorizing encumbrances of PHICS project funds are the same as those used for committing MOW funds received from the MOF and those of the MOH. The implementation of those systems has apparently been inadequate, especially in checking requests for commitment of funds against budgetary balances. The problem appears to be general, at least to the Water Department, and not PHICS specific. The Rural Water Supply department has reportedly overspent its PHICS project funds and its MOW budgetary allotments in each of the years the project has been in operation.

3.3.3 Cash Receipts and Disbursements

Normally, receipts and disbursements are controlled by a journal in which entries in chronological order record all receipts that increase the standing balance and disbursements that reduce it. The balance should be the same as the balance in the bank, except for deposits not yet recorded or checks written but not yet cashed.

The accountants in both the MOH and the MOW keep such journals, which should also include breakdowns by line items or be supported by ledgers that allocate the expenditures to program budgets (water schemes and subline items in the MOW, and program components and their subline items in the MOH). It is not certain that such summary records with totals and unexpended balances by program area are maintained. Accounting for receipts and disbursements is further complicated by the limitations of the banking system in Malawi. Payments occasionally are made in cash, especially in field activities. This requires routines and forms for temporary internal advances and transfers, the means for allocating them to program areas, and liquidating them when the transactions are completed.

The evaluation team had too little time to gain a complete understanding of all project books and records. Return visits frequently can turn up records and subsystems that through miscommunication were previously said not to have existed. However, a cursory review of the PHICS MOH and MOW accounting systems suggests the following:

- MOH

Cash disbursements for HESP have been blocked for most of the life of the project by a lack of pre-approved work plans and budgets. The expenditure records are file folders containing originals of expenditure receipts, photocopies of documents exchanged with USAID to request advances, and reports on expenditures. The evaluators could find no journal or ledger that clearly separated a budget, earmarkings, advances, and expenditures (liquidated and disallowed) specifically for HESP.

An accurate determination of allocations to, and expenditures by, HESP under the PHICS project would have required an examination of voluminous receipts.

- MOW

The situation in the MOW is similar. To identify the costs of each water scheme would require a reorganization of the USAID earmarkings according to GOM budget categories and a monthly summary of expenditures along these lines by the PHICS accountant when submitting reports. He would have to examine the source documents to do this, and even then would not find data on direct USAID expenditures that he could attribute to each water scheme.

The PHICS component in the Rural Water Supply department has run up significant overdrafts at the Bank of Malawi in each of the years the project has been in operation. This

presumably is how most of the disallowances have been temporarily covered without resubmitting documents to USAID for approval. The Bank of Malawi is not a commercial bank but a division of the national treasury. The overdrafts are permitted because the PHICS account is only a subaccount of the main treasury account of the Department of Water, which has sufficient funds in other subaccounts to cover the overdrafts.

3.3.4 Financial Reports

Financial summaries explaining the evolution of funds earmarked for the ministries are attached to each PIL but only sometimes to the documents in the HPN files (PIO/Ts, PIO/Cs, and DOs) that earmark funds for direct USAID procurement. These summaries give an overview of the status of authorizations, obligations, and earmarkings for funds managed by the MOH and the MOW. They do not provide a breakdown by ministry, subprogram, or water scheme of the earmarkings made by PIO/Ts, PIO/Cs, or DOs. More than half of the earmarkings are for such direct expenditures, and without a breakdown it is difficult to determine the costs of specific PHICS activities.

USAID provides the ministries with copies of PIO/Ts, PIO/Cs, and DOs pertaining to their PHICS activities, but does not give any summary of expenditures to date or unexpended balances, and does not number these documents so that it can be determined whether or not the sequence is unbroken and complete. Neither the MOH nor the MOW attempts to attribute these USAID-procured inputs to specific program components (MOH) or water schemes (MOW), and has no idea of what, how, why, and when USAID does what it does to implement direct procurement. It follows that the ministries are uninformed of the full costs of PHICS activities.

The USAID FMO maintains records and computerized summary reports of the status of encumbrances, liquidated expenditures, and disallowances, inter alia, for all PHICS funds. When the project began (1989), the HPN office was asked what line items should be used in coding PHICS financial data in the FMO reporting system. Since it gave no indication, the FMO went ahead and used the half dozen line items from the PHICS Project Paper (technical assistance, training, commodities, operating expenses, evaluations and audits, and contingencies). With the PP supplements, three more were added (direct grants to SCF-UK, NGO grants, and construction).

These categories do not distinguish between budgets, expenditures, and balances for each ministry, nor by water scheme or program component. Hence, it is impossible for summary financial reports to provide complete, useful, and timely data on accrued expenditures that can be related to the percentage of project completed by the MOH, the MOW, and other grantees.

3.4 Input Supply Management

The requirements for project inputs were estimated in the Project Paper and were expected to be refined annually during the development of plans and budgets. Original estimates have been modified in both the MOH and the MOW. In the MOH, this has been largely a redefinition of sources (e.g., bicycles for the HSAs will now be provided by the World Bank PHN Project instead of by PHICS). In the MOW, new geological data uncovered during project implementation and a value engineering workshop in January 1992 have resulted in changes to specifications for materials for RWS schemes under PHICS.

Materials for PHICS projects are obtained in several ways. Request orders (ROs) are used for items carried in stock by the ministry, and local purchase orders (LPOs) are used for items costing less than 3,000 K (US$750) and available from local suppliers. Items costing more than 3,000 K but less than 30,000 K (US$7,500) require a requisition and purchase voucher (RPV) submitted to the Central Stores of the Ministry of Finance for purchase. Requests for items costing 30,000 K or more are submitted to the Central Tendership Board (CTB), which prepares request-for-proposal (RFP) announcements using MOW specifications.

Discussions with the RWS and the Stores Department of the MOW and the USAID FMO indicated that the PHICS project largely has bypassed the Stores Department, with the sole exception of the stores clerk at Chikwawa who has been trained by, and reports to, this department. In all other cases, stores clerks are hired locally by the project engineers, have received no inventory management training, are not overseen or guided by the Stores Department, and provide no data to either the Central Stores Department or the RWS in Lilongwe on the status of their inventories.

3.4.1 International Commodities Procurement

One large international tender for US$1.4 million, approved in PIL no. 15 (October 16, 1990), was managed by the RWS through the Central Tendership Board (CTB) for the purchase of pipe and fittings. The turnaround time on this procurement was 90 days from the time the specifications were submitted to the CTB to the time the goods arrived at the work sites. It was not clear what problems may have arisen in the management of this procurement, but subsequently the Regional Procurement Office of REDSO/ESA Nairobi recommended that the CTB be de-certified for large PHICS procurements. This has resulted in delaying project inputs, especially pipe and fittings.

USAID has considered managing all large procurements through the Regional Procurement Office of REDSO and has estimated that the turnaround time would be about one year, which would impose unacceptable delays upon the project. The audit of PHICS under way could show that the problems in the MOW may have had more to do with inventory control than procurement procedures. This finding and the unacceptably long turnaround time for REDSO procurement could lead USAID once again to approve large host country procurements under PHICS.

- Procurement Agent (Chemonics International)

Most large international orders, other than for MOW construction materials, are procured by Chemonics International, with USAID/ Lilongwe as the consigning agent. The mission provides Chemonics with specifications and receives the goods upon entry into Malawi. Some errors in specifications resulting in wrong shipments were reported. From a financial and assets management perspective, it could not be determined whether this anecdotal evidence reflected mere inconvenience or serious detriments to project progress.

3.4.2 Monitoring and Recordkeeping of Acquisitions and Issuances from Stocks

The turnaround time on procurement by Chemonics seemed satisfactory. USAID verifies that what is received corresponds to what was ordered and signs the items over to the MOH and the MOW. With the exception of the vehicles assigned to the MOH and MOW motor pools, there are no records of these transactions, no log of serial numbers and locations of large ticket items, and no routine reports (e.g., annually) on the status of equipment bought by PHICS.

3.4.3 Periodic Inventories

Storekeepers at the project sites do a physical count of all items in inventory monthly. Several indicated that if discrepancies are found, they are merely reported orally to the engineer and no explanatory or correcting entries are made in the records.

3.5 Accounting and Inventory Staffing and Supervision

A superficial review suggested that both the PHICS accountants (MOH and MOW) are qualified bookkeepers who maintain recordkeeping systems adequate for a general audit (the pending audit may determine otherwise). However, the project systems as designed rely too heavily upon the constant manipulation of source documents (receipts, invoices, vouchers, etc.) and do not aggregate or summarize information in a way that is useful to GOM project managers or the HPN office of USAID.

The inadequacy of project systems for program management and the fact that disallowances went unaddressed and grew for so long suggest that the accountants are not qualified to identify and rectify deficiencies in the accounting systems they operate. Over the past year, many of the lower- level accounting problems were addressed with some technical assistance and training. The FMO supervised a PSC (personal services contractor) who worked with the MOW accountant.

Chapter 4

HEALTH EDUCATION AND SANITATION PROMOTION (HESP)—PROJECT EFFICIENCY

4.1 Introduction

HESP is an integral part of the MOH Environmental Health Section and has been in existence for nearly a decade. It was engaged in activities under the USAID-supported Self-Help Rural Water Supply Project, which operated from 1980-1988. In the final evaluation of this project, a WASH team (Field Report No. 186) made the following favorable observations:

> "HESP has proven itself to be an integral companion to piped water supply as a means of raising rural living standards and improving the health of rural populations in Malawi. For this reason, the HESP component of any future follow-on project should have the objective of providing health education and sanitation promotion activities to all rural areas having piped water projects, both USAID-financed projects and non-USAID projects. Such an expansion of the current HESP program would require an increase in both MOH staff and project funds. Because of the proven effectiveness of HESP in the rural piped water program, it is recommended that a future follow-on project provide sufficient resources to the MOH to assist it in bringing HESP activities to all rural piped water areas."

Unfortunately, our evaluation team found little evidence of the success of HESP because of an almost total lack of activities under the PHICS project. The HESP component has not been efficient and has no documented implementation plan. Its annual budgetary submissions have been severely criticized by USAID, which cannot see how its proposals come together to form a cohesive plan.

The overall objective of the HESP component is:

> To strengthen and expand the MOH Environmental Health Unit and the Health Education and Sanitation Promotion (HESP) program to promote the adoption of hygiene practices and increase the use of sanitation services and facilities.

It was supposed to cover the 55 gravity-fed water schemes constructed under the Self-Help Rural Water Supply Project (SHRWSP) and the 13 new schemes to be constructed under PHICS. These water schemes are located in 17 districts to serve a population of 1.7 million. The HESP component of SHRWSP covered only 18 schemes.

4.2 Inputs to HESP

Inputs for the HESP component as stated in the Project Paper included commodities such as trucks, four-wheel-drive vehicles for movement of materials, and light pickups, motorcycles, and bicycles for transport of staff; materials for latrine and washing slab construction (cement, reinforcing bars, and tools); and materials for worker housing. PHICS would provide training for HESP staff and, on a declining basis, meet operational expenses and staff salaries. There was no provision for technical assistance.

4.2.1 Financial

HESP was allotted $1.85 million, or 12.3 percent, of the original PHICS budget of US $15 million, second only to the Rural Piped Water Supply component of the MOW. The allocations for subcomponents were as follows:

Category/Donor	USAID	GOM	Communities
1. Training	$297,000	$132,000	
	(16 percent)		
2. Commodities	$981,000		$146,000
	(53 percent)		
3. Operating Expenses	$572,000		
	(31 percent)		
Salaries	$488,000	$197,000	
Fuel and Maintenance	$84,000		
Total Percentage of Grand Total	$1,850,000	$329,000	$146,000
	(80 percent)	(14 percent)	(6 percent)
Grand Total for All Project Partners = $2,325,000			

Given that the proposed HESP component was to cover a population of approximately 1.7 million, the per capita cost was $1.38 for all project partners and $1.09 for USAID alone.

In mid-1990, the GOM, USAID, and the World Bank's Population, Health, and Nutrition Project (PHN) decided that PHN would fund the salaries of all health surveillance assistants (HSAs) and USAID would fund the training of the 4,000 new HSAs to be recruited. A training component was added to PHICS and would receive all salary support funds for HSAs transferred from HESP and other PHICS components. Thus, the USAID contribution was

reduced by $167,000 (for HSA salaries and bicycles) to $1,683,000, making the new per capita cost for all project partners $1.27 ($2,158,000/1,700,000).

4.2.2 Commodities

Expected vs. actual inputs of HESP components are shown below:

Commodities	Received as of 10/1992
7-ton truck	1
1 land cruiser (4wd)	1
10 light pickups	3
50 motorcycles (HAs)	20
250 bicycles (HSAs)	0
Miscellaneous tools	some
House building equipment	none
Tools and equipment	some
Materials	???
San Plat latrine materials	1 percent purchased
Washing slab materials	1 percent purchased

A computer requested by the HESP central coordinator has not been authorized because it was not budgeted for.

4.2.3 Personnel

MOH personnel in HESP activities funded by PHICS are supposed to be located at the central, regional, district, supervisory (HAs), and community (HSAs) levels. The project design recognized that HESP was understaffed and needed more positions to achieve its coverage targets. The new staffing plan added the following positions:

- Central Level HESP Coordinator—1
- Regional Level HESP Coordinators—3
- District Level HESP Coordinators—10
- Supervisory Level HAs—50
- Community Level HSAs—250

The actual HESP staff at the central and regional levels and in the 14 target districts during the past three years included:

- Central Level HESP Coordinator—1
- Regional Level HESP Coordinators—0
- District Level HESP Coordinators—20
- Supervisory Level HAs—24
- Community Level HSAs—136

The HESP coordinator at the central level is a senior health officer with the equivalent of a master's degree in environmental health and 19 years of GOM service. He has been associated with HESP since its creation and is the project manager for HESP under PHICS. He holds a district post and can spend a maximum of 50-70 percent of his time on the PHICS project. In fact, he has spent only 15 percent of his time on this during the past year.

4.2.4 Training

Many types of HESP training were planned and considerable funding was allocated in the PP, but no targets were given for each type of training.

4.2.5 Information, Education, and Communication

No funds specifically were allocated for this component, but the PP stipulated coordination with the Health Education Unit.

4.3 Implementation Activities

4.3.1 Overview

The team visited the HESP component of the Mpira Balaka rural piped water scheme, an African Development Bank and Danida funded project considered a model for HESP in Malawi. It appears to have picked up where the Malawi Self-Help Rural Water Supply Project left off in 1986. This HESP component is well planned and adequately staffed, has motivated and well-trained people, is smoothly funded, and has received timely technical assistance in planning, implementation, monitoring, and evaluation. Even though the scheme is quite large, covering a population of 354,000 with 1,830 water taps, it is a defined area that can be managed by a team approach. There are 30 HESP workers including two project coordinators,

four HAs as supervisors, and 24 HSAs. External reviews of this project have been favorable and have recommended actions to improve HESP implementation.

In 1991, the local currency budget for the HESP component of the Mpira Balaka project was approximately 1.1 million Kw, or $367,000, making the per capita cost $1.48, approximately 15 percent higher then PHICS funding of the component. But funds are not the main issue here. What is important is the ability of the HESP component to plan, implement, and evaluate an effective program spread over 3 regions, 17 districts, and 68 water schemes (55 existing and 13 under PHICS).

HESP now is a number of projects funded by various donors. The question is whether it can be developed as a national program covering the entire population of Malawi. Under the Self-Help Rural Water Supply Project, its activities, were commended in the final evaluation, covered only 18 of 55 (33 percent) water schemes.

4.3.2 Functioning of HESP—Roles and Responsibilities

It was apparent in Mpira Balaka as well as Machinga East that there is a strong foundation for HESP activities within the MOH. Successful and efficient functioning of HESP depends on a strong and well-trained District Coordinator responsible for the planning, supervising, and evaluating of activities as well for the primary training of lower-level staff. The HAs who supervise HSAs in the area must be skilled in HESP concepts, supervision, and training. PHICS has no regional HESP coordinators, though there are regional health inspectors who could play a greater role in HESP activities.

The HSAs, who have been around since the 1970s, originally worked in cholera prevention and focused on environmental health. They have been the cornerstone of the HESP component and also have been used in health clinics and hospitals and in various programs run by the MOH or NGOs. In 1990, the GOM, supported by the World Bank and other donors, decided to increase the number of HSAs to 4,000 so as ultimately to reach a coverage of 1 HSA for 2,000 people. At present, there are about 750 new HSAs who will be given a six-week course covering 14 primary health care topics. In essence, the HSA will be a PHC worker with a preventive health focus. (See Appendix x for job descriptions of HSAs for HESP and of the newly trained HSAs.)

The HSA works in groups of villages, selecting 10 villages initially and visiting each one weekly to provide the following services:

- Introduction of village leaders to HESP activities
- Formation or reformation of a VHC (10 members)
- Orientation of VHCs in roles and responsibilities
- Baseline survey collection with the VHCs

- Persuading VHC members to improve hygiene and sanitation in their homes as a model
- Latrine promotion and skills training for sanplats
- Helping villagers construct sanplats for their own homes
- Intensive hygiene and sanitation training of VHCs
- Assisting VHCs in educating population in HESP
- Monthly village inspection to complete reports
- Construction of washing slab at water point if applicable
- Organizing clean village campaigns

After the targets have been reached, usually in one year, the HSA moves on to another group of villages to do the same things, returning to the first group periodically to check on progress.

This approach is basically sound, but the HSA concentrates on environmental factors such as clean houses, dish racks, bath houses, and kitchens to the detriment of hygiene practices such as hand washing, water handling, water storage and the two-cup method for drawing water. The HSA does not educate households in managing diarrheal diseases, nor in controlling schistosomiasis, a scourge infecting large numbers of people in prone areas, though washing slabs are to be constructed at water points in the 68 old and new schemes.

The total number of villages to be covered under PHICS is not known, though the approach seems to be to include villages that are served by gravity-fed systems.

There have been attempts to coordinate water (MOW) and HESP activities at the village level. The MOW forms tap committees and HESP forms village health committees (VHCs). In some places these committees are linked, but often they are not. More coordination, especially in new water schemes, should take place and training should be conducted jointly. Coordination at the district level is extremely important.

4.3.3 Training

HESP is responsible for training district coordinators, HAs, HSAs, and VHCs, but only bits and pieces of an overall training plan for the HESP component under PHICS could be found in various documents. There are no training curricula or manuals, except for one on communications skills training developed by Healthcom under the previous rural water project. This is surprising considering HESP training has been given for more than a decade. Under PHICS, HESP was supposed to prepare training manuals for HSAs and VHCs but has not done so.

The courses given and the trainees who attend are shown in Table 6.

Table 6

HESP Training Activities

Course	*Trainees*
Development of training manuals for HSAs and VHCs	District HESP Coordinator DHIs, SHAs, HA
Data collection, analysis, and utilization	District HESP, HA
Construction skills training	HAs and HSAs
HSA training	HSAs
HESP concept and strategies (3 days)	
Data collection, analysis, and utilization (3 days)	
Community mobilization, approach and supervision (3 days)	
Hygiene education training skills (5 days)	
Water-and sanitation-related diseases (3 days)	
Water, personal, and domestic hygiene (3 days)	
Village Health Committee training	VHCs

Newly hired HSAs will need instruction in HESP concepts prior to training. The new six-week course should prepare them to begin HESP activities though they will not be fully versed in all HESP areas after completing it. The 20-day training may not be needed in its entirety. Training in construction skills will be essential.

The HAs are given a good grounding in environmental issues but may need more instruction in training-of-trainer skills since they are involved in HSA training at the district level.The skills of the HAs in constructing sanplats and washing slabs should also be verified and they should be given additional training if needed.

4.3.4 Monitoring and Evaluation

HESP has numerous reporting forms. The HSAs and HAs send information to the district level, which is supposed to compile a quarterly report for the central office. The central office is expected to prepare a summary of district activities, but since the initiation of PHICS has prepared no reports of this type.

With the assistance of the VHCs, the HSAs collect baseline information on the number of households with latrines, bathrooms, kitchens, water storage systems, dish racks, and refuse pits. Every month or sometimes every quarter they return to find out how many more households have added these improvements. Baseline and follow-up data are compared in graphs. In Machinga East, baseline information showed that only 15 percent of households had water storage systems. At follow-up three months later the figure remained the same. This should have alerted HESP workers to a problem, but they had no plans for encouraging better storage and handling of water.

Besides the reporting indicated, HESP has no monitoring or evaluation plans. The emphasis remains on physical environmental factors. Hygiene practices linked to decreasing and managing childhood diarrheal and other water-related diseases are ignored.

4.3.5 Construction

The completion of 62,500 Sanplats for latrines and 8,000 washing slabs at water points in the existing 55 water schemes is the main construction activity for HESP. Tools and construction materials are provided under PHICS. Community members are taught to make their own sanplats. Washing slabs are constructed by the HAs with community assistance.

In the PP design, PHICS is required to provide building materials for houses for 10 HAs which health workers and the communities will construct. PHICS may need to provide some skilled labor to get these houses built.

4.3.6 Information, Education, and Evaluation

HESP has no information, education, and evaluation (IEC) plan nor any visual aids for training VHCs and community members in hygiene and sanitation, though is was supposed to produce some posters. The health education unit, also funded by PHICS, has not worked with HESP to develop any educational materials. The Mpira Balaka project has begun pre-testing some visual aids for HSAs that appear to meet the needs of HESP and emphasize hand washing, water storage, use of the two-cup system, etc. The HEU did work with HESP on the design and pre-testing of these aids.

Besides the personal contact of the HSA, HESP has not considered other channels that could be used to spread messages on HESP to the community, e.g., radio, the HEU band, etc. The HESP national coordinator claimed that schools were being targeted, but there was no evidence of this during the site visits. The school health activities of HESP should be reviewed as part of IEC planning.

The HESP component of PHICS has no funds for IEC materials and the HEU has no funds for large-scale production of HESP materials. The budget must be revised to cover production of materials for VHCs, HSAs, and the schools.

4.3.7 Project Management

Planning and Reporting

Since HESP has no detailed implementation plan (DIP), its annual budgetary submissions are carefully scrutinized by USAID, which questions many of its proposed activities. One annual PIL is issued for each ministry and delays in submission and approval of work plans result in funding being held up for months and activities are brought to a halt. For this reason it was

difficult to assess any achievement of expected outputs. Only personnel and construction plans have proposed targets.

Financial Management

The authorization and approval of funds has not been adequate, and problems with disbursement have caused extreme delays in HESP activities. Annual budgetary plans have been prepared at the district level, but money is disbursed only in response to individual requests. This process is long and arduous and has greatly impeded work. The HESP project manager needs more authority in managing the budget and training in how to do this.

Coordination

Coordination throughout PHICS is very weak. HESP and the MOW have no provision for this in their annual work plans because these are budgetary not implementation work plans. They need to work more closely to maximize the health benefits of improved water systems. The HSAs and the monitoring assistants should be giving out similar messages concerning health education and sanitation and operation and maintenance. The training of tap committees and village health committees should be coordinated and conducted jointly by MOW and HESP wherever possible.

Within PHICS, HSA training, the HEU, the control of diarrheal diseases (CDD) program, and the HIS section of the community health services unit (CHSU) should all work together in planning and evaluating their activities.

Table 7

Outputs of HESP Component

HESP Component	*Planned vs. Actual Activities*								
ACTIVITIES	*Expected LOP Targets*	*YEAR (90/91) 2*		*YEAR (91/92) 3*		*YEAR (92/93) 4*		*Actual Totals to Date*	*% Compl. vs. LOP Targ.*
		Planned	*Actual*	*Planned*	*Actual*	*Planned*	*Actual*		
PERSONNEL									
■ HESP Coordinator Central level	1	1	0	1	0	1	0	0	0
■ HESP Coordinator Regional level	3	3	0	3	0	3	0	0	0
■ HESP Coordinator District level	10	10	0	10	0	10	6	6	60
■ HAs (Supervisory level)	50	25	0	25	0	25	13	13	26
■ HSAs (When staff arrived is unknown.)	250	?	?	?	?	?	136	136	54
TRAINING									
■ Workshop for development of training manuals for HSAs in HESP				2	0			0	UNKNOWN
■ Workshop for development of training manuals for VHCs				?		?		0	
■ TOT for Reg/District Coordinators for participatory training methods						1	0	0	
■ Hygiene education skills workshop for new HSAs						4	0	0	
■ Workshop for training HAs/HSAs on construction techniques				3	?	14	2	2	
■ VHC refresher training workshops				13	?	28	2	2	
■ Exchange visits for VHCs						7	0	0	

TRAINING (con't)							
■ Orientation of new HSAs				?	1	1	
MONITORING AND EVALUATION							
■ Workshop for district coordinators and HAs on data collection and analysis		5		?	2	2	UNKNOWN
■ Regional review and planning meetings		0		3	1	1	
■ Printing of HESP report forms		1	1	1	?	1	
■ Annual HESP evaluation	3	1	0	1	0	0	
CONSTRUCTION							
■ HAs houses	10	10	0	10	0	0	0.0
Washing slabs	8,000	?	10	168	6	16	0.2
■ Sanplats for latrines	62,500	?	44	42,000	279	323	0.5
IEC							
■ Video filming of sanplat construction		1					Not
■ Production of posters for sanitation and water	9 posters			9 x 500	0	0	Planned
■ Clean-village campaigns		2			1	1	
PROJECT MANAGEMENT							
A. Procurement							
■ HSA bicycles *	250					0	0
■ Materials for HAs houses	10					0	0
■ Tools for sanplat construction						some	some
■ Construction materials						some	some
■ Project computer	1					0	0
■ Calculators for District HESP	?			20	0	0	0
■ Project vehicles/pickups	10	10	3			3	30

■ Motorcycles	50	50	20			20	40
■ Project lorry (1) and 4wd vehicle (1)	2	2	2			2	100
B. Planning and Reporting							
■ Annual workplans	3	1	1	1	1	2	67
■ Annual reports	3	0	1	0	0	1	33

(*) Bicycles are to be purchased by PHN World Bank. The absence of bicycles is negatively afffecting HESP work.

4.4 Outputs

Table 7 shows the outputs of the HESP components.

4.4.1 Personnel

It was difficult to evaluate HESP's staffing pattern. The HSAs assigned to HESP and PHICS are all new recruits, most of whom have not gone through the six-week training. (See Tables 8 and 9 for total planned versus actual staff and HSA staffing by district, respectively.) The HAs, who supervise them, are in short supply. With no regional HESP coordinators, supervision and regional planning are left to the national level. A manpower study scheduled to occur early in the project did not take place.

Table 8

Summary of Planned vs. Actual Staff for HESP Component

LEVEL	*No. of staff at startup of PHICS (1)*	*Planned No. of new staff supported by PHICS (2)*	*No. of staff currently working on HESP (3)*	*Actual No. of new staff supported by PHICS (4)*	*% completion of manpower by PHICS Pld. vs. Actual (4/2)*
CENTRAL	1	1	1	1	0
REGIONAL	0	3	0	0	0
DISTRICT ■ HIs/SHAs	14	10	20	6	60
SUPERVISORY ■ HAs	11	50	24	13	26
COMMUNITY/ WATER PROJECT ■ HSAs	63	250	155	136	54
Total	89	314	200	156	50

Table 9

HSA Staffing by District for PHICS HESP Activities

District/Water Scheme existing/new		*Pop. Served*	*HSAs Working on PHICS*	*HSAs (+) Needed on PHICS*	*Pop./HSA Currently on PHICS*
NORTH REGION					
SCHEMES	19/11				
RUMPHI	5/3	62,850	9	31	6,983
KARONGA	4/0	43,600	14	22	3,114
MZIMBA**	4/1	183,000	9	92	20,333
KASUNGU	1/0	32,000	?	16	
CHITIPA	4/2	119,912	4	60	29,978
NKHATA BAY	1/5	68,240	10	34	6,824
SUBTOTAL NORTH		509,602	46	255	11,078
CENTRAL REGION					
SCHEMES	10/1				
NTCHEU	6/0	83,200	23	42	3,617
DEDZA**	1/1	46,400	N/A	23	0
MCHINJI	1/0	20,000	2	10	10,000
NKHOTAKOTA	2/0	43,000	7	22	6,143
SUBTOTAL CENTRAL		192,600	32	96	19,760
SOUTH REGION					
SCHEMES	21/3				
ZOMBA	5/0	201,000	6	101	33,500
MULANJE**	11/0	427,000	8	214	53,375
MACHINGA**	7/0	137,200	20	69	6,860
MANGOCHI	1/0	12,000	12	6	1,000
CHIRADZULU	1/R	60,000	4	30	15,000
CHIKWAWA	1/1	179,900	8	90	22,488
THYOLO	0/1	24,400	N/A	12	0
SUBTOTAL SOUTH		1,041,500	58	521	132,223
GRAND TOTAL		1,743,702	136	872	163,061

** (Salima and Dowa are also CS Target Districts but will not be covered by gravity schemes.)

(+) = calculated as 2,000 population for each HSA.
The target is expected to be reached by 1997.

4.4.2 Training

Since there are no targets for training, it was not possible to assess the percentage of completion.

4.4.3 Monitoring and Evaluation

Except for construction targets, no information on outputs was available, which does not mean that no activities are taking place at the district level. There is no central summary to document field activities, some of which are reported while others are not. There was no information on the percentage of reporting. Though this information could be tabulated by hand, a computer would facilitate a national tracking system of data. Regions could also be more involved if posts were staffed at this level.

4.4.4 Construction

Construction is taking place only in Nkata Bay, Rumphi, Machinga, Mangochi, and Karonga, where 503 (0.8 percent) of the planned 62,000 sanplats have been constructed and 226 have been installed. The HESP project manager's explanation for this slow progress was that he had no funds for training HAs/HSAs in construction techniques. USAID questioned whether this training was necessary, but it appeared that the six-week course does not adequately equip the HSAs since it gives them little practical training.

4.4.5 Information, Education, and Communication

There were no outputs or actions to evaluate. The Mpira Balaka HESP project is producing visual aids that could be produced for PHICS as well.

4.4.6 Project Management

Roughly 35 percent of project vehicles have been received. Construction supplies will be procured locally but a system is needed to ensure they are sent to the field in time. Some tools have been purchased but more are needed. Better coordination between HESP and the MOW must be stressed again.

Chapter 5

RURAL WATER SUPPLY—PROJECT EFFICIENCY

5.1 Introduction

Rural water supply was given major emphasis in the original PHICS project design. Preliminary studies used in the Project Paper called for the construction of 14 new systems and the rehabilitation of one system to serve a total of 245,000 people. As more studies of water yields and designs of intake and distribution systems were completed, several changes in costs and population coverages were made. A value engineering workshop held in January 1992 introduced changes in design standards that gave some systems priority and expanded others. Present plans call for 13 new systems and two rehabilitated systems, and the expansion of one of the 13 new systems, Chikwawa, to include intakes at five different sites.

As an add-on to the PHICS project, a $1.1 million drought assistance grant administered by Save the Children-UK is providing for the construction of 80 new boreholer and rehabilitating 50 old over.

5.2 Inputs to Rural Water Supply

Inputs to the water component of the project are finances, personnel, and commodities.

5.2.1 Finances

In the original PHICS estimated budget, the MOW of Works was allotted $5,099,000 for rural piped water activity. The amount spent to date was not available for reasons explained in the finance department of this report.

5.2.2 Personnel

One full-time expatriate engineer, one full time Malawian engineer, and part-time MOW engineers design and manage PHICS construction projects. The are supervised by the MOW Chief Water Supervisor and Chief Engineer and are assisted by two Peace Corps engineers in field offices in Sekwa and Chikwawa.

During pipeline construction, village laborers work under project "operators" (construction supervisors), some of whom later become monitoring assistants and are paid by the Department of Water (DOW). The number of operators at each on-going project and the number of monitoring assistants expected at project completion are listed below.

Operators	Project	Monitoring Assistants
6	Chikwawa	2
2	Usisya	1/2*
1	Ruarwe	1/2
4	Sekwa	1
4	Namitambo	2

*Usisya and Ruarwe will share one monitoring assistant.

Only one monitoring assistant will work at each of the remaining projects, with the exception of Mzimba, which will have two. The GOM contributes the salaries of drivers, storekeepers, guards, and others, depending on the site served. Each monitoring assistant, in addition to O&M, will accept the duties of storekeeper at project completion.

Through the construction phase, the communities provide labor and form project committees. During the O&M phase, these committees expand into tap committees and repair committees and provide an intake caretaker.

Other personnel inputs include contract labor for water tank construction and filter erection, and borehole rehabilitation, construction, and development, especially as related to drought assistance.

5.2.3 Commodities

The following commodities and related training were to be provided under the original PHICS project:

- Water system construction: cement, PVC pipe, fuel, trucks, four-wheel-drive vehicles, concrete mixers, vibrators, drills, tools and equipment, spare parts, motorcycles for monitoring assistants, and materials for vehicle operation and maintenance.
- Central Water Laboratory, Lilongue: water quality testing equipment for field and laboratory use, motorcycles, laboratory supplies, and refrigerators.
- Project management: computer assisted project design and cost estimation software, microcomputers, and peripheral equipment.

In addition, the project was to provide a system for easy retrieval and reporting of information on the status of piped water schemes, a library of reference materials, and technical assistance and funding for applied research. Low-cost water treatment methods, system reliability surveys, manpower needs, and community ability to pay for system maintenance are examples

of applied research suggested. Construction materials, motorcycles, tools, test kits, training costs, and technical equipment were funded to facilitate this effort.

5.3 Implementation Activities

5.3.1 Design Criteria

The two factors that determined the selection of sites and the finalizing of designs were the number of beneficiaries to be served and the per capita cost. During the final stages of design, the numbers of beneficiaries (coverage area) were increased. Population estimates were based on 1987 census data projected 20 years to the year 2010. Table 10 shows population estimates for 1997, the closing year of the project, and per capita costs. Final population estimates were considerably higher than pre-project estimates, which were based on limited hydrologic data and a pipe network (geographic area) that was not defined.

5.3.2 Personnel

The PHICS Project Paper gave the MOW responsibility for all salaries associated with the rural water program. The project required a minimum of five engineers at headquarters or regional centers to direct construction of new schemes and supervise maintenance of completed schemes.

Currently the project is severely understaffed. As noted earlier, three MOW engineers work part time, one Chief Civil Engineer works 25 percent of his time, and one expatriate engineer works full time. Two Peace Corps engineers assist at field locations. The portion of the MOW organizational chart applicable to the PHICS project is shown in Table 11.

The organizational components important to the PHICS project are the construction management branch, the rural water supply department, and the operations and maintenance management branch for rural water supply. The number of MOW positions approved versus those actually filled is shown below.

	Construction Management Branch	*Rural Water Supply Department*	*Operation & Maintenance Management Branch*	*Piped Water Section*
Positions	2	45	2	53
Actual No. Filed	2	3	2	0

Table 10

Cost Estimates of Original 15 Projects and Populations to be Served in 1997

	1997 Population	*Total Cost (kwacha)*	*Per Capita Cost (kwacha)*	*(dollars)*
Sekwa	6,290	688,220	109.40	40.52
Usisya	7,885	369,310	46.84	17.35
Ruarwe	863	107,190	124.21	46.00
Chikwawa	85,383	5,269,449	61.72	22.86
Namitambo	106,000	3,100,000	*29.24	*10.83
Golomoti	26,978	1,320,520	48.95	12.24
Muhuju	20,194	265,000	*13.12	*3.28
Thimba	3,085	269,340	87.31	21.82
Luwawa	3,984	205,250	51.52	12.88
Nchenachena	4,787	287,880	60.14	15.03
Sankhulani	14,843	867,590	58.45	14.61
Subtotal	280,292	12,749,749	72.06	22.59
		(3,187,437)		
Mlowe	16,659	1,140,750	68.48	17.12
Chintekwa	2,705	263,250	97.32	24.33
Mzimba	58,378	4,500,000	77.08	19.27
Kawiya	14,485	1,033,000	71.32	17.83
TOTAL	372,519	19,105,170	*73.60	21.68
		(4,776,292)		

An average population growth rate was used for Mlowe, Chintekwa, Mzimba, and Kawiya since no estimates were available for these projects.

The costs for each project are the design estimates. For the first five projects they have been calculated at the prevailing exchange rate of MK 2.7/$1, for the rest at a rate of MK 4.0/$1.

*Namitambo and Muhuju are not included in the per capita costs because they are rehabilitation projects.

Table 11

Portion of MOW Organizational Chart Important
to Implementation of PHICS Project

5.3.3 Vehicles and Equipment

The PHICS project was expected to supply the MOW with tools and equipment for water system construction and maintenance and water quality monitoring. The following list shows what was proposed and what actually has been received. The remaining vehicles and equipment are presently on order.

Item	Quantity Proposed	Quantity Received
Construction Program		
7-ton Pipe Carrier Trucks	2	2
5-ton Drop Side Trucks	3	0
7-ton Tipper Trucks	1	1
Pajero (4WD)	1	1
Light Pick-Up Trucks	4	2
Motorcycles	5	4
Concrete Mixers	3	3
Poker Vibrators	3	3
Portable Rock Drills	2	2
Maintenance Program		
Water Quality Monitoring:		
Field Test Kits	3	3
Refrigerators	3	3
Motorcycles	3	3

5.3.4 Costs of Water Supply Projects

The costs in Table 10, taken from a value engineering workshop conducted in January 1992, show that the first seven completed projects would serve 253,593 people, a little over the initial target population of 245,000. The first 11 completed projects would serve a population of 280,000. The estimated cost of these 11 projects is 12,749,749 kwacha, or $3,187,437. The dollar cost would have been much higher a few years ago when the exchange rate was MK 2.7/$1.

The estimated cost to construct all 15 projects is 19,105,170 kwacha, or $4,776,292.

The value engineering workshop reordered the priority of projects (Table 12). By regarding the five Chikwawa schemes as individual projects, it dropped Mlowe, Chintekwa, Mzimba, and Kawiya from the original 15 projects (Table 10). It also reduced the design water consumption from 36 l/c/d to 27 l/c/d, saving the project 976,352 kwacha (13,726,101 kwacha minus 12,749,749 kwacha) or $244,088. This is a saving of 7.7 percent for the first 11 projects. (See Table 13)

5.3.5 Procurement and Accountability

PVC pipe is usually the largest cost item in a project. In Sekwa, for example, it accounts for 78 percent of the cost of materials and 63 percent of the total project cost. The costs of individual categories for Sekwa are given below.

	(kwacha)
PVC pipe	495,103
PVC fittings	49,510
G.I. pipeaps, tap aprons	12,173
Washing slabs	14,970
Intake	12,514
Pillars	648
Tools	2,200
Tanks	7,743
Filters	33,432
	72,160
Total	700,455

ditches may disappear completely. This delay could severely jeopardize community involvement in laying pipe.

MOW personnel complained that obtaining spare parts for items such as concrete mixers and generators purchased by USAID is very difficult, and that specifications they provide are not always followed. One example was the order for 120V concrete mixers.

Another problem was the delay in authorizing purchase requests. Approximately six months ago, a tender document was submitted to USAID for purchase of pipe and materials. It has been held up because of previous PHICS accounting discrepancies. Meanwhile, ditches dug by villagers to a depth of one meter a month or two ago are now only one-half meter deep because they are filling up while the delivery of pipes is awaited. After the rainy season, the dirches may disappear completely. The delay could severely jeopardize community involvement in laying pipe.

Table 12

Value Engineering Reprioritization of Projects

	1997 Population	*Cost (kwacha)*	*Per Capita Cost (kwacha)*	*Per Capita Cost (dollars)*
	6,290	688,220	109.40	40.52
Sekwa				
Usisya	7,885	369,310	46.84	17.35
Ruarwe	863	107,190	124.21	46.00
Chikwawa				
Maperera	23,061	1,401,377	60.77	22.51
Limphangw	6,589	413,045	62.69	23.22
Mbadzi	10,432	540,469	51.81	19.19
Namitambo	106,000	3,100,000	*29.24	*10.83
Chikwawa				
Livunzu	11,530	581,577	50.44	12.61
Golomoti	26,978	1,320,520	48.95	12.24
Muhuju	20,194	265,000	*13.12	*3.28
Thimba	3,085	269,340	87.31	21.82
Luwawa	3,984	205,250	51.52	12.88
Nchenachena	4,787	287,880	60.14	15.03
Sankhulani	14,843	867,590	58.45	14.61
Chikwawa				
Thangadzi	33,771	2,332,981	69.08	17.27
TOTAL	280,292	12,749,749	67.82	21.17

Table 13

Cost Estimates and Populations Served in Design Year

	Design Population	*Design Year*	*Cost (kwacha)*	*Per Capita Cost (kwacha)*	*Per Capita Cost (dollars)*
Sekwa	8,593	2010	688,220	80.09	29.66
Usisya	8,833	2002	369,310	41.81	15.48
Ruarwe	1,080	2011	107,190	99.25	36.76
Chikwawa					
Maperera	31,098	2010	1,401,377	45.06	16.68
Limphangw	8,885	2010	413,045	46.49	17.22
Mbadzi	14,068	2010	540,469	38.42	14.23
Namitambo	111,000	1999	3,100,000	*27.93	*10.34
Chikwawa					
Livunzu	15,549	2010	581,577	37.40	9.35
Golomoti	41,973	2011	1,320,520	47.03	11.75
Muhuju	18,000	1993	265,000	*14.72	*3.68
Thimba	4,160	2010	269,340	64.75	16.19
Luwawa	6,280	2010	205,250	32.68	8.17
Nchenachena	8,052	2010	287,880	35.75	8.94
Sankhulani	11,912	2010	867,590	43.91	10.98
Chikwawa					
Thangadzi	45,540	2010	2,332,981	51.23	12.81
TOTAL	335,023		12,749,749	51.07	16.02

5.3.6 Water Testing

Rural water supply (RWS) department engineers routinely perform water quality tests in the watershed areas chosen for gravity-fed schemes to determine whether the water supply is potable. In many cases the coliform count is found to be greater than 50 per 100 ml, leading to the consideration of designs for treatment systems.

RWS also intends to carry out five tests per year at the 55 old projects and 15 new projects through the Central Water Laboratory's in Lilongwe—two tests during the dry season, two during the wet season, and one in between. The laboratory is also responsible for tests at other sites throughout Malawi. Last year only one test was carried out at each of 138 sites. According to the laboratory's principal water chemist, about 40 percent had coliform counts above 50.

The laboratory is handicapped for several reasons. It has only one vehicle to cover the entire country. Most of its equipment, purchased under the previous USAID rural water project, is old and some is in need of repair. It is short of supplies, and although its staff is adequate for the present, more technicians would be needed to carry out all the testing expected.

The PHICS project has purchased field test kits and three refrigerators. One remains in storage, and two have been delivered to Mzuzu and Blantyre, where laboratory space has been selected. Motorcycles are used by the laboratory staff to reach rural sites but breakdowns are frequent.

Water quality standards were proposed by the Malawi Bureau of Standards for use by the RWS but are still under review by the GOM. The standards are the same as WHO recommends, and will be impossible to meet without expensive treatment facilities.

5.3.7 System Design

Gravity-fed piped water systems have long proven successful in the rural areas of Malawi. They consist of an intake structure, a reinforced concrete storage tank, pressure tanks, and PVC pipes that carry the water to standpipes with faucets. The standpipes are equipped with a concrete apron and an open drain leading to a soak pit. Wash basins are constructed a short distance away from each tap.

Filtration systems are being planned at several sites. Combinations of slow sand filters and horizontal sand filters have been used in four Chikwawa schemes and one scheme in Sekwa. Horizontal roughing filters and sedimentation tanks provide treatment for turbidity during the rainy season. Biological treatment for bacteria is provided via slow sand filters. In some cases, 230 cubic meter tanks have been constructed where 160 cubic meter tanks would have sufficed. However, the cost differential of 25,000 kwacha for the larger tank versus 20,000 kwacha for the smaller tank is negligible in the context of a total project cost of, say, 800,000 MK.

Gravity-fed water systems with filters are easy to construct and maintain. Horizontal concrete filter beds are provided with a bypass system so that one filter bed can be washed while another is being used for water treatment. Four-day water tank storage provides more than enough time for cleaning slow sand filters upstream. Only the top layer in the slow sand filter must be changed periodically.

Cement asbestos pipe used in the old gravity-fed water systems lasted only four years in some cases because of poor quality pipe and pipe deterioration. PVC pipe used now is pressure tested at the Malawi Bureau of Standards, and the MOW has four large pressure testing departments to test pipe in the field. Pipe is tested at 1.5 times its working pressure, which should eliminate the problem of collapsing pipe that has plagued some of the older projects.

Larger storage tanks have certain advantages. A 230 cubic meter tank can store a four-day supply whereas a 90 cubic meter tank provides storage for only 16 hours. The larger capacity allows more time for maintenance on upstream filters and sedimentation tanks and, up to a point, can serve an increase in the number of downstream users.

To save money on pipe costs, break-pressure tanks should be considered in the design of future projects. By reducing pressure, these tanks permit the use of lower strength (lower cost) pipe downstream.

Soil boring tests at least 1.5 meters deep should be performed where sizable excavations such as those near water tanks and filters are planned. Fuel, equipment rental, and labor costs associated with jackhammering rock formations can be avoided by relocating water pipe and tank placement.

5.3.8 Washing Slabs

Approximately 8,000 washing slabs at 55 water systems under the HESP component and approximately 1,100 taps and an equal number of washing slabs under the water system component of the PHICS project are to be constructed by the RWS. Each tapstand will have two taps, a new design to be evaluated. Twelve washing slabs and 12 taps have been constructed to date.

5.3.9 Operation and Maintenance

The project is at a stage where taps are just beginning to be inaugurated and thus the operation and maintenance activities are also just beginning. The planned approach to O&M is established and will follow the approach described below.

Several community committees are responsible for O&M of gravity-fed piped schemes. Each tap, serving about 120 consumers, has a tap committee of about 10 people, primarily women, chosen from the community. It monitors the use of the tap, apron, drainage pit, and wash

basin and collects money for paying a spring intake caretaker, for replacing the tap, and for small repairs.

Every 10 taps have a department repair team responsible for about five kilometers of pipeline and for needed repairs. Members of the team, which generally includes a few women, have been involved in the construction and so are familiar with the technicalities of the pipe system. There is also a team responsible for the operation of filtration and reservoir tanks.

Over all these is a main water supply committee of prominent members of the village that oversees the entire system. It approves new customers, settles disputes, provides liaison with the DOW monitoring assistant and advises her or him of breakdowns or other problems, and hires and pays the spring intake caretaker—the only individual paid by the community.

At a higher organizational level are the District Development Committee and the Area Action Committee, which are responsible for various local activities and sometimes become involved in O&M.

For each water committee there is a corresponding health committee and many members serve on both. Table 14 shows a model organizational structure, but each community is encouraged to adopt an organizational structure that fits its own needs.

The MOW has a manual, "Rural Water Operator's Handbook—Gravity Fed Piped Water Schemes," which explains the extension agent's role in assisting the community to carry out O&M. Written in 1977 and revised in 1983, it contains sound advice on community participation and responsibilities. The manual does not address financing issues however.

The GOM believes the community should not pay for water because it has contributed the labor for construction of the system. Although its "Statement of Development Policies 1987/96" declared that "maximization of financial and technical self-sufficiency is seen as an important consideration for both urban and rural water schemes," it continues to subsidize water costs.

Each household pays MK 2 per year into a fund for replacing taps, costing about MK 35 each, and for the salary of the caretaker, which averages MK 300/year. Actual data on costs were collected in 1990 by Gearhart but communities presently are being asked to pay more. Because of these changing contributions and a GOM interest in having communities do more, both financially and operationally, a procedures manual has not yet been written.

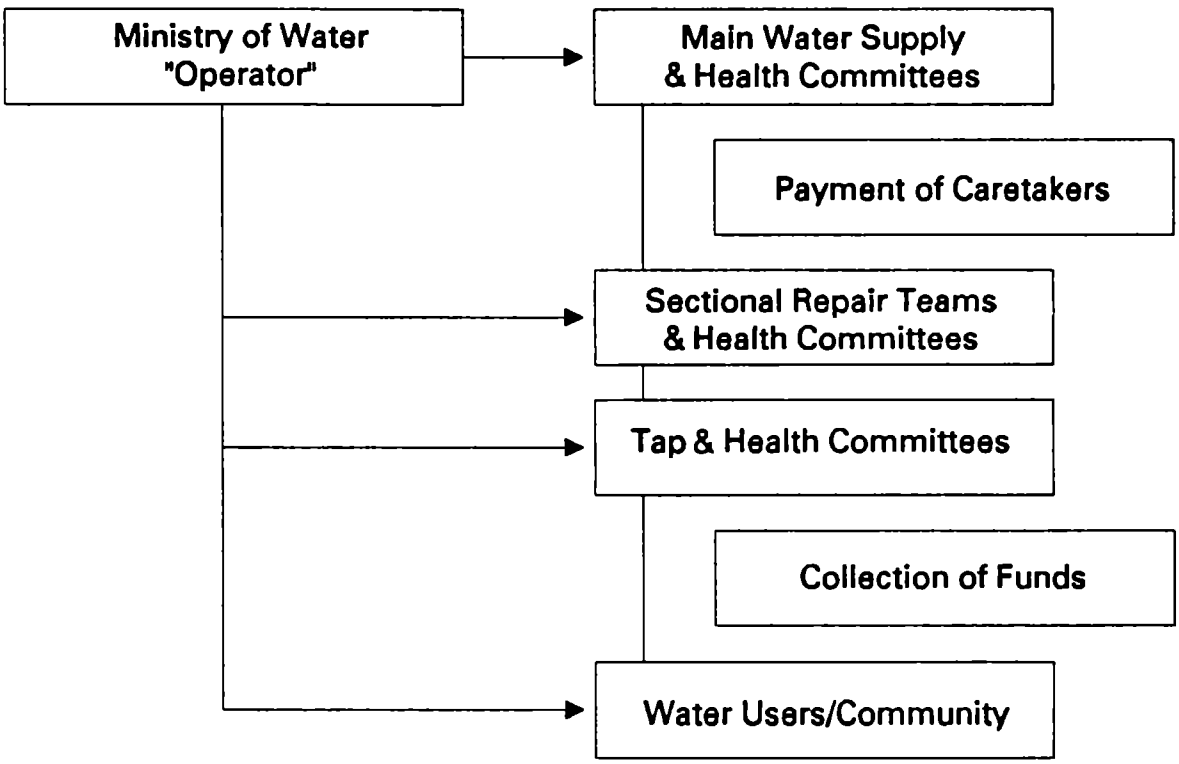
5.3.10 Research

The Project Paper proposed several research studies on topics such as system reliability, low-cost filtration, and community willingness to pay. Three of these are described below.
A study entitled "Community Based Maintenance and Cost Recovery of Piped Rural Water Schemes" was completed by Dr. Robert Gearhart in 1990 under a WASH assignment.

"Community Based Operation and Maintenance of Rural Water Supplies," an assessment of manpower needs and the villagers' ability to pay for system maintenance, was prepared by

Table 14

O&M Organizational Structure



L.A. Msukwa of the University of Malawi Centre for Social Research in Zomba in 1990. This report was not approved by the RWS department because not all the terms in the scope of work were met.

In July 1990, the RWS department proposed a rural water supply water usage public health baseline survey. Two graduate students working with Dr. Gearhart were to perform the survey, but one of them fell ill and the work was not begun. There are now plans to resume the survey.

5.3.11 Information Systems and Computer Training

An Australian firm, Coffee & Partners, contracted with the MOW to provide information management in accounting, water quality data, water consumption data for urban and rural populations, inventory, and material tracking, and to provide computer hardware, software, and conducting training. Because of this contract, funding for the PHICS information management system was reallocated to other commodities.

Unfortunately, the firm left Malawi without completing the accounting and material tracking programs, providing computer hardware and software, and conducting training. It did provide conducting a computer-assisted design program, Autocad #11, but neither the MOW nor the PHICS engineer has a digitizer and large plotter printer to operate the software, and MOW and PHICS engineers are not trained in the operation of CAD.

MOW and PHICS staff do, however, use a UNDP microcomputer program that sizes pipes, loops, and branches according to flows. Although CAD would provide a good water system database, the UNDP program is more essential to good water system design.

5.4 Outputs of Water Supply Component

The objectives of the water supply component and the current status of each objective are listed below. The evaluation team had to infer some of these from the Project Paper, which did not clearly specify them. They should be adopted by the water supply component in the future.

1. Complete feasibility studies for 14 proposed projects and one rehabilitation project.

   Feasibility studies have been completed for 11 of the 15 projects.

2. Prepare designs, including value engineering analysis, for water supply systems to serve about 250,000 people.

   Designs have been completed for nine, and surveys for 11 of the 15 projects.

\ = Started X = Completed O = Not Started

	DESIGN	SURVEY
Sekwa	X	X
Usisya	X	X
Ruarwe	X	X
Chikwawa	X	X
Namitambo	X	X*
Golomoti	X	X
Muhuju	X	X*
Mlowe	\	\
Thimba	X	X
Chintekwa	\	\
Luwawa	\	X
Mzimba	O	\
Nchenachena	\	X
Kawiya	\	\
Sankhulani	X	X

* Rehabilitation project

3. Prepare annual work plans and update quarterly.

   Three annual work plans and 10 quarterly reports have been submitted.

4. Construct 13 water supply systems, including treatment facilities as needed, and rehabilitate two.

   The percentage of work completed for each site is shown below, including design, survey, and construction stages. Construction is underway on the first five sites only. Percentages are based on RWS department estimates as of October 1992.

Water System	*Percentage Completed*
Sekwa	60
Usisya	45
Ruarwe	35
Chikwawa (1)	40
(2)	60
(3)	45
(4)	15
(5)	6
Namitambo	95**
Golomoti	15
Muhuju	15**
Thimba	12
Luwawa	12
Nchenachena	15
Sankhulani	12
Mlowe	6
Chintekwa	6
Mzimba	6
Kawiya	6

** Rehabilitation project.

5. Review feasibility of mixed systems, including treatment facilities as needed.

   Preliminary analyses show that gravity-fed systems are more cost effective in most cases.

6. Conduct research on O&M costs, low-cost water treatment, reliability of systems.

   The Gearhart study examined system reliability and made several recommendations, many of which have been carried out. The Center for Social Research prepared a study of community involvement and willingness to pay, but the report was not accepted by the MOW because it did not meet all the objectives. However, some recommendations such as training of committees are being carried out. No research has been undertaken on treatment systems.

7. Prepare plans for O&M by community to ensure sustainability.

   Plans are based on O&M of 55 earlier projects, but changes are being considered.

8. Adopt water quality and quantity standards for rural water supply.

   No quality standards have been approved because of continued debate on issues.

9. Carry out water quality tests as required.

Some preliminary testing of water sources has been conducted only for water system design.

10. Train staff in computer assisted design. No CAD training has occurred.

11. Establish a management information system to track project status and system reliability, water consumption, and quality. There has been no progress on this.

12. Construct 1,100 washing slabs, one for each tap (8,000 are to be constructed by MOH).

    Only 12 have been completed.

13. Decentralize water quality labs.

    Two field labs are being set up but support problems have developed.

14. Provide research proposals for research department.

    This is a proposed objective. Guidance is needed on the types of research the department will undertake.

15. Establish a monitoring system

    This is a proposed objective. See recommendations in Section 6.4.4 on the need to enhance reliability with water quantity, water quality, and access monitoring.

16. Integrate quarterly and annual program and financial reporting systems.

    Quarterly reports are being completed. The fourth serves as an annual report.

17. Coordinate HESP and MOH activities.

    There has been little coordination to date.

Chapter 6

PROJECT EFFECTIVENESS

6.1 Institutional Strengthening

This section discusses a number of generic issues related to institutional strengthening and the overall effectiveness of the PHICS project.

6.1.1 Lack of Adequate Project Leadership and Management

1) The lacks of leadership and managerial talent in the project as a whole is affecting the water component, particularly coordination between the MOH and HESP and MOW/RWS construction. The components of the PHICS project are poorly connected, a problem that was anticipated during the design phase. The Project Paper stated that "the National Health Plan identifies insufficient financial and human resources and weak management and implementation capacity as priority problems." It is curious that this realization did not impel the project designers to plan for strong central management and coordination.

2) The effective delivery of child survival services and interventions, including clean water and health education, will be very unlikely without such management and coordination of the work of many program elements and coordination across ministerial lines.

3) The project plan called for two positions, that of Project Coordinator and of Project Accountant, within the planning department of the Ministry of Health. Both positions have been filled. The Project Coordinator was to be responsible for overall project implementation. For some reason the MOH determined the position could be filled by a planning officer at the P-7 level, which is an upper-middle level in the ministry's hierarchy. Although the incumbent is capable and hard-working, she simply does not enjoy the authority within the MOH hierarchy that the project requires. Even though she reported to have a good personal relationship with the higher-ups in the ministry, it is difficult for her to direct program managers who are above her in the ministry structure. This disparity between her level in the ministry and her position as the officer in charge of PHICS activities has created a serious mismatch between the organizational structure of the project and of the ministry itself.

4) In addition to a Project Coordinator, the project requires a Project Director with the hierarchical authority, the administrative experience, and the managerial skill to provide forceful leadership.

5) The need for strong central leadership is particularly acute because of what has happened with the Project Coordinating Committee. That committee, made up of representatives of the MOW, MOH, and USAID, was expected "...to meet regularly (at least once per

quarter) to review current activities, to identify and resolve mutual problems, and to coordinate future work programs." Annex 1 of the Project Grant Agreement states that "the principal GOM mechanism for implementing the project and promoting inter-ministerial coordination will be the Project Coordination Committee." The PCC was also to have played a major role in project monitoring.

Unfortunately, the PCC has met only three times, the last being September 1990. A review of the minutes of those meetings revealed that the committee discussed a range of important issues and developed "Proposed Terms of Reference for the PHICS Project Coordination Committee" that would require it to:

- facilitate interministerial cooperation among all the ministries and departments involved in the implementation of the PHICS project;
- appoint a Project Implementation Committee that is going to be directly involved in matters pertaining to the implementation activities of the project;
- review annual work plans, budgets, and progress reports; and
- make recommendations on policy issues affecting the project.

The responsibilities of the Project Implementation Committee were defined as:

- Development of implementation plans
- Preparation of budgets
- Preparation of progress reports
- Identification and resolution of implementation issues within the committee's capacity to resolve
- Reporting to senior-level staff on issues

It appears that the PCC intended that the PIC would be a *working committee* to carry out these important managerial functions. Unfortunately, the PIC has never met and is non-functional, and has left a vacuum in the managerial core of the PHICS project.

6) It is curious that PHICS has a number of long-term OPEX advisors in various functional areas such as curriculum development, manpower, epidemiology, and engineering, but not in project management. An OPEX advisor or a senior-level Malawian could provide the guidance, leadership, and coordination that are so urgently needed.

6.1.2 Need to Resolve Existing Financial Management Issues

1) The PHICS project has been under a cloud of doubt and uncertainty because of the way money and resources have been managed. A large number of disallowances were outstanding until recently and advances for project activities are being held up. An audit of the project is currently under way.

2) Financial management systems/procedures are needed for both budgetary management and accounting that not only will enjoy the confidence of the donor but will better serve the project.

3) Concerns about the financial management of the project led to an audit of MOW activities that was being carried while the evaluation team was in Malawi. The audit results were not available to the team. Although the team found no evidence of mismanagement, it appears that an aura of doubt about these issues has led to increased scrutiny and has reduced the pace of project activities.

4) Funds are not flowing to important components of the project. The HESP program and community mobilization are almost at a standstill because budgets that can be approved for funding have not been adequately prepared.

5) Despite a clear stipulation in the Project Paper, adequate financial management and reporting systems have not been developed, nor has adequate training been provided in this area. Unsatisfactory accounting for expenditures makes program planning, management, and evaluation difficult. There is no attribution of costs to specific program components or water schemes.

6) Accounting for funds in the project is considered a bookkeeping exercise instead of a higher management function. Managers of program components need to know what resources they command and to have some control over how they are used. The reporting system should be able to give them clear and timely information on the current financial status of their components.

6.1.3 Need for an Overall Project Management Plan, Annual Work Plans, and Sub-unit Implementation Plans

1) An overall management plan required during the first months of the project was never prepared. A draft plan was developed which serves as an example and appears in Appendix I of this report.

2) A number of studies were required during the first year of the project. Of particular importance were the manpower analyses that were to be part of the first year implementation plans of the MOW and MOH. So far the MOW has only a draft of the terms of reference of a manpower study and the MOH has done nothing. In the same way, there has been little or no action on studies to establish baselines and indicators for

the monitoring of project progress, and to develop management information systems, procedures manuals, and financial reporting systems.

3) The Project Coordinator has received no annual work plans from collaborating departments within the MOH, because the problems and delays surrounding the project have created a general impression that the payoff from PHICS is not worth the hassle of all the planning, replanning, justification, and other onerous bureaucratic requirements it has imposed. MOH personnel have turned their time and energy to other donor project activities.

4) Each of the project's eight components is expected to submit annual work and activity plans. Eliciting and then collating these plans into a single master plan for submission to USAID is a time-consuming process that does not serve the project and needs to be changed.

5) Numerous personnel changes since the inception of the project three years ago have prevented a working consensus or understanding of its overall goals, structure, and management, of the way decisions are made, and of its procedures for monitoring, reporting, and coordination.

6) Poor coordination and understanding within the MOH and between the MOH and USAID about overall work plans have resulted in a situation where almost every activity must be justified, reviewed, and funded separately. This is extremely frustrating and overburdens the communications and decision-making systems.

6.1.4 Personnel: Why the Government Cannot Fill Posts

1) The evaluation team was asked to assess the impact of manpower shortages on project implementation and to recommend solutions.

2) The harmful effects of shortages of managerial, technical, and operational personnel is very clear. A review of the organization chart of the MOW's water department with the personnel officer revealed that only 30 percent of the positions had been filled.

3) At the outset of the project, there were only two Malawians in nine engineering positions in the water department. At the present time there is one Malawian engineer, two part-time engineers, and one Chief Civil Engineer who spends 25 percent of his time on project activities. The project was supposed to have added five engineers.

4) The Project Paper noted that senior staff in the RWS "...have had little time for long-term planning, new project preparation, or maintenance management. This shortage of senior technical staff is the most serious weakness in the MOW's rural water program." Little has been done to correct this shortage, which jeopardizes a key objective of the PHICS project: the strengthening of the institutional capacity of the MOW.

5) A similar situation prevails in the health education and sanitation promotion (HESP) program. At the inception of the project, HESP had a staff of 89 and 314 were to be added. There are only 165 personnel in HESP at present.

6) Extensive discussions with a number of people in the MOH and MOW revealed the following reasons for the difficulty in filling positions:

- There are insufficient admissions, and therefore output, by the principal pre-service training institutions: the Lilongwe School of Health Sciences, the Polytechnic, the University, and the Medical School.
- The private sector offers better salaries and benefits for skilled engineers and technicians. In the last three years, the RWS has lost a number of qualified engineers. The MOW appears to be a training ground for technical personnel who leave for better-paying positions once they have gained the requisite experience.
- The pool of acceptable candidates for senior-level positions in the ministries, is made up of people already employed by the government. However, the GOM is reluctant to transfer competent personnel from positions where they are desperately needed.

One solution would be to engage individuals who reach the mandatory retirement age of 50 and wish to continue in a non-established project position. However, there are few of these. Once assured of a government pension they generally seek employment in the private or NGO sector at higher salary levels.

- Occasionally, qualified personnel can be found in other government organizations, for example, the health inspectors in local authorities and parastatals. But the salary scales of the MOH are too low to entice them.
- Another strategy for filling key positions would be to promote junior and mid-level personnel, but the rigidity and extremely slow pace of decision-making in the civil service would thwart effective action. An even stronger influence against promoting mid-level personnel is that most project positions are non-established. There is a dismal history of converting non-established to established posts. Few, if any, mid-career professionals would be willing to risk moving to a non-established post and thereby jeopardizing their long-term employment and pension prospects.

In addition, persons in non-established positions are <u>not</u> eligible for training either at home or abroad and thus are denied coveted opportunities for the means to career advancement.

Project personnel in non-established posts are often prevented from applying for established posts elsewhere because the government is reluctant to displease donors by allowing important personnel to transfer out of the project.

Finally, persons in entry-level non-established posts are likely to remain there for years, because they are regarded as a lesser breed by the establishment and overlooked for advancement opportunities.

- People entering the job market for the first time would provide a pool of applicants, but most of them are turned away by the discouraging prospects just described.
- In summary, there are very good reasons for the difficulty of filling personnel vacancies. Short of a sweeping reform of the civil service, which is not likely to happen in the current political and economic environment, there is little prospect for major changes. However, marginal and incremental improvements may be possible.

6.1.5 Possible Strategies to Cope with Personnel Constraints

1) Perhaps the best way to attract qualified personnel, even though the positions are non-established, is to improve the conditions of employment. Bright and upwardly mobile young professionals will find the project attractive if it provides quality supervision, in-service and on-the-job training, and opportunities for long-term educational advancement. Not one individual from the MOW or HESP has been sent abroad for training, although the project plan provided for this.

2) A second strategy would be for the project to mount an aggressive recruitment and marketing campaign in the schools, the university, and technical training institutions.

3) A third strategy would be the establishment of conversion courses that would prepare university graduates in other fields—such as economics, sociology, business—for careers in water management and the health services. Mr. Rudi Klaus reported that the HRID project has conducted successful intensive one-year conversion courses in marketing and accounting, and, through competitive application procedures and the prospect of jobs, has been able to attract high-caliber applicants.

4) A fourth strategy would be to exploit conditions precedent or covenants should a decision be made to redesign the PHICS project.

5) A final strategy would be to accept the manpower constraints and reduce the scope, objectives, and funding of the project accordingly.

6.1.6 Community Participation/Sustainability

These are discussed in Section 6.4.

6.2 Financial Management

6.2.1 Effective Use of Finances

It will be almost impossible to determine whether project finances are being used effectively until the system for recording and reporting them is improved. The data for routine analyses either are not being collected or are in bits and pieces that are difficult to manipulate. The following analyses, which project managers may wish to perform, would be impossible or too costly with the present accounting and financial management system:

- Analysis of cash flow, costs, and project benefits
- Cost benefit analysis
- Cost effectiveness analysis

6.2.2 Financial Sustainability

- Policy Commitments to Continue GOM financing

The decision by the GOM to continue funding PHICS-type activities after project termination could be significantly influenced by data demonstrating the value of investment in construction, training, and community development, and of sustained allocations to operation and maintenance where necessary. Such data, available perhaps from other donor water supply projects, are not being generated by PHICS.

- Technical Ability to Manage Financing

Section 2.2 described deficiencies in the MOH and MOW accounting systems. The team from Nairobi will determine whether they record enough data to pass a U.S. government audit. It is not known whether they would meet GOM audit standards. It is very clear, however, that they are not capable of providing program managers with timely and accurate information of the most basic kind, such as monthly comparisons of actual and budgeted expenditures by water scheme (MOW) and program component (MOH).

- Financial and Economic Sustainability

Financial and economic analyses cannot be conducted without timely, accurate, and accessible data.

  - Viability of Working Capital Fund

Projections of revenue streams and capital outflows likewise are impossible. The fact that the MOW has overdrawn its PHICS project account by hundreds of thousands of dollars is not encouraging. The technical section of this report provides information on the costs of operation and maintenance after USAID-funded construction is completed. The GOM would like to see

greater community cost-sharing for repairs and maintenance, but also should consider allocations for costs the community cannot bear.

- Revenue Potential and Profitability (at market demand level of output, within capacity constraints)

Estimates in the Msukwa and Gearhart reports of the consumers' ability to pay, discussed in more detail in the technical department, do not provide a satisfactory answer to how much is to be paid by whom. It is not clear to what extent the GOM is willing to consider cross-subsidies, for example, using profits from urban metered water supplies to subsidize the repair and maintenance of rural water schemes. Currently, defaults in payment for urban metered water are said to be about 3.3 million kwacha, about 80 percent of this attributed to government agencies. Nonetheless, the Department of Water's 1991 revenues reportedly exceeded total costs by 1.8 million kwacha.

- Depreciation and Economic Life

The accounting codes for the MOH and MOW, like most GOM accounting, do not include depreciation. There is no attempt to calculate what share of the usable life of machinery, vehicles, and equipment is consumed during a year. USAID assumes all capital goods are consumed during the life of the project and includes their full cost in the cost of project completion. For the MOW, however, it would be useful to know what the real life of the equipment might be for two reasons: to estimate the duration of potential revenue streams if it is being used to produce a marketable product or service, and to know when it must be replaced in planning the capital investment budget.

6.3 Health Education and Sanitation Promotion (HESP)

6.3.1 Effective Use of HESP

Since the HESP component of the project has done very little, it was difficult to evaluate its performance. However, it must follow a five-year implementation plan to achieve its stated objective.

This plan should include a district-by-district outline of activities and distinguish PHICS from non-PHICS areas, specifically those where coverage is not related to improved water supply. This exercise should produce a document that can be used by any donors in establishing achievable objectives and indicators. A phased approach to the expansion of the HESP program nationwide would begin by concentrating on a few selected areas before moving on to others. If a regional approach is used, the required regional staff must be in place first. (See Table 15 for planned and recommended activities and outputs.)

6.3.2 Change of User Behavior

The favorable review of HESP in the final evaluation of the Malawi Self-Help Project and the success of current HESP activities in Mpira Balaka suggest that HESP can be effective in changing behavior. However, behavior affecting diarrheal diseases must be monitored, and research must ensure that HESP educational messages correctly focus on proper handling and storage of water.

- Monitoring HESP Indicators

The ultimate aim of HESP is to prevent diarrheal diseases in all children under five. But since this is not likely to happen immediately, HESP should also teach caretakers how to manage childhood diarrhea so that it does not prove fatal and how to minimize its impact on children's nutrition. This is why HESP should work with the CDD program, examine areas of overlap, and prepare common indicators.

It is the responsibility of the CDD program to determine reduction in diarrheal disease morbidity and mortality. In 1991, the CDD conducted a national baseline survey on morbidity and treatment practices (see Appendix G for Summary of CDD Morbidity and Treatment Survey) that it plans to repeat. The findings can be used as intermediate indicators of changes in diarrheal disease morbidity. The CDD also plans to re-establish surveillance sites for the collection of data on trends in diarrheal morbidity and mortality. The HIS system could be used for the same purpose.

HESP should concentrate on monitoring intermediate indicators related to behavior linked to diarrheal disease prevention and treatment. A list of these indicators and a tracking system is provided in Table 16.

- Operations Research

Water is carried in open aluminum buckets covered with leaves to prevent splashing, a practice that invites contamination. HESP has discouraged this practice, but uncovered containers are as vulnerable to contamination. Water storage containers in the home are placed on the ground to permit access to children. Though HESP encourages a two-cup system of drawing water, it is not known how well young children follow this.

HESP needs to investigate water carrying, handling, and storage practices to see where contamination occurs and to direct its health education messages accordingly. It should work

Table 15

Comparison of HESP Activities

Comparison of HESP Activities: A = Undertaken, B = Planned in PP/Logframe, C = Recommended

PART A *Activities that have been part of annual HESP workplans*	*PART B* *Activities called for in PP or logframe directly related to HESP or PHICS components related to HESP*	*PART C* *Recommended activities and outputs that would ensure proper functioning of HESP*
PERSONNEL ■ At Central level, no activity ■ At District level, HSAs being hired	PERSONNEL ■ Plan for phased deployment of staff prepared ■ 1 HESP coordinator, Central level ■ 3 HESP Coordinators, Regional level ■ 10 HESP Coordinators, District level ■ 50 HAs (Supervisory level) ■ 250 HSAs MOW Component ■ Manpower assessment completed	PERSONNEL ■ Prepare plan for post creation, recruitment, and deployment in a phased manner to ensure adequate staff for HESP activities ■ Prepare job descriptions for new staff ■ Review existing job descriptions for HESP staff
TRAINING ■ Workshop for development of training manuals for HSAs in HESP ■ Workshop for development of training manuals for VHCs ■ TOT for Regional/District Coordinators for participatory training methods ■ Hygiene Education Skills workshop for new HSAs ■ Workshop for training HAs/HSAs on construction techniques ■ VHC refresher training workshops ■ Exchange visits for VHCs	TRAINING ■ Additional health workers and community workers trained in hygiene and sanitation MOH/Training Component ■ HSA pre-service training established and HSAs trained ■ HIs trained and assigned as tutors for HSA and HA training programs	TRAINING ■ Develop training plan for remaining project years based on training needs assessment ■ Develop training curriculum and manuals for HSAs in HESP-specific areas ■ Develop training manual for VHCs ■ Develop curriculum for TOT ■ Develop curriculum for construction skills training ■ Training District level staff in TOT, including communication skills training ■ Train HSAs in HESP ■ Train VHCs ■ Train HAs on construction

MONITORING AND EVALUATION ■ Workshop for District coordinator and HAs on data collection and analysis ■ Regional review and planning meetings ■ Printing of HESP report forms ' Annual HESP evaluation	MONITORING AND EVALUATION ■ No specific activities stated for M&E MOH HIS Component ■ Support sentinel surveillance sites to monitor diarrheal mortality/morbidity and treatment practices. ■ Conduct KAP for control of diarrheal diseases program MOH Health Education Unit ■ Health Surveys (KAP) on health issues related to CS conducted MOH/CHSU ■ Monitor behavioral and health impacts of service delivery activities	MONITORING AND EVALUATION ■ Develop a monitoring and evaluation plan that includes systems for tracking HESP component activities, behavioral change and community institutional strengthening Included in above: ■ Develop baseline and follow-up survey strategy ■ Prepare report on baseline findings and use this information for decision-making in directing HESP activities ■ Prepare report on comparison of baseline and follow-up surveys highlighting lessons learned ■ Prepare supervision plan for all cadre ■ Train staff in new M&E system ■ Print forms for M&E ■ Computerize tracking system at MOH HQ for activities/behaviors
CONSTRUCTION ■ HAs houses ■ Washing slabs ■ Sanplats for latrines	CONSTRUCTION HESP Component ■ Approx 8,000 washing slabs constructed at piped water taps ■ Washing slabs and latrines constructed and installed ■ Conduct research to develop and refine alternative latrine models	CONSTRUCTION ■ 8,000 washing slabs constructed by HESP in 55 existing water schemes ■ Coverage of improved latrines in 55 existing and 14 new water schemes raised to 80 percent by the installation of 62,500 sanplat latrines ■ Area water and health committees trained and supplied with tools to enable them to continue sanplat construction after HSA/HESP leaves ■ Conduct research to develop and refine alternative latrine models

IEC ■ Video filming of sanplat construction ■ Production of posters for sanitation and water ' Clean-village campaigns	IEC HESP Component ■ Nothing specifically stated HEU Component ■ IEC materials developed and disseminated specifically for HESP	IEC ■ Prepare IEC plan As part of above: ' Develop KEY messages specifically addressing changes in behavior related to water diseases, (diarrhea, shisto, and trachoma)
PROJECT MANAGEMENT A. Procurement ■ HSA bicycles ■ Materials for HAs houses ■ Tools for sanplat construction ■ Construction materials ■ Project computer ■ Calculators for District HESP ■ Project vehicles/pickups ■ Motorcycles ■ Project lorry (1) and 4wd vehicle (1) B. Planning and Reporting ■ Annual workplans ■ Annual reports	PROJECT MANAGEMENT ■ Project-wide implementation plan ■ Annual workplans and budgets ■ Project coordination committee formation and bi-annual meetings ■ Annual project assessments for first three years of project	PROJECT MANAGEMENT A. Planning and Reporting ■ Prepare detailed implementation plan for *remaining four years* ■ Prepare annual workplans ■ Prepare quarterly progress reports using annual workplan (fourth quarter acts as annual report) B. Finance ■ Prepare annual budgets ■ Set up systems for regular review of budget status C. Coordination ■ Attend quarterly PHICS coordination committee meetings ■ Attend coordination meetings with MOW on monthly basis ■ Conduct coordination meetings with other PHICS components linked to HESP ■ Plan for coordination within EHU D. Evaluation ■ Conduct mid-term and final evaluations

with CHSU to design such a study, the outcome of which might be a practical way to cover water carriers and advice to families to raise the home storage container off the ground away from young children.

- Health Education Messages

HESP activities should integrate messages on practices affecting diarrhea, such as hand washing, water storage and handling, and diarrhea treatment in the home (breastfeeding, ORT/ORS, feeding during and after diarrhea, and early referral). Improving the physical environment of the home (clean dish racks, bath houses, etc.) is important but should not take priority over diarrhea-related messages. HESP should design a simple questionnaire to ascertain the KAP of caretakers regarding diarrheal diseases and conduct baseline and follow-up surveys like those it is doing to improve the physical environment.

- Coordination

The most effective water projects in Africa feature joint planning and coordination between construction (hardware) and health education and sanitation promotion (software). Some of these projects require HESP to precede construction, others approach the two simultaneously, while still others forget how important HESP activities are and only add them as an afterthought.

In Malawi, the HESP component is behind the construction phase in most of the existing 55 systems, which should be targeted for immediate action. In the schemes planned under PHICS, HESP should work closely with the MOW and start activities prior to, or along with, construction.

Joint training of tap and village health committees in health education, sanitation, and operation and maintenance should be organized, and manuals developed by either MOW or HESP should be shared and given to field workers.

6.3.3 HESP Sustainability

Since HESP's objective is to establish practices that reduce morbidity in water-borne diseases such as diarrhea and schistosomiasis, it should promote the following sustainable activities:

- It should train villagers to make sanplats for improved pit latrines and to maintain them long after HESP activities have ceased by ensuring that villagers have access to a supply of the necessary tools at the area level.
- When HESP forms and trains village health committees, it should leave a structure that should be able to manage the health needs of the community. VHCs should be constantly reminded of their in role in improving health.

Table 16

Proposed Method of Tracking HESP Indicators

HESP Objective: To strengthen the MOH's HESP Unit to increase the number of households in 69 water schemes that adopt behaviors enhancing the health impact of clean water and improved sanitation systems.

Project Indicators (Examples of indicators)	*Expected Total*	*Year 3 (91/92)*	*Year 4 (92/93)*	*Year 5 (93/94)*	*Year 6 (94/95)*	*Year 7 (95/96)*	*Year 8 (96/97)*	*% Completion as of ____*
■ 80% of villages covered by improved gravity feed water supply are reached by HESP activities. (number of villages)								
■ 80% of households in villages covered by HESP have improved pit latrines that are well maintained and used. (number of households)								
■ 100% of water taps in 55 exisiting gravity water schemes have washing slabs constructed. (number of water taps)								
■ 80% of villages covered by HESP have trained and functioning VHCs.								
■ 80% of households covered by improved gravity feed water supply demonstrate improved water storage and handling behaviors. □ water storage vessel covered □ 2-cup method used by entire HH								

■ 80% of villages covered by improved gravity feed water supply can state 5 key messages about childhood diarrhea prevention and home management, including referral.
■ 80% of households covered by improved gravity feed water supply have improved physical aspects. □ dish racks, bath houses □ refuse pits
■ 80% of households covered by improved gravity feed water supply demonstrate knowledge of disease transmission and prevention.

- Using the washing slabs at each water tap consistently will reduce the transmission of schistosomiasis. HESP's educational messages should ensure that parents and children learn this and are aware of the benefits of staying away from rivers and streams.

HESP should identify indicators to show how active and effective VHCs are both during and after the work of the HSAs. Follow-up surveys should be made so HESP can demonstrate the sustainability of important practices.

6.4 Technical Effectiveness of Rural Water Supply

6.4.1 Operation and Maintenance

Since the PHICS water systems are still under construction, the O&M approach can be evaluated only as a concept. As a concept, the approach described earlier is sound. The major issue is whether the beneficiaries should or can pay more for their water. Based on a few meetings with community groups, the evaluation team found users were willing to accept responsibility for maintaining their tap because it belonged to them. They understood the importance of clean water to their health and stored their water in the prescribed manner. When asked what they would do if their tap broke, they replied correctly that they would seek another potable supply or boil water from an unimproved source. Most of the communities visited were not part of the present HESP program but of previous health education programs. As such, their responses were impressive, and so was the large number of households with latrines. This does not mean that more health education is not needed. Sustained O&M depends largely on the understanding that water and sanitation are critical to good health, a concept that is established but must be emphasized constantly.

In spite of their willingness to pay, there is still a question of whether most rural dwellers can meet total O&M costs. The RWS tried to resolve this question through a grant to the Center for Social Research, but the resultant report by Dr. Msukwa was deemed unacceptable because parts of the TOR were not adequately addressed.

Dr. Msukwa found that about 94 percent of those interviewed in selected locations were willing to contribute an average of MK 2.75 per household (MK 0.46 per capita per year) for O&M of boreholes. Assuming an annual per capita income of MK 160, of which perhaps half is cash, that is less than 1 percent of per capita cash income. This is very low considering consumers in other low-income countries contribute about 4 percent for potable water. Assuming the Msukwa study was accurate and not influenced by past perceptions that water should be free, there is no alternative for the GOM but to partially subsidize the costs of O&M. Gearhart calculated the cost of O&M at MK 1.09 per capita in 1990, which means that rural Malawians are willing to pay only about 42 percent of the real costs. Nevertheless, as a matter of principle it is important that they pay a reasonable percentage of their means so that water is seen as something of value.

The general opinion among MOW staff is that not enough is known on this subject. Although good research doubtlessly would contribute more information, it is obvious that the cost of O&M in rural areas is at the margin of the ability of poor rural dwellers to pay. More promotion of the value of WSS and more emphasis on community responsibility for O&M could increase their willingness to pay. Coordination with HESP activities is critical to this approach, which should combine the technical needs of the RWS with the health education messages of the MOW, and should be embodied in a joint operational manual that clarifies the magnitude and timing of contributions from each organization. The RWS operator presently carries out some health education activities that should be expanded or supplemented by MOH staff.

The key to community participation, both organizationally and financially, is to establish a line of communication between the community and the government agencies through local representatives. Both sides must clearly define their needs and expectations through a series of meetings, perhaps supplemented by mass communication messages, that establish what can be done to solve a particular water and sanitation problem at a particular site. Malawi has a long and successful tradition of community involvement in the construction of gravity-fed systems. Community financing is a comparatively new issue for both gravity-fed and borehole systems. Clarifying what the community must do and pay should precede any decision to start a scheme. The community should be required to establish an O&M fund in an amount determined by the RWS department as a prerequisite to construction. This is an effective way of judging its willingness to pay, its perception of meeting a felt need, and its organizing abilities. These steps should be outlined in a procedural manual that can be used in schemes now being constructed.

6.4.2 Mixed Systems

Some interest has been expressed in exploring the merits of mixed systems in water supply. There are three technologies that have been successfully employed in Malawi, each with its own advantages and disadvantages: gravity-fed systems, boreholes, and large-diameter wells.

Gravity-fed piped systems are an excellent choice wherever there are springs at elevations high enough to provide sufficient pressure to serve populations below. Such systems generally are the cheapest because they are simple to construct and rely on local labor, especially for digging the trenches in which pipe is laid. Such systems are found throughout the country but the best sites have already been developed. The combination of an elevated spring and a nearby population is increasingly difficult to find. It is estimated that only 5 percent more of the population can be served by gravity-fed schemes. Spring water generally is of good quality, but if it flows along the surface before reaching an intake structure can absorb considerable bacteriological pollution.

Boreholes equipped with hand pumps offer a wider range of locations and in many cases can be placed in or near a village. The cost of construction is moderate but repairs can be expensive. Community labor contributions are minimal. There are three zones of ground water

in Malawi: the plateau region, which has high yields of good quality at depths of less than 40 meters; the mountain region, where yields in fractured rock are most variable but generally of good quality; and the low alluvial plains, where yields are high, depths may reach 20 meters, and water may be somewhat saline. Local concentrations of iron, sulfur, or fluoride may render the wells unusable.

In areas where the aquifer is near the surface, large-diameter wells are sunk. If the depth is not more than about 10 meters, unpaid community labor is used for digging and costs are moderate. Typically, such wells are not capped and users rely on buckets and ropes for drawing water. These wells inevitably are polluted, and drought can lower the water table, thus rendering them unreliable.

Any of these technologies may be appropriate at a particular site. The criterion should be per capita cost, including both construction and recurring O&M expenses. Tradeoffs between water quantity and quality must also be considered. Current construction costs of gravity-fed schemes are shown in Table 12. Construction costs for boreholes are shown below.

Borehole cost in kwacha:

18,600 (drilling 45m-borehole)

1,484 (Afridev pump)

2,610 (45m of class 10 PVC casing @ 58K per m)

1,200 (reinforced pump slab)

Total: 23,894

Pump costs, drilling costs, and the average drilling depth of 45 meters were provided by the Save the Children Foundation in Lilongwe, which is carrying out borehole construction under a PHICS grant for emergency drought relief. Based on estimates from other African countries, the number of people to one borehole is about 250, making the per capita cost 96 kwacha or $24.

This compares with an average gravity-fed system construction cost of $21.17 per capita (Table 12). Some per capita costs for boreholes are considerably greater than $24 and call into question the superiority of this technological choice. These calculations do not include the recurring costs of O&M. Pumps invariably have higher repair and maintenance costs than gravity-fed pipelines, and there are much more available data for O&M costs of piped systems than of Afridev pumps. However, a comparison of the two technologies should consider the fact that piped systems provide larger quantities of water but often of lower quality.

Many of the simplest gravity-fed systems have been or are being constructed now. As pipelines become longer, water quality standards become more stringent, and treatment methods become more elaborate, the use of groundwater through boreholes may become more cost effective. Each site will have to be considered separately, as the occurrence of groundwater and springs varies enormously from site to site.

6.4.3 Role of PVOs and the Private Sector

Rural water supply activities presently are being carried out by several PVOs and private contractors. Given the limited capacity of the GOM to meet demand, there is some interest in considering whether a larger role for PVOs and the private sector is warranted.

Numerous PVO organizations, both international and local, are reportedly involved in rural water supply activities. These organizations, which are constructing small gravity-fed piped schemes, digging large diameter wells, drilling boreholes, or rehabilitating wells and boreholes, have intensified their activities in recent years because of refugee migrations and the drought.

The evaluation team met with representatives of Save the Children-UK, which is managing the drilling of drought relief boreholes by private contractors. No training in community management nor health education is being provided, although the representatives agreed that ideally these components would have been included were it not for the fact that the need for quick action was paramount.

The WASH project is also familiar with the work of World Vision and Africare in Malawi and elsewhere. WASH worked to improve World Vision's WSS development capabilities in several countries, including Malawi, under a grant from the AID PVO office. World Vision has made considerable progress in the past few years, especially in the technical aspects of constructing boreholes, but has placed less emphasis than desired on community management and health education.

WASH is beginning a similar assignment of more modest scope with Africare. Again, this PVO has the technical competence for spring development and drilling but needs to place much more emphasis on community management and health education.

The capabilities of PVOs in carrying out the large-scale water schemes being undertaken within the PHICS project is limited. Generally, they do not have the engineering capability for such sophisticated schemes but are competent in constructing small piped systems and boreholes.

The evaluation team believes that it would be unwise to give the PVOs a larger role in the HESP component, a suggestion prompted by the lack of progress the PHICS project has made so far. They have provided no evidence of a capability in this special area. But apart from this, virtually all of them are working to capacity in drought relief and refugee programs.

The MOW's use of private contractors for the construction of storage tanks and filtration systems and the drilling of boreholes is wise. Such firms offer skills that can be called upon at specific sites to supplement the MOW's capacity. About 600 boreholes per year are being drilled, some two-thirds by the private sector, according to the MOW Chief Water Resources Officer (responsible for groundwater).

6.4.4 Monitoring

The effectiveness of the water systems should be judged by several criteria, including water consumption, water quality at the tap, accessibility of the tap, and reliability of the system. The RWS collects data on the causes and frequency of breakdowns but should give more attention to the other factors.

A suggested monitoring program is outlined below. It would perform selective sampling to quantify the effectiveness of each scheme in meeting the needs of beneficiaries and to measure health impacts. Its results should be reported annually.

- Water Quantity

A baseline survey should be conducted at each site to compare the quantity of water used before and after the taps are installed. Before installation, randomly selected households should be approached once during the wet and once during the dry season and asked how many containers are collected each day. After the taps are in use, this should be repeated. The number of households to be sampled must be determined statistically but will probably be on the order of 40 for each scheme.

- Water Quality

The water should be tested for coliforms above the filtration system and at a representative tap below, again, once during the wet and once during the dry season. If there is evidence of other impurities, tests should also be done for these. It would also be desirable to test household containers, but this should be coordinated with the HESP program.

- Water Access

The distances and time to walk to the unimproved sources before the project should be compared with what is required after taps are in use. The same households should be queried as for the water quality study.

- System Reliability

The present monitoring effort should be continued.

Chapter 7

PROJECT IMPACTS

7.1 Health

The health impact could not be determined since there are no summary reports on accomplishments, very little has been done under HESP, and water schemes are still under construction. Before the end of the project, the following steps related to the effects of water and sanitation should be taken as part of a general evaluation:

- HESP should measure intermediate indicators of changes in health and sanitation practices affecting diarrheal diseases and schistosomiasis (see indicators in Table 6).
- MOW should measure the increase in the number of people who have access to reliable and improved water systems, and indicators of changes in the quantity and quality of water, as well as of savings in distances and time.
- The Control of Diarrheal Diseases Program should measure changes in the mortality, morbidity, and treatment of diarrheal diseases in the community. The Community Health Services Department, through the HIS department, should measure these changes at hospitals and clinics.

7.2 Social

The social impacts of improved water and sanitation could not be measured because neither the MOW nor HESP had any information to offer. As with the health impact, monitoring systems should be established in each project component. Information on committee formation and functioning, offshoots of community mobilization for construction and HESP applied to other health and social interventions, and the added time available to women should be routinely collected both from MOW and MOH so that the social impacts of the project can be determined.

7.3 Economic

No economic analysis accompanied the preparation of the Project Paper, except for some general assumptions on the beneficial effects of improved health. These would be reflected in reduced outlays for health care and the improved productivity of healthier workers, who also would have less reason to be distracted by concerns about the health of their spouses and children. Making water available at a lower cost in time and effort would also generate economic opportunities and long-term macroeconomic effects.

However, the team found no data collection systems that would support such an analysis, nor any evidence that anyone in the GOM or USAID was interested enough to pay for one. Since health impacts are the primary focus, no specific action is suggested.

7.4 Women

Women feature prominently in the water and sanitation components of the PHICS project. As beneficiaries, they use the time saved in fetching water and the increased supplies now available to clean their homes and wash their clothes, both of which should have positive impacts on health. They work on tap committees, on many of which they represent over 80 percent of the membership, and are active in the village health committees, chairing several of these. Through these committees, they receive training in basic health and health and sanitation and learn how to make committees function for the benefit of the community. Women represent about 30 percent of the HSAs.

7.5 Institutional Strengthening

With six years still to go, it is difficult to assess the enduring impact of the project on institutional strengthening. The water systems being constructed are expected to provide improved supplies for more than 245,000 consumers, undoubtedly reducing the prevalence of water-borne diseases in the project areas. However, HESP's failure to provide health and sanitation education has limited the potential gains in both the new water schemes and all other rural piped water schemes that are supposed to be served by the component. Severe personnel shortages in both the MOH and the MOW have affected skill development and skill transfer. If the OPEX advisor and the PCVs were to leave, the MOW would be unable to carry on the work. Denying Malawian professionals the opportunity for overseas training will have a telling effect on technical and managerial leadership in the future. The critical lack of senior-level leadership within the MOH is seriously hampering project performance and decreasing the likelihood of institutional strengthening. Basic project support systems such as planning, budgeting, health information, and financial management are not functioning as they should. Many in-service training targets are not being achieved. There is no overall project evaluation plan, and no data on indicators are being collected to permit project performance to be measured.

7.6 Environment

Although the construction of improved water supply facilities will have a positive environmental impact, there are several problems to be faced.

High flows in the rainy season, especially during the first day after intense rainfall, can cause severe erosion particularly in areas where the soil has been disturbed to bury pipes. To curb erosion, MOW and PHICS engineers have planted fast-growing paspulum grass in some project areas like Namibitambo, where it could be seen marking the buried water pipeline .

Women were seen washing clothes in streams and rivers where animals were drinking. This practice should change as soon as washing slabs are constructed.

Some watersheds have farming and other land-use activities above the intake systems that cause a decline in water quality. Treatment facilities in such cases have added to the cost of the systems. Coordination with land-use planners, particularly the forestry department, to maintain or increase the vegetative cover of the upper watersheds will improve water quality and reduce erosion.

Taps and washing slabs have been provided with seepage pits for draining excess water. These pits seemed to be working well. No standing water was visible during the evaluation.

In general, the areas surrounding the water distribution points were very clean. Pride in ownership was evident where flowers had been planted along the water tap apron and seepage pit.

Population increases can be expected in areas now being served, and training in community management, health, and O&M should be started immediately.

Chapter 8

CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations are listed for each of the four evaluation subject areas—institutional strengthening, financial management, HESP, and rural water supply. The recommendations requiring immediate action are marked with an asterisk.

8.1 Institutional Strengthening

1. Important institutional strengthening objectives of the PHICS project are not likely to be achieved without major changes in project management and structure. The RWS probably will achieve planned coverage by the end of the project with the water systems it is constructing. But complementary health education, sanitation promotion, and community mobilization are being neglected, to the detriment of reductions in morbidity and mortality from water-related diseases. Institutional strengthening in other areas is stalled by severe manpower shortages, the lack of systems (management information, financial management, monitoring, reporting) upon which improved service delivery relies, and unmet training objectives.

   It is recommended that the midterm evaluation of the project be advanced for an early resolution of project design and implementation problems.

*2. The project lacks senior-level involvement and leadership. The Project Coordinating Committee has held only three meetings and none since September 1990. It is not providing management oversight, monitoring, policy development, and problem solving. The Project Coordinator does not occupy a position of respect in the Ministry of Health, and cannot provide the leadership and coordination that the project requires.

   It is recommended that, in addition to the Project Coordinator, the project should have strong, senior-level program management. The Project Coordination Committee should convene before February 1, 1993 to discuss the problem of leadership and to act upon the agreed solutions. This relatively complex project needs leadership that can manage, control, and coordinate its many program elements and resources and integrate project activities with ongoing MOH programs.

3. The health education and sanitation promotion (HESP) component of the water program has done nothing to date.

   It is recommended that the HESP department be provided with management oversight, resource mobilization, technical assistance, and training.

4. The poor financial management of the project is causing major problems and delays, and must be improved through the development of functional monitoring, control, and

reporting procedures. The present deficiencies must be corrected to the satisfaction of all parties in order to establish the levels of trust and confidence that are needed for resources to flow and initiatives to be taken.

It is recommended that USAID provide the necessary technical assistance and training for an effective financial management and reporting system for PHICS activities in both the MOW and the MOH. If agreement cannot be reached, other options, such as employing PVOs, should be considered to meet project objectives.

*5. Planning and budgeting systems and procedures for the project need a major overhaul. An overall management plan, annual work plans, and subdepartment implementation plans need to be developed and tied directly to budgets. A system for the timely development, review, and approval of plans and budgets is needed, so that expenditures can be authorized and activities begun with less delay.

It is recommended that USAID provide technical assistance and training to evaluate, redesign, and implement improved planning, budgeting, review, and authorization procedures in the PHICS project. This should be done in conjunction with recommendation number two.

6. No MOW/RWS or HESP personnel have been selected for long-term overseas training.

It is recommended that the MOH, MOW and USAID investigate and resolve the reason for this delay, and move ahead to identify candidates and send them for training.

8.2 Financial Management

The Project Paper, noting the extent of project management which PHICS would require, committed AID to providing technical assistance in the design of project and budget management systems, both at the MOH and in the HPN office, and training in their use. Since these systems have not been developed, the question of training is moot.

The USAID FMO gave HPN the opportunity to identify budget categories for project budgets and to design reports on allocations, expenditures, disallowances, and unobligated, unearmarked, and unexpended balances, for each ministry and program component. Since this was not done, project accounting and financial reporting have been handicapped, and financial and economic analyses have been impossible.

Every project year has offered the opportunity to specify planned project activities and the allocations to accomplish them. Yet earmarkings approved annually without adequate work plans have been based upon vague incremental budgets. This has required the HPN to dedicate excessive amounts of time to reviewing and approving requests for advances and expenditures at the task level. The pattern of disallowances resulting from such task-level reviews is inconsistent and lacking in focus, further confirming the image of a project adrift without a rational annual work plan, especially for HESP activities.

*1. The GOM categories used by the MOH and the MOW in their budgets for PHICS activities should be adopted as the official line items in future authorizations, obligations, earmarkings, and reporting on expenditures and disallowances, whether these are in kwacha or in U.S. dollars.

*2. The Project Officer (in collaboration with the Project Coordinator) should engage a local consultant to revise the budget categories to provide for better budget management (and, if feasible, revise and recode the FMO computerized database on expenditures to date).

*3. The Project Coordinator should be given technical assistance by USAID in training the Project Implementation Committee in project planning, budgeting, and budget management.

*4. Annual work plans should be the basis for annual budgets. All USAID earmarkings and direct expenditures for PHICS should be clearly attributable to either MOH or MOW activities, and be supported by documentation of cumulative expenditures and unearmarked and unexpended balances.

*5. Mutually acceptable definitions of allowable and disallowable expenditures should be negotiated, and the FMO and the HPN project officer should regularly review disallowances, providing technical assistance to the project accountants and supervision of the HPN HCN project assistant to ensure conformity with the USAID/GOM understandings.

6. The following actions should be taken towards an integrated system for developing work plans and budgets as management tools:

   - The PHICS component managers should be given technical assistance in developing annual work plans and budgets by the end of November.
   - The Project Coordinator should be given short-term technical assistance to lead program managers in a workshop to reconcile and integrate individual plans and budgets each year by the end of December.
   - The Project Coordinator should submit the annual integrated plan and budget to the PCC for approval each year by the end of January.

7. The Project Officer and the Project Coordinator should require MOH, MOW, and USAID project assistants to use the revised program and financial reporting forms and formats for earmarkings, advances, expenditures, and disallowances, by program in the MOH and by water scheme in the MOW, both for funds managed by these ministries and for direct USAID earmarkings and expenditures. (See Appendix J.)

8. The Project Officer with FMO assistance should ensure the Stores Section of the Water Department receives the technical assistance planned in the PP, and then verify the integration of PHICS procurement and inventory control into the improved systems.

9. The Project Officer and the PIC should negotiate mutually acceptable guidelines for allowable/disallowable project expenditures.

10. The Project Officer should require the MOW and the MOH to devise alternative action plans to avoid the most frequent and costly types of disallowances (e.g., activities requiring cash advances to the field).

11. The Project Officer should ensure that any future PP supplements and PROAG amendments affecting any project component will include a revised LOP project budget and financial plan showing the net effect on all components.

8.3 Health Education and Sanitation Promotion

Personnel

*1. A staff recruitment and deployment plan should be developed by the head of the Environmental Health Department, assisted by the HESP coordinator and the HSA training coordinator. Those who select and train the HSAs should ensure that HESP receives the number of HSAs needed in a phased manner. This plan needs to be developed by the end of 1992. The assignment of regional HESP coordinators is a priority. It is recommended that all regional posts be filled no later than the end of 1993.

Training

*2. A training plan should be developed as part of the overall DIP (detailed implementation plan) mentioned below with details of the type and timing of training and the participants. The finalization of training curricula and manuals for HSAs and VHCs is vital to this. A provisional curriculum should be developed during the DIP meetings so that some training activities can proceed. Meanwhile an advisory consultant is needed to assist HESP in preparing two training manuals, one for VHCs and one for HSAs in HESP. This consultancy should be planned for mid-1993.

3. The HESP national coordinator should prepare a three-month training plan for HAs and HSAs in constructing sanplats and washing slabs. The course should take no more than five days. This plan should be developed immediately (by mid-November 1992) and submitted to USAID for review and funding since less then 1 percent of targets has been met. Monitoring assistants and other key staff should be included in this training to ensure completion of targets.

Monitoring and Evaluation

*4. Key messages are needed for diseases targeted by HESP and improved water schemes, i.e., diarrhea, schistosomiasis, and trachoma. Environmental concerns should not take precedence over behavioral changes that will impact on health.

*5. An HESP monitoring and evaluation plan should be developed as part of the DIP process. This may necessitate the revision of routine report forms to highlight key areas of concern such as water handling/storage, hand washing, KAP on diarrhea, and latrine improvements. A system of tracking coverage data similar to the Mpira Balaka HESP program should be instituted. This plan should be finalized by the end of March 1993 and is needed before an HIS computer specialist is hired to set up a software program.

6. HESP and CSHU HIS/CDD need to cooperate in re-establishing sentinel surveillance sites to observe the impact on health of improved water and HESP components. This should be part of an overall evaluation plan for PHICS.

7. An operations research study should investigate contamination points between the water tap and the point where water is consumed in the home. The HESP national coordinator should work with CHSU (CDD and epidemiology department) to set up the study design, in which National Public Health Laboratory personnel should be involved. A budget should be prepared and funded by HESP or by HESP and CDD. The results of this study, which should be completed before the end of 1993, should be integrated into HESP activities.

Construction

8. During implementation planning, washing slab construction should be arranged to first reach areas where schistosomiasis is endemic. Training of multidisciplinary teams (MOH, MOW, MOLG) should be considered to ensure that 8,000 washing slabs can be constructed through the remaining years of the project.

Information Education and Communication

9. An IEC plan is needed to describe various channels and methods to disseminate messages about HESP. HEU staff should be called upon to assist in this plan. Again, this should be part of the DIP.

10. HEU should be called upon to assist HESP in designing visual aids/posters for education programs for VHCs and HSAs.

Project Management

(Planning And Reporting)

11. The environmental health department needs a plan to achieve stated objectives in HESP. Roles and functions should be defined and activities monitored by USAID and the PHICS directorate.

*12. The HESP national coordinator should be given short-term technical assistance in preparing a DIP for a national program. Both PHICS and non-PHICS activities should be included, and the plan should be developed with the inputs of HESP staff at the district, and if people are in place, at the regional level as well. Planning meetings should be held to assist the district staff in preparing detailed plans, including budgets, for their respective areas. The PHICS HESP budget should be rewritten to support the implementation plan. A phased approach should be taken to ensure proper project management both at national and district levels. A consultant with planning and project management skills in health, with a focus on HESP, should be hired for a minimum of six weeks no later than February 1993. (See Appendix H for Draft Terms of Reference for this TA.)

13. A computer should be procured for the HESP national coordinator and a short-term computer HIS specialist should be hired to design a monitoring and tracking software program for HESP activities and behavioral change indicators. HESP national level staff should be trained in the use of this system. The consultant should be hired locally if possible so as to be available to assist HESP as needed. The timing for this consultancy should be decided after the DIP is written.

(Coordination)

14. Monthly and quarterly meetings should be held between the HESP national coordinator and MOW/RWS PHICS personnel. District HESP staff would attend MOW/PHICS quarterly meetings.

15. Both at district and area level, coordination meetings should be part of all HESP staff work plans and discussed in monthly reports to supervisors. If meetings are not taking place, the reasons for this should be stated.

16. The HESP national coordinator should meet with HEU, HIS, and CDD departments to discuss areas of coordination and a report should be prepared describing the coordination activities that will take place. These meetings must be held before the end of 1992 and the report should be an integral part of the HESP DIP.

(Procurement)

*17. Since PHN provides bicycles for HSAs who are trained, those HSAs who have not yet been trained do not have them. USAID has been assured by PHN that bicycles will be given to the districts for HSAs prior to the six-week training. The HESP national coordinator should prepare a request to PHN for the number of bicycles needed. If

this request is not filled in time (by February 1993), USAID should authorize the purchase of bicycles for select HSAs so that HESP activities are not held up for lack of transportation.

8.4 Rural Water Supply

1. The present prioritization of projects appears sound from the viewpoint of design criteria. Adopting a 27 lpcd yield and 20-year design life for water schemes is a reasonable compromise to reduce costs and provide an adequate water supply.

2. More attention must be given to choosing an appropriate technology for each rural site. The choice is between a gravity-fed system, a borehole equipped with a handpump, and a shallow large-diameter hand dug well. Feasibility studies at each site should include a cost analysis of both construction and recurring O&M costs as a routine part of scheme design. These costs should be expressed as per capita costs for project beneficiaries, the primary factor in choosing the right technology. These studies should be carried out by the RWS Department and included in each scheme file.

3. Cost data should be continually updated and reviewed annually since costs change frequently. The best sites for gravity-fed schemes have already been developed, and many of the new sites for this technology will be costly. The RWS should review previous costs and report on trends at the annual review meeting to assist in the planning process.

4. The water quality standards presently under review are similar to standards in high-income countries. Standards recommended in the Project Paper (Appendix K) require advisories to water users when fecal coliform counts are above 50, and should be used by the project. Water sources that have a higher than 50 count throughout the year should be equipped with a treatment facility. Although this recommendation could be questioned, the alternative to insisting on high standards is to deny improved water to many rural Malawians.

5. The costs of O&M continue to exceed the revenues the MOW obtains from the sale of minor spare parts to the communities. In spite of the GOM's policy of requiring communities to pay more of the real costs of O&M, their ability and willingness to pay has been questioned in earlier studies. Present efforts to ease the effects of the drought by constructing many new facilities will increase this burden dramatically. As part of the annual review process, the GOM and the RWS must assess the need for continued subsidization of the O&M costs of rural water supply.

6. The role of PVOs and the private sector in the construction of water facilities appears to match their abilities. The GOM's policy of contracting with PVOs, construction firms, and drillers to carry out specific tasks appears satisfactory and needs no change. A note of caution is warranted, however, in regard to emergency projects to alleviate the drought, which are not being undertaken in a sustainable manner of incorporating

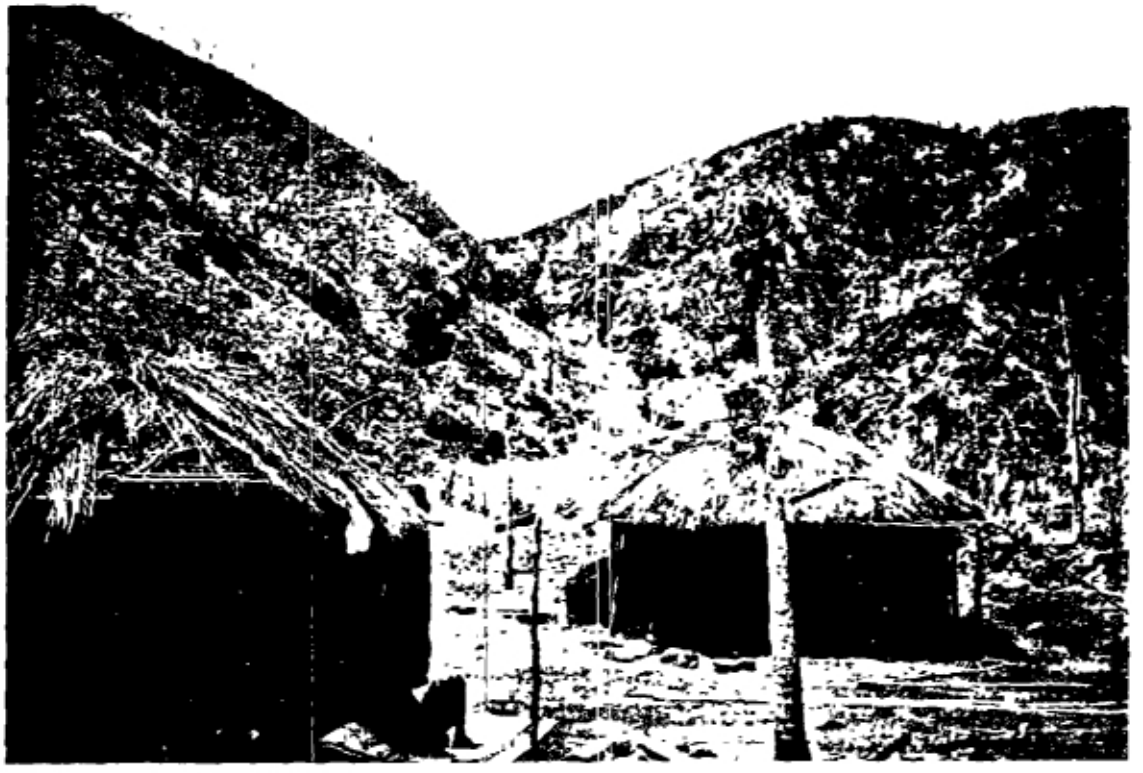
community responsibility for management. This presumably will fall on the RWS to rectify.

7. Because of the shortage of engineers at the MOW, the senior water engineer advisor position should be extended for two years.

*8. Urgent action is needed to procure and install pipe at sites that have open trenches, which are in danger of caving in from imminent rains.

9. If USAID is unable to come to resolution with the MOW/DOW on management and financial problems that have plagued the project, other options must be reviewed to finish the planned water system schemes. Engaging PVOs is one option that should be considered.

Springs outcrop high above valley near Chicwawa



Watershed above springs has been partially farmed and deforested leading to increases in water pollution.

Drought has reduced flow below normal levels at spring intake pipe (Oct, 1992).

Specialized labor, such as air hammering, is sometimes needed in the construction of the filtration systems.

Filtration system consists of settling tank, horizontal filters, slow sand filters, and a storage tank.

Wier at entrance to horizontal filters indicates low flows.

Newly installed pipeline brings villagers to enjoy benefits of potable water supply system.

A tap committee consisting of about 10 members is responsible for ongoing O&M of the standpipe.

Washing slabs built near water taps are a popular sanitation improvement.

Clothes washing without washing slabs is an unhygienic practice.

Appendix A

SUMMARY OF PHICS

Except as specifically provided herein and within the limits of the definition of the Project set forth in Section 2.1, elements of this Amplified Project Description may be changed by exchange of Project Implementation Letters between the authorized representatives of the Parties named in Section 8.2 without formal amendment of this Agreement.

I. PROJECT DESCRIPTION

A. Introduction:

Promoting Health Interventions for Child Survival (PHICS) is an eight-year, $22.9 million project to be implemented by the Government of Malawi (GOM) through the Ministry of Health (MOH) and the Ministry of Works (MOW). As detailed in this document, A.I.D. will provide $20.4 million, subject to the availability of funds. The GOM will contribute the equivalent of no less than $2.5 million comprised of support for certain recurrent costs, such as MOH staff salaries and vehicle operating costs, and the estimated value of labor contributed by beneficiaries to the construction and maintenance of piped water schemes.

The health priorities to which the Project responds and the program strategies supported are based on GOM policies and plans including the National Health Plan (1986-1995) and Statement of Development Policies (1987-1996). Specific needs for additional staff, technical assistance, training, commodities, and operational support with which to address GOM health priorities were identified and requested by the MOH and MOW during the PHICS Project design and development process. The Project directly addresses the goals and objectives of A.I.D. health, child survival, child spacing, and water and sanitation strategies.

B. Terminology:

The term "child survival" when used in this document describes a set of primary health care (PHC), maternal and child health (MCH), and water and sanitation services considered by the GOM to play a central role in the improvement of children's health in Malawi. In addition to oral rehydration therapy (ORT) and immunization, the Project supports the following GOM "child survival" priorities: the prevention and treatment of malaria, diarrheal diseases, malnutrition, and acute respiratory infections (ARI), the provision of child spacing, water, and sanitation services, and the prevention of HIV infections and AIDS.

C. Goal:

The goal to which the PHICS Project contributes is the improved health status of rural Malawians with emphasis on decreasing child morbidity and mortality. The target for goal achievement is a decrease in the overall level of mortality and morbidity in Malawi; specifically, a reduction in the infant mortality rate (IMR) from an estimated 154/1000 in 1988 to 100/1000 in 1997, the last year of the Project. Mortality reduction goals may change as information becomes available with which to estimate the impact of AIDS on the IMR in Malawi.

D. Purpose:

The Project purpose is to increase the institutional and human resource capacities of the MOH and MOW to deliver child survival services on a sustained basis, and to increase the supply and utilization of these services at the community and family level.

E. Project Components:

The Project purpose will be accomplished through activities implemented under the Project's two components -- institutional strengthening and service delivery.

1. Institutional Strengthening:

To increase the impact and sustainability of priority child survival interventions, the Project will strengthen the institutional infrastructure and human resource base on which qualitative and quantitative improvements in health service delivery depend. The Project will strengthen MOH capacity to implement an expanded child survival service delivery program through the provision of operational support, commodities, technical assistance and training to key MOH service delivery support units and training instititutions responsible for the planning, implementation, and evaluation of child survival services and the training of health workers.

2. Service Delivery:

The Project's service delivery activities will increase access to safe water, sanitation, and child survival services among a substantial proportion of the nation's population. This will be accomplished through a variety of activities including: (a) the establishment of new positions for health service delivery and support personnel; (b) pre-service training for new health personnel; (c) in-service training for existing health personnel to upgrade knowledge and skills in priority areas such as malaria, AIDS, and child spacing; (d) the implementation, evaluation, and replication of new service delivery approaches such as increasing the ratio of community health workers to population served, employing women as community health workers, introducing the community-based distribution of modern methods of contraception (CBD), home-based prevention and early treatment of malaria and diarrheal diseases, and harnessing the community organization which coalesces around the construction, use, and maintenance of water systems to initiate and sustain sanitation and child survival services. Lessons learned from experience gained under the Project regarding how best to deliver child survival services will be utilized by the GOM in the formulation and refinement of child survival policies and programs.

F. Expected Project Results:

At the conclusion of the PHICS Project, key child survival and water and sanitation services and support activities will be institutionalized and the GOM will have increased substantially its commitment of human and financial resources to preventive health in Malawi and will be better able to sustain child survival services over the long term.

II. PROJECT ACTIVITIES

A. Information, Education, and Communication (IEC) (MOH/HEU):

1. Objective:

To expand the national health education program by strengthening the MOH Health Education Unit (HEU) and its capacity to coordinate with MOH technical units to develop, pre-test, produce, and disseminate health education messages which lead to the adoption of behaviours and the use of services which improve child survival.

2. Inputs:

Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport vehicles; IEC, audio-visual and materials production equipment; minor renovation; local production costs; and, on a declining basis, recurrent costs such as the salaries of additional staff and vehicle operating and maintenance costs.

3. Outputs:

Anticipated outputs include: additional trained health education staff posted at central, regional, and district levels; IEC surveys and studies completed and results utilized in the design of health education program strategies and materials; new and existing IEC materials tested and disseminated nationally; and health education facilities expanded and remodeled.

B. Service Delivery Support:

Improve the capacity of the MOH to plan, implement, evaluate and institutionalize child survival services through the establishment or strengthening of key MOH service delivery support units such as research, epidemiology, health information systems, malaria control, and health manpower planning, development and training.

1. Research Unit (RU):

a. Objective: To strengthen the capacity of the MOH Research Unit to plan and coordinate an expanded health research program with relevant MOH technical units which effectively channels research results into GOM health and development planning processes and which utilizes results to improve the effectiveness and efficiency of health services.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport; microcomputer equipment including a compact disc (CD) reader and software; research costs; and, on a declining basis, recurrent costs such as the salaries of additional staff.

c. Outputs: Anticipated outputs include: additional trained staff; the provision of research support services to health researchers in Malawi; health surveys, assessments, and studies which conform to agreed-upon research program guidelines and criteria; workshops and publications to disseminate and utilize research findings; and policy and program decisions based on research findings which lead to improvements in the efficiency and sustainability of child survival services.

2. Community Health Sciences Unit (CHSU):

a. Objectives: To establish an MOH Epidemiology Unit and health research station to support service delivery and furnish information on which to base health plans, policies and program strategies. To strengthen and expand the malaria control program.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport; commodities; and, on a declining basis, recurrent costs such as the salaries of additional personnel, in-country training, research, and vehicle operation and maintenance.

c. Outputs: Anticipated outputs include: a new Epidemiology Unit and health research station staffed by trained Malawians; personnel trained in epidemiology; policy and program decisions informed by epidemiologic data and operations research; and an expanded and strengthened malaria control program.

3. Health Information System (HIS):

a. Objective: To strengthen and decentralize the MOH HIS and increase the use and utility of HIS data for policy-making, program planning, evaluation, and service delivery support.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; computer hardware and software; transport; commodities; and, on a declining basis, recurrent costs such as salaries of additional personnel, and operation and maintenance of computers and transport.

c. Outputs: Anticipated outputs include: additional trained staff; a rationalized MOH HIS computer system; a decentralized HIS; and policy and program decisions based on more accurate and up-to-date health information.

4. Health Manpower Planning and Development Unit (HMDU):

a. Objective: To strengthen MOH capacity to analyze and evaluate health manpower and training needs and to plan and coordinate the development of human resources, facilities, and training programs to address needs.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; and commodities such as computer hardware and software and office equipment and supplies.

c. Outputs: Anticipated outputs include: a new Health Manpower Planning and Development Unit staffed by trained Malawians; the establishment of systems and procedures for analyzing and monitoring health manpower; policy, program, and budgetary decisions informed by up-to-date and pertinent health manpower information.

5. Lilongwe School for Health Sciences (LSHS):

a. Objective: To strengthen and institutionalize the capacity of the national paramedical training school, the Lilongwe School for Health Sciences (LSHS), to plan, implement, and evaluate an expanded program of pre- and in-service Primary Health Care/Child Survival training for health workers.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport; commodities; and recurrent costs such as those for in-service training and the running of vehicles.

c. Outputs: Anticipated outputs include: integrated PHC/CS training curricula designed and programs planned; in-service training program for preceptors and LSHS faculty designed and implemented; and the number of trained LSHS faculty increased.

C. Service Delivery:

1. Rural Piped Water (MOW/RWS):

a. Objectives: To increase access to safe water among rural populations through an extension of the gravity-fed piped water system and, in so doing, to contribute to the key child survival goal of preventing water-borne diseases, particularly diarrheal diseases among children.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport, equipment, tools, pipes, and other materials for the construction of piped water systems; motorcyles, tools, and parts for piped water system maintenance; motorcyles, test kits, refrigerators, and supplies for water quality monitoring; costs of temporary engineering staff; transport fuel and maintenance; and local costs of applied research.

c. Outputs: Anticipated outputs include: 14 new gravity-fed piped water systems installed in rural areas serving approximately 250,000 people; 1 existing rural piped water system rehabilitated; approximately 8,000 washing slabs constructed at piped water taps; water quality standards adopted by the GOM; a management information system established to track status of construction, system reliability, etc.; Rural Water Section (RWS) personnel trained in computer-assisted design; and policy-oriented surveys conducted on community-based maintenance of rural water schemes.

2. Hygiene Education and Sanitation (MOH/Environmental Health Unit):

a. Objective: To strengthen and expand the MOH Environmental Health Unit and the Hygiene Education and Sanitation Program (HESP) to promote the adoption of hygienic practices and increase the use of sanitation services and facilities.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: trucks and four-wheel-drive vehicles for the movement of materials; staff transport; cement, reinforcing bars, and materials for worker housing; tools and supplies for the latrine research and training component; and, on a declining basis, recurrent costs such as salaries of additional staff.

c. Outputs: Anticipated outputs include: additional health workers and community members trained in hygiene and sanitation; and washing slabs and latrines constructed and installed.

3. Child Survival Training:

a. Objective: To increase the number of health personnel trained to deliver child survival services.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; transport; commodities; and local and recurrent costs of pre- and in-service training.

c. Outputs: Anticipated outputs include: the completion of three in-service training programs (Health Assistants, AIDS, and Family Health); the design and implementation of a new national integrated in-service training program; and the design and implementation of a new pre-service training program for Health Surveillance Assistants (HSAs).

4. Child Survival Service Delivery (MOH):

a. Objective: To increase knowledge and use of preventive health services at the community level by increasing access to child survival services.

b. Inputs: Subject to the availability of funding, A.I.D. anticipates providing support for: technical assistance; training; commodities; transport; and, on a declining basis, recurrent costs such as salaries of service delivery staff and vehicle operating expenses.

c. Outputs: Anticipated outputs include: additional community-level service delivery staff; families and village health volunteers trained in priority health interventions; and enhanced CS service delivery program implemented in areas with the highest infant mortality.

D. Project Management, Evaluation and Audit:

To strengthen GOM capacity to manage the PHICS Project, A.I.D. will fund additional project management staff for the MOH and short-term training in project and financial management. To strengthen USAID/Malawi capacity to support the GOM with Project implementation in light of increased USAID support to the health sector, the Project will support one additional project management staff at USAID/Malawi, one computer, and one vehicle. In addition, the Project will support the cost of technical assessments, evaluations and audits necessary to monitor and manage the Project.

III. IMPLEMENTATION

A. Project Management:

Management and implementation of the PHICS Project is the responsibility of the Government of Malawi working through the MOH and the MOW. Overall responsibility for implementation of the PHICS Project will rest with the Principal Secretary of Health and the Principal Secretary of Works. Responsibilities of the Principal Secretaries or their designees will include:

--- authorizing the expenditure of Project funds;

--- concurring in, for Ministry of Finance approval, Project Implementation Orders, Project Implementation Letters and other forms of earmarking/obligating documents;

--- monitoring the commodities procurement process; and

--- acknowledging the receipt of commodities by the issuance of receiving reports.

The following is a brief description of MOH, MOW, and A.I.D. project management and implementation responsibilities:

1. Ministry of Health:

Anticipated PHICS Project activities for which the MOH is primarily responsible include: the creation of new positions for service delivery and support staff; the hiring, training and deployment of new staff; the completion of current HA, Family Health, and AIDS in-service training programs; the design and implementation of a new integrated in-service training program; the design and implementation of a new pre-service training program for HSAs; the strengthening of PHC training programs and an increase in the number of trainers; the identification of technical assistance needs; the selection of long-term resident advisors; the selection of staff for overseas training; the establishment of an Epidemiology Unit, health research station, and a Health Manpower Planning and Development Unit; the decentralization of the Health Information System (HIS); expansions of the malaria control program and the Research, Environmental Health, and Health Education Units; the implementation of an expanded child survival service delivery program in selected areas of need; the management of an expanded health research program; the review and utilization of the results of health research in policy and program formulation; and the planning and implementation of a program for the assumption of the Project's recurrent costs.

Overall responsibility for Project implementation within the MOH will be held by the Principal Secretary (PS), or his designee. Day-to-day responsibility for Project management and coordination will be assumed by a Project-funded full-time Malawian MOH Project Coordinator. The position (preferably at the P4 or P5 level) will be filled by a senior-level manager with considerable government experience. Supporting the Coordinator will be a Project-funded Accountant working full-time on Project financial management and other MOH staff working part-time on Project implementation. The MOH Project Coordinator will be responsible for the development of detailed work and implementation plans which will specify tasks to be accomplished, responsible persons/units, and deadlines.

The principal GOM mechanism for implementing the Project and promoting inter-ministerial coordination will be the Project Coordination Committee. The main functions of the Committee are to monitor Project progress against work plans, to identify and resolve implementation problems, to plan and coordinate future Project implementation actions, and to ensure Project activities are institutionalized and can be sustained over the long term. The Committee will be composed of MOH, MOW, MOF, A.I.D. and other GOM staff, as appropriate, with responsibility for the implementation and oversight of Project activities. The MOH Project Coordinator, in consultation with A.I.D., will be responsible for arranging Committee meetings, preparing agenda, and preparing and distributing meeting minutes.

2. Ministry of Works:

Anticipated PHICS Project activities for which the MOW is primarily responsible include: the construction of 14 new gravity-fed piped water schemes; the rehabilitation of one existing piped water scheme; the design and management of an expanded in-service training program for MOW staff; and the conduct of policy-oriented surveys and assessments related to community maintenance and support of rural water schemes.

Overall MOW responsibility for Project implementation will be borne by the Principal Secretary, or his designee. Day-to-day responsibility for Project management and implementation will be borne by the MOW Rural Water Section (RWS). Coordination with the MOH regarding Project implementation will be formalized through the Project Coordination Committee.

3. USAID/Malawi:

USAID/Malawi is responsible for ensuring compliance with appropriate A.I.D. project monitoring, reporting, and evaluation requirements and for monitoring overall implementation of the Project. In addition, USAID/Malawi will assume responsibility for certain Project implementation actions related to off-shore procurement and the provision of technical assistance and training. To help USAID/Malawi assume these responsibilities, Project funds have been budgeted for an Assistant Project Manager to work at the USAID/Malawi Mission in support of Mission and GOM staff.

B. Procurement:

The purchase of Project commodities will be undertaken by a variety of entities. PVC pipe, cement, reinforcing rods, handtools and other materials required by the MOW rural piped water component of the Project will be purchased by the MOW by international tender under A.I.D. Handbook 11 Host Country Contracting procedures.

Other materials and supplies, handtools and furniture to be financed in local currency under the Service Delivery and Sanitation and Hygiene Education components of the Project will be purchased by the various purchasing sections of the MOH. The A.I.D. Executive Office will assist in the purchase of all motor vehicles, motorcycles, and mid-project replacements which will be financed under the Project. Because of the complexity of the procurement component of the Project and in order to ensure that goods are purchased at the most advantageous prices, the majority of the other equipment financed by the Project, including computers and electronic equipment, will be purchased by a professional A.I.D.-selected procurement services agent (PSA). In order to maximize MOH involvement in and control over the procurement process, work orders issued to the PSA will specify that the PSA is to report directly to the MOH unit concerned with the particular procurement component. Training in A.I.D. procurement regulations and procedures will be provided, as needed, to those staff with procurement responsibilities.

C. Technical Assistance and Training:

The GOM will select technical advisors and off-shore training programs to meet technical assistance and training needs to be supported under the Project. To assist with the identification of suitable advisors and training programs, and with the provision of administrative and logistical support to advisors and trainees, the GOM may utilize the support services of the Academy for Educational Development (AED), the contractor for the A.I.D.-funded Human Resources and Institutional Development (HRID) Project.

A wide array of technical assistance is available to the GOM from specialized projects supported by the A.I.D./Washington Offices of Health, Nutrition and Population. It is anticipated that certain GOM technical assistance needs will best be met by these projects, in which case such services would be purchased with Project funds through the "buy-in" procedure.

IV. EVALUATION

Information on which to monitor and evaluate the PHICS Project will be generated from a number of sources. The MOH Health Information System (HIS), including the sentinel surveillance system, compiles clinic-based data on childhood mortality and morbidity nationally and by district, and on malaria and diarrhea treatment practices at the twelve sentinel surveillance site areas. With the standard caveats, HIS data is useful to discern general mortality and morbidity trends on national and district levels and as such will serve as an indication of Project impact. Data from the sentinel surveillance system will be used as a more direct measure of the impact of national-level health communications efforts on malaria and diarrhea treatment practices. Soon after the Project's commencement, baseline surveys and KAP studies, preferably via a Demographic and Health Survey (DHS), will be done to allow the effect of various service delivery strategies on health knowledge, behaviour, and status to be measured. Baseline data disaggregated by age and sex will be collected to enable a focus on the Project's impact on women and children.

The Project will be evaluated periodically during the first three years by technical assessment teams composed of representatives from the GOM, A.I.D. and technical consultants, as needed. Mid-term (February 1993) and end-of-project (January 1997) evaluations will be conducted by a team of people mostly external to A.I.D., and with substantial Malawian participation. A detailed evaluation plan will be developed by the GOM and USAID as part of the PHICS Project's implementation plan.

V. ILLUSTRATIVE FINANCIAL PLAN

The Illustrative Financial Plan, Attachment 1 to this Annex, sets forth the planned contributions of the Parties. Changes may be made to the Plan by written agreement of the representatives of the Parties identified in Section 8.2 without formal amendment of the Agreement provided such changes do not cause (1) A.I.D.'s Grant Contribution to exceed the amount set forth under Section 3.1, or (2) the Government's contribution to be less than the amount set forth under Section 3.2.

Appendix B

SCOPE OF WORK

I. Background

The USAID-supported bilateral health project, Promoting Health Interventions for Child Survival (PHICS) Project, supports activities in Ministries of Health and Works. Under the water component with the Ministry of Works (MOW), the project supports the construction of 13 new gravity-fed rural piped water schemes and rehabilitation of 2 old schemes at an estimated cost of approximately US$5.2 million. Of this amoun, $3.1 million was earmarked for commodoties and $2.1 million for operating expenses.

On 4 December 1990, MOW informed USAID that the amount allocated was inadequate for them to complete construction of the proposed schemes. MOW sent an official document proposing that an additional $11.82 million would be required to complete these schemes.

In response to the MOW request for additional funding USAID/Malawi conducted a WASH-assisted Value Engineering/Analysis (VE/VA) Workshop 13-17 January 1992 to assist the MOW to critically look at their designs and cost estimates. The workshop results were utilized by MOW staff and when the VE/VA concepts are implemented, significant savings will be made.

Now, at 28 months into the implementation of the project, the water component has fallen behind the implementation schedule due in part of financial management problems. MOW has been unable to submit accurate and complete expenditure reports in a timely manner. A short-term consultant was brought in during March to assess the nature of the problem. One result of this consultancy was that the MOW agreed to reinforce their accounting personnel. USAID also will conduct a planned 1993 audit in late 1992 instead of focus on this problem.

Assistance is needed to conduct a mid-term project evaluation of the water and sanitation component of PHICS to assess progress in achieving its objectives and to provide expert opinion on the MOW's request for additional funding.

The scheduled completion date for the PHICS project is June 30, 1997.

II. Purpose

The purpose of this request for technical assistance is to undertake a mid-project evaluation to determine the level of success in attaining the goals and objectives which were originally designed. This evaluation should address:

(a) Design criteria used in designing new water/sanitation schemes
(b) Water quality/quantity standards to sustain good health.
(c) Community capability to sustain operation and maintenance of gravity schemes and sanitation facilities.
(d) Project financial and technical management strategies
(e) Accomplishments to date vis-a-vis the PP Logframe expected outputs (water/HESP component).

III. Evaluation Tasks

The activities or tasks to be undertaken during evaluation of the water and sanitation component of PHICS are:

1. To recommend strategies for the future execution of the project (through 1997). This would include suggestions to achieve technical, fiscal and environmental sustainability, including:

   (a) Recommend an approach to developing appropriate design criteria/water standards for both source and end-users
   (b) Recommend financial and technical management strategies
   (c) Recommend monitoring system of intermediate indicators leading to potential impacts in health, socio-economy, women and the environment
   (d) Assessment of input supply systems with recommendations as needed to improve (1) requirements estimates (2) procurement & contracting (3) inventory management (4) distribution & use

2. To recommend a strategy for coping with severe human resource/manpower constraints and estimate training needs to ensure both sustainability of project activities and attainment of the capacity-building objectives in water and sanitation.

3. Assess the feasibility and effectiveness of greater involvement of NGO/PVOs in project implementation.

IV. Methodology

In order to complete the objectives described above, a five person WASH team will travel to Malawi to meet with USAID staff and local officials, examine conditions at the village level, and gain access to available data. As part of the technical evaluation, the relative role and advantages that surface water or ground water provides as the source for villages covered by the project will be examined. The team should utilize the WaSH evaluation Guidelines in designing and implementing this task.

V. Team -

1. Water Engineer/Hydrogeologist- The water engineer/hydrogeologist will address the technical and environmental aspects of the water supply project, with reference to success to strategies for the future and long-term sustainability. The individual must have a clear understanding of the requirements for the operations and maintenance of water supply systems in the African context, and should also be able to address the technical issues of design criteria and water quality standards.

2. Institutional and Human Resources Development (ID/HRD) Specialist - The ID/HRD person will evaluate the institutional capability of both the public and private sectors to implement ongoing and planned rural water projects; and evaluate the impact of manpower shortages on project implementation. The individual must have a broad understanding of the water $ sanitation sector and the human resources issues involved in both the public and private sectors and experience in developing strategies for privatization.

3. Economist/Financial Analyst - The Economist/Financial Analyst will address the fiscal issues of the project, including recurrent costs of operations and maintenance, as well as the implications of privatization and prospects for sustainability. Therefore the analyst will need to address financial management issues at the government central, regional and district levels; within the NGO and communities; and at the community level for operations and maintenance. The individual should have signigicant experience with the financial aspects of water and sanitation systems, preferably in Africa.

4. Health/Sanitation specialist - The Health/Sanitation specialist will play a key role in evaluating the project to date, and examine the linkages betwee water system activities and health benefits. Issues to be addressed include potential health impacts of the project, hygiene education, coordination between HESP (health educators) and water construction teams, and community involvement. The individual should have extensive experience in community development projects in Africa.

USAID/Malawi and the Malawian Goverment (GoM) will each assign personnel to the team. The USAID/Malawi person will work with the team in addressing the sustainability issue, while the MG person will be an engineer and will work with the team on design criteria and water quality standards.

An initial draft of the report will be left with the Mission before the team leaves Malawi. After comments are received from the Mission, it will then be revised, finalized and printed at WASH. WASH will provide 20 copies of the final report to the mission by January 31, 1993. The product should also include a draft of the Project Evaluation Summary (PES) for completion by the mission.

VIII. Level of Effort

The level of effort for the consultants will consist of 2 days for the team planning meeting at WASH, 3 total travel days, 22 work days in-country, and an additional day for finalization of the report. The project leader will be authorized 2 days for pre-planning and 2 additional days for completion of the report. WASH is also authorized 6 days for project management and 4 days for editing and report production.

IX Cost

This includes all salaries, travel (including in-country), overhead, fees, and other direct costs. It also includes the preparation, printing and distribution of the report. Mission authorizes a 6-day work week for this activity. See budget.

USAID/Malawi requests that WASH utilize at least one person from an HBCU or other Gray Amendment organization. While WASH normally meets Gray Amendment requirements, the Mission would like to see the participation of a Gray Amendment organization/individual in this activity.

VI. Duration/Schedule

A minimum of three to four weeks in the field will be required to achieve the objectives of this activity. A 2-day team planning meeting (TPM) should be held in Washington the first week of September. The team would then arrive in Malawi on Monday, September 7, 1992 and remain until October 1-day TPM. As part of the in-country TPM, the team will brief the Mission and MG on the Proposed work plan and product. The team is also required to debrief prior to departure.

Appendix C

PERSONS CONTACTED

The following individuals were contacted by the Evaluation Team between Oct. 20 and Nov. 5, 1992:

1. Mr. Chris McDermott, HPN Officer, USAID/Malawi
2. Mr. Mexon Nyirongo,HPN Program Specialist, USAID/Malawi
3. Ms. Carol Peasley, Mission Director, USAID/Malawi
4. Mr. R. Amin, Controller, USAID/Malawi
5. Mr. Sam Scott, Deputy Mission Director, USAID/Malawi
6. Mr. Newton Chaya, Chief Water Engineer, MOW/RWS
7. Mr. Jack Farmer, Principal Civil Engineer, MOW/RWS
8. Mr. J. Nyirenda, Principal Environmental Health Officer, MOH
9. Miss Jean Kapalamula, PHICS Coordinator, MOH
10. Mr. Gerald Gausi, Civil Engineer, MOW/RWS
11. Mr. Ben Chandiyamba, HESP Coordinator, MOH
12. Mr. Bob Strickland, Save the Children Fund, U.K.
13. Ms. Kate Wedgwood, Save the Children Fund, U.K.4
14. Ms. Sharon Brock, Peace Corps Engineer, Chickwawa5
15. Mr. Chindamba, Head of the Environmental Health Unit, MOH6
16. Ms. Anne Bauers, Technical Advisor, LSHS7
17. Mr. Bomba, Head, Health Education Unit, MOH (and staff)7
18. Dr. Lester Chitsulo, Head, Community Health Services Unit, MOH
19. Mr. George Malikebu, HSA Training Coordinator, Environmental Health Unit, MOH
20. Mr. Jali, PHICS Accountant, MOH
21. Mr. Frank Ngulube, Chief Water Supervisor, MOW
22. Mr. Fred Movete, Personnel Officer, Water Dept., MOW
23. Mr. J.G. Nkhoma, Water Supervisor, Zomba

24. Mr. P.L. Makondetsa, Chief Water Supervisor, Monitoring and Evaluation, Zomba
25. Mr. E.A. Priminta, Monitoring Assistant, Liwonde
26. Mr. Namitowa, Chief Clinical Officer, Machinga Distrist Hospital
27. Mr. C. M. Nyirenda, Senior Health Assistant/HESP Supervisor, Nsanama Health Center
28. Mr. L. N. Chilambula, HESP Coordinator, Liwonde
29. Mr. E. Ngaiyaye, Senior Health Assistant, Makwira Health Center, Chikwawa District
30. Mr. M. A. Kanzondeni, Senior Health Assistant/HESP Supervisor, Chikwawa District
31. Mr. Barle Makumba, Chief Health Inspector/HESP Coordinator, Mpira-Balaka
32. Mr. Tensonny W. Kaponya, Health Surviellance Assistant, Twaila Area, Mpira-Balaka
33. Ms. Mary Stephano, Technical Advisor, manpower Development, MOH
34. Mr. Rudi Klaus, HRID Project, Lillongwe
35. Mr. Rob Kafundu, Chief, Grounwater Division, MOW/RWS
36. Ms. D. Larudzala, Senior Water Chemist, Central Water Quality Lab
37. Mr. C. S. Sakaike, Senior Stores Officer, MOW/Water Department
38. Mr. K. Msampha, Financial Analyst, USAID/Malawi
39. Ms. Darla Gucken, FMO, USAID/Malawi
40. Mr. B. H. Kasonya, PHICS Accountant, MOW
41. Mr. A. J. Galafa, Accountant, MOW
42. Mr. C. J. Taylor, C.P.A., Peat Marwick, Nairobi
43. Mr. S. M. Woods, A.C.A., Peat Marwick, Nairobi

Appendix D

DOCUMENTS CONSULTED

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Appendix E

HESP JOB DESCRIPTION

1. Implement the programme in the communities i.e. sanitation promotion hygiene education surveys.
2. Train communities.
3. Community mobilization and motivation.
4. Support of communities with timely provision of resources and information.
5. Promote construction, correct use, adequate and appropriate sanitary facilities.
6. Indentify training needs of the community.
7. Monitoring rate of progress and reporting.
8. Reports to Health Assistants.
9. Distribute construction and training materials to communities.

Appendix F

HSA GENERAL JOB DESCRIPTION

JOB TITLE : Health Surveillance Assistant (HSA)

GRADE : S-1, S-3

DESCRIPTION : The HSA serves as a linkage between fixed district health services and the community; motivates, informs, refers and assists the community and individuals with in the promotion and maintenance of personal and environmental health, detects, eliminates and refers potential and real health hazards reaks detects and reports disease outbreaks.

RELATIONSHIPS : The HSA works directly with the village/community leaders in identifying and providing services required by the community; works with traditional healer, community service workers and volunteers from other ministries providing environmental and personal services; collaborates with Medical Assistant, Health Assistant and the Enrolled Community Health Nurse within the Health Center.

RESPONSIBLE TO: Health Assistant in assigned catchment area.
Health Inspector in the absence of a Health Assistant

QUALIFICATIONS: Completion of Ministry of Health approved Health Surveillance Assistant training program. Ability to function independently, possess good organizational and verbal and nonverbal communication skills.
EMPLOYMENT : In community settings according to an assigned catchment area.

FUNCTIONS:

1. Works with others in performing activities of growth monitoring

2. Informs the community about child spacing.

3. Provides for and informs the community about nutrition and rehydration practices.

4. Provides for and informs villagers about oral rehydration

5. Conducts village inspections and informs on practices to promote environmental and personal hygiene.

6. Informs and assists the community in obtaining and maintaining safe water supply.

7. Observes for and reports disease outbreaks.

8. Follows up patients: tuberculosis, mental illness.(others?)

9. Inspects for and informs community about food hygiene.

10.Conducts community assessment within assigned catchment area

11.Works with others in providing immunizations.

12.Informs community about antenatal care.

13.Informs community about STD and AIDS prevention.

14.Maintains equipment utilized on job

15.Provides written monthly work plans and reports

16.Gives health talks to individuals and groups within assigned catchment area.

Functional areas of the Health Surveillance Assistant

1.	Growth Monitoring	Motivate, Inform, Refer, Perform
	a. Equipment maintenance	
	b. Prepares equipment & supplies	
	c. Purpose of growth monitoring	
	d. Weighs the child	
	e. Records & plots weight	
	f. Existing illness & problems	
2.	Child Spacing	Motivate, Inform, Refer, Perform
	a. MOH practices	
	b. Reasons for child spacing	
	c. Benefits of child spacing	
	d. Methods of child spacing	
	e. Problems with child spacing	
3.	Nutrition & Rehydration	Motivate, Inform, Refer, Perform
	a. Healthy nutrition	
	b. Detection of malnutrition	
	c, Use of available food products	
	d. Breast feeding/weaning	
	e. Related illness(es)	
	f, Oral rehydration	
4.	Village Inspection	Motivate, Inform, Refer, Perform
	a. Latrines	
	b. Bath house	
	c. Refuse	
	d. Animal kholas	
	e. Dish racks	
	f. Vector & vermin control	
5.	Safe Water Supply	Motivate, Inform, Refer, Perform
	a. Protect a shallow well	
	b. Chlorinate well/drinking pots	
	c. Protection of springs	
	d. Storage pots	
6.	Sanitation and Food Hygiene	Motivate,Inform,Refer, Perform
	a. Structure of latrine	
	b. Dwelling infestations	
	c. Safe food stores	
	d. Personal hygiene	
7.	Disease Investigation	Motivate, Inform, Refer, Perform
	a. Follow up patients with TB	
	b. Report disease outbreaks	
	c. Reports suspect cholera cases	

8.	Community Assessment	Motivate, Inform, Refer, Perform
9.	Immunizations	Motivate, Inform, Refer, Perform
	a. Maintenance of cold chain/equip	
	b. Preparation vaccines & equipment	
	c. Administration of vaccines	
	d. Possible side effects	
	e. Existing illness	
	f. Records immunization	
	g. Informs/organize community	
10.	Antenatal Care	Motivate, Inform, Refer, Perform
	a. Promotes checkups	
	b. Nutrition for pregnancy	
	c. Tetanus toxoid	
	d. Problems with pregnancy	
11.	STD'S AND AIDS	Motivate, Inform, Refer, Perform
	a. Prevention of STD and AIDS	
	b. Behavior change	
	c. Condoms	
12	.Organize and mobilize Community and Village Health Committees	Motivate, Inform, Refer, Perform
13.	Equipment Maintenance	Motivate, Inform, Refer, Perform
	a. Bicycles	
	b. Refrigerator	
	c. Sterilizer	
	d. Weight scales	
	e. Weigh bags	
	f. Chemical sprayers	
	g. Vaccine carriers	
	h. Wheel barrows	
14.	Communication skills	Motivate, Inform, Refer, Perform
	a. Preparation monthly work plan	
	b. Preparation of monthly report	
	c. Health talks	

Appendix G

SUMMARY OF CDD MORBIDITY AND TREATMENT SURVEY

Conducted November 1991 before peak season just at beginning of the rains

8997 households were interviewed. 13,227 children under 5 years old were living at the moment of the interview in the house.

n	%	under 5 years of age.
3288	24.7	less than 12 months.
2761	20.7	between 12 and 23 months.
2483	18.7	between 24 and 35 months.
2306	17.3	between 36 and 47 months.
2455	15.6	between 48 and 59 months.

The total by age is 13293

Children with diarrhea in the last two weeks:

		n	% same age group
less than 12 months	=	1028	31.3
12-23 months	=	1002	36.2
24-35 months	=	569	22.9
36-47 months	=	296	12.8
48-59 months	=	175	7.1
total	=	**3070**	

3605 children (22.9% of the under five) had diarrhea in the last two weeks. 784 (21.7% of the children who had diarrhea) did nothing. 334 (9.2% of the children who had diarrhea) gave ORS. 261 (7.2% of the children who had diarrhea) gave fluids. 1116 (30.9% of the children who had diarrhea) gave SSS. 605 (16.8% of the children who had diarrhea) went to the health center/hospital.

639 children (20.8% of the children with diarrhea in the last two weeks) had blood in their stool. 1804 children (58.7% of the children with diarrhea in the last two weeks) had fever. 1766 children (57.5%???? of the children with diarrhea in the last two weeks) went to the health center for the diarrhoea. 1008 mothers whose child had diarrhoea in the last two weeks gave the child anti-diarrhoeal(?). Among the mothers who gave anti-diarrhoeal 48.3% got it from the health center and 24.3% got it from the shop.

874 children had diarrhea at the moment of the interview. Total of the children who had diarrhea that day 710 (?).

1911 children with diarrhea in the last two weeks were breastfeeding before diarrhea started (2030 children are the total under 24 months of age who had diarrhea in the last two weeks). 1857 (97.1% of all the breastfed children continued breastfeeding during diarrhea. 1448 mothers did not change the amount of food given to the child during diarrhea. 1317 mothers did not change the amount of fluids given to the child

during diarrhoea episode. 1035 increased the amount of fluids given to the child during diarrhoea episode. 1913 children were fed in the usual way (?) after diarrhoea

5933 mothers (66.3% of the 8952 mothers) have treated the child with ORS solution. 2561 (59.4% of 4310 mothers who treated with ORS?) at the health center 1549 (35.9% of 4310 mothers who treated with ORS?)

4266 mothers (49.3% of 8647 mothers who answered this question) declared they gave ORS to replace fluid. 3491 mothers (40.3% of 8647 mothers who answered this question) declared they do not know why they give ORS. 5736 mothers (63.4% of the 9035 mothers interviewed) would use phala in case their child had diarrhoea. 399 (4.4% of the 9035 mothers interviewed). 3322 mothers (36.7% of the 9035 mothers interviewed) would use SSS(?). 412 mothers (4.5% of the 9035 mothers interviewed) would use thobwa. 754 mothers (8.3% of the 9035 mothers interviewed) would use tea. 507 children died in the last twelve months.

Malaria Mortality, Morbidity and Treatment

Child with fever/malaria in the last two weeks:

		n	% same age group
less than 12 months	=	1186	36.8
12-23 months	=	1067	38.6
24-35 months	=	832	33.5
36-47 months	=	629	27.2
48-59 months	=	571	23.2
Total with fever	=	4285	32.4

4556 (?) children under five (34.4% of all the children under five) had fever in the last two weeks. 1021 children -I will be using 4556 as denominator- (22.4% of all the children with fever in the last two weeks) did not receive anything for the fever. 1547 (33.9% of all the children with fever in the last two weeks) received chloroquine. 1765 (38.7% of all the children with fever in the last two weeks) received analgesic. 16 children (0.3% of all the children with fever in the last two weeks) received fansidar. 52 (1.7% of all the children with fever in the last two weeks) went for traditional medicine. 833 children had fever today.

481 children were hot according to the interviewer's assessment. 220 children had convulsions. 3053 (83.5% of the answers to this questions) children went to the hospital. 886 (10.8% of the mothers who answered this question) declared that one of their children was hospitalized because of fever in the last twelve months. 223 (2.7 of the mothers who answered the this question) mothers declared that their child was transfused in the past twelve months. 1141 mothers declared their children received some kind of medication to increase blood level.

Appendix H

TERMS OF REFERENCE-HESP TA

Technical Assistance to HESP Component to Develop

Detailed Implementation Plan as part of Promoting Health Interventions

Through Child Survival (PHICS) USAID Bilateral Health Project No. 612-0231

BACKGROUND TO THE ASSIGNMENT

USAID Malawi is supporting an 8 year $23.5 million bilateral health project, Promoting Health Interventions Through Child Survival (PHICS), which supports activities overseen by the Ministry of Health and Ministry of Works. PHICS began in late 1989 and its expected completion is 1997.

PHICS is an umbrella project and funds eight components at the MOH. Under the water component of the MOW, PHICS supports the construction of 13 new and 2 rehabilitations of existing large scale gravity fed water schemes to reach a population of 250,000. In the past USAID has supported the MOW in constructing 55 gravity fed systems covering 1.5 million. As part of the MOH component supported by PHICS, the Health Education and Sanitation Promotion (HESP) program of the Environmental Health Section is being supported to provide hygiene and sanitation education services and construction of latrines and washing slabs to the users of the 68 new and existing water schemes covering a population of 1.7 million.

During a mid-term evaluation of the PHICS HESP program, conducted by a WASH team in November 1992, several recommendations were made to strengthen the HESP component so that its expected objectives would be reached. (See attached excerpt from the Executive Summary). The Mid-Term Evaluation recommended

technical assistance to aide the HESP program in developing a detailed implementation plan which would guide the HESP program over the remaining project years.

Following these recommendations, USAID/Malawi in consultation with the MOH HESP component, has requested WASH to provide technical assistance to develop a detailed implementation plan for the HESP program.

OBJECTIVES OF THE ASSIGNMENT

To develop a detailed implementation plan for the HESP component jointly with the MOH HESP National Coordinator. The plan should be based on district plans. Specifically, the plan should include:

1. A training plan spelling out how many people need training, in what, based on what curriculum, and for how long.

2. A monitoring and evaluation plan which finalizes HESP indicators and activities that will be tracked on a quarterly and annual basis.

3. A staff deployment plan for HSAs. The plan would be used to determine the potential coverage of HESP throughout the remaining years of PHICS.

4. A revised budget, using GOM budget categories, for the remaining years of PHICS.

5. A IEC plan for HESP including production of materials to support education activities of HSAs and VHCs.

6. A coordination plan between MOW, CHSU, HEU etc.

7. A annual work plan for 1993/1994.

METHODOLOGY

In order to complete this assignment, one technical advisor, with a strong background in project management and implementation in HESP, is needed for 6 weeks in Malawi. The TA will work with the National HESP Coordinator and conduct a minimum of 2 district planning workshops. Each district planning workshop will take place at a regional level for approximately 1 week. As part of this week, meetings with MOW at district level will take place in order to outline strategies for coordination and training.

TASKS

WEEK 1 - Meet with USAID, MOH and MOW.

- Plan table of contents of DIP.
- Prepare district w/shop curriculum.
- Assure logistic arrangements for w/shops.

WEEK 2 - Conduct first district planning w/shop.

(most likely the North Region)

WEEK 3 - Finalize district plans from 1st w/shop

- Assure logistic arrangements for 2nd w/shop.

WEEK 4 - Conduct 2nd district w/shop.

(Most likely the South and Central Regions)

WEEK 5 - Finalize plans from 2nd w/shop

- Finalize overall plan in draft.

WEEK 6 - Review overall plan in meeting with key staff

- Finalize plan.

- Debrief USAID/GOM

PERSONNEL AND LEVEL OF EFFORT

In order to complete this assignment, the following personnel will be required:

A Health/Sanitation Specialist with background in planning, project management and implementation of health education and sanitation projects in Africa. This person should also have training/workshop facilitation skills and management information systems design and tracking.

The position will require 40 person days of effort.

TIMING OF ASSIGNMENT - This assignment should be completed no later than mid March 1993.

Appendix I

DETAILED PHICS PLAN

		Action	Responsible Party
Quarter 1			
	1	Special Project account established	USAID/GOM
	2	Financial Audit initiated	USAID/GOM
	3	Draft 2-year workplan	MOH
	4	Various Job descriptions finalized	MOH/MOWS (USAID/Review)
	5	Some key personnel recruited	MOH/MOWS
	6	Draft outlines of research activities	MOH
	7	Design and conduct basline survey (project and control)	MOH/RU
	8	PHICS Project Management finalized	MOH/MOWS/ USAID Review)
	9	Malawian participation in AED microcomputer course	USAID/MOH
	10	Initial implementation plan finalized for 8/88 - 8/90	GOM/USAID
	11	Financial management system designed	MOH/PIU
	12	Health staff in water sites inventoried	MOH
	13	First order to vehicles equipment and materials procured	MOWS/MOH/USAID
	15	Computer Specialist (decentralization) (install/ train at main Hospitals)	HIS/MOH
	16	Development of full term PHICS Implementation Plan (1988-95)	USAID/MOH/MOWS
	17	Annual workplans finalized	MOH/MOWS/USAID
	18	1st Quarterly review	MOH/MOWS/USAID
Quarter II	19	Procure equipment vehicles and and materials	MOH/MOWS/USAID
	20	TA's arrive and other support hired	MOH/MOWS/HRID
	21	Draft of 2-year workplan for HEU and Epidemiology	MOH/HEU/ES
	22	Recruitment for 1st Epidemiology course	MOH/ES
	23	First five water sites begun	MOWS
	24	Outline of Biomedical research officially reviewed	MOH
	25	Second quarterly review	USAID/MOH/MOWS

Quarter III	26	Draft 2-year workplans	MOH/MOWS
	27	Additional vehicles equipment materials procured for HSAs and PCVs	MOH/MOWS
	28	Draft requirements for short term TA needs	MOH/MOWS
	29	Additional staff recruited	MOH/HEU
	30	Identify candidates for 1st round of courses	MOH
	31	1st round of courses launched	MOH/AID
	32	Water Sanitation and HEU field activities begun	MOWS/MOH
	33	Initial operations and Biomedical Research plans finalized	MOH/RU/ES/PU/ USAID
	34	Develop reseach orientation workshops	MOH/RU
	35	Design monitoring of service delivery component	MOH/RU
	36	Draft plan for renovation of HEU buildings for new equipment	MOH/HEU/MOWS (USAID Review)
	37	Third quarter review	
Quarter 4	38	First group for long term training departs	MOH/HRID
	39	First round of workshops held	MOH/HEU/RU
	40	Short Epidemiology course developed	MOH/EU
	41	Additional staff recruited	MOH/MOWS
	42	Begin awareness campaign	MOH/HE
	43	Begin renovation of HEU building	MOH/MOWS
	44	Fourth quarterly Review	USAID/MOH/MOWS
	45	First year technical assessment	USAID/MOH/MOWS

Action	Date	Responsible Party
Project Agreement signed special project account established	MONTH 1	USAID/GOM
Financial audit initiated		USAID/GOM
Job description for Epidemiologist finalized		MOH (USAID Review)
Malawian participation in AED micro-computer course		USAID/MOH
Design of baseline survey (project and and control)		MOH/RU Review)
PHICS Project Management Plan finalized		MOH/MOWS (USAID
USAID/M PSC PHICS Project Monitor hired		
Draft 2-year workplan for HIS section	Month 2	
Three engineers recruited		MOWS
Female HSA job description finalized		MOH (USAID Review)
Malaria/ORT management specialist job description finalized		MOH (USAID Review)
PCV (MPH) job description finalized		MOH/Peace Corps, (USAID Review)
Job description of male HSA finalized		HESP/MOH (USAID Review)
Malaria/ORT management specialist recruited		MOH/HRID
Expanded Research Review Committee formed		MOH/RU
Job Description of L-T Health Education Advisor finalized		MOH (USAID Review)
Job description for Principal Research Officer finalized	Month 3	MOH/RU (USAID Review)
Job description for Documentation Expert finalized		MOH/RU (USAID Review)
Job description for Public Health Advisor finalized		MOH (USAID Review)
Financial Management system designed		MOH/PIU
Draft Outline of Applied Biomedical Research Prepared		MOH
Draft Outline of Operations Research Prepared		MOH
Draft Outline of Health Care Financing/ Cost Effectiveness Research		MOH
Evaluation plan finalized		USAID/GOM
Initial implementation plan finalized for 8/88 - 8/90		GOM/USAID

Job description of Senior Planner finalized		MOH/PU/HRID (USAID Review)
Project Officer (PIU) hired		MOH/PU
Three senior technical field staff recruited		MOWS
Job Description of Peace Corps Water Engineers finalized		MOWS/Peace Corps (USAID Review)
First order of PVC pipes procured		MOWS
Health staff in water sites inventoried		MOH
Vehicles procured		MOWS (USAID)
Baseline survey (project and control) conducted		MOH/RU (Short-term TA)
Training materials and testing protocols for female HSA developed		MOH
Administrative Officer (PIU) hired	Month 4	MOH/PU
Personnel (Ass. Documentation Officer + secretary) hired		MOH
First Meeting of expanded Research Review Committee		MOH (USAID)
Computer Specialist (Decentralization) (install/train at main hospitals)		MIS/MOH
Procure equipment (computer)		MIS/MOH
50 male HSAs recruited		HESP
Development of full term PHICS Implementation Plan (88-95)		USAID/MOH/MOWS
Financial Review	Month 5	MOH/MOWS
Annual Workplans finalized		MOH/MOWS (USAID Review)
1st Quarterly Review		MOH/MOWS/USAID
Procure Equipment (Computer)		MOH
Procure Equipment (vehicles)		MIS/MOH (USAID)
Procure water systems equipment (vehicles)		MOWS (USAID)
Long-term Health Ed. Advisor in-country	Month 6	MOH, HRID
Procure equipment (2 Jeeps)		MOH/ES (USAID)
Epidemiologist In-country		MOH/HRID
Computer specialist (center)-install/train		MOH/MIS
10 HAs recruited		HESP
Peace Corps engineers (3) arrive		MOWS/Peace Corps (USAID)
Outline of Biomedical Research officially reviewed		MOH

Draft of 2-year Workplan for HEU and Epidemiology section	Month 7	MOH/HEU, MOH/ES
Data clerks (6) hired		MOH/Hospitals
Female HSA training materials tested		MOH
First five sites begun		MOWS
Principal Research Officer In-country	Month 8	MOH/HRID
Documentation officer In-country		MOH/HRID
Public Health Advisor In country		MOH/HRID
Recruitment for 1st Epidemiology course		MOH/ES
Documentation Expert hired		MOH/HIS/Hospitals
Water quality, monitoring equipment/ supplies procured		MOWS
Supplies (i.e., cement, steel rods) procured		HESP/MOH
First 25 female HSAs recruited/ trained		MOH
Second Quarterly Review		MOH/MOWS/USAID
Draft 2-year workplan	Month 9	MOWS
Draft 2-yr workplan		MOH/RU
First HIS person to data analysis course		MOH/HIS
Draft 2-yr. workplan		MOH/PU
Draft list of short-term technical assistance needs		MOH/HEU
Washing slabs construction begun		HESP
Equipment/supplies for villages & HSAs procured		MOH
Initial Operations and Biomedical Research Plans finalized		MOH/ES/RU/PU (USAID)
Initiate willingness to pay study	Month 10	MOWS
Initiate procurement of commodities		MOH/HEU
Identify candidates for 1st round of training		MOH/HEU
Design monitoring of service delivery component		MOH/RU
Launch 1st Epidemiology course		MOH/ES
Five additional ENMs recruited		MOH
San-Plat latrine promotion begun		HESP
Develop research orientation workshops	Month 11	MOH/RU
PIU Staff (4 members) Complete training in AID procedures		MOH, AID
Make preliminary distribution of radios to local health workers		MOH/HEU

Draft plans for renovation/ remodeling of HEU buildings for new equipment		MOH/HEU, MOWS (USAID Review)
Water quality monitoring begun		MOWS
Transport for PCVs (4) procured		MOH
Third Quarterly Review		MOH/MOWS/USAID
Begin "Health Awareness campaign"	Month 12	MOH/HEU
Initiate recruitment for first round of new HEU staff		MOH/HEU
First Research orientation workshop		MOH/RU
All baseline data surveys initiated		MOH, MOWS
Five RWOs recruited		MOWS
Malawian Principal Research Officer departs for Ph. D. training	Month 13	MOH, HRID
Malawian documentation officer departs for MA training		MOH, HRID
Malawian Epidemiologist departs for M.S. training		MOH, HRID
Documentation Expert installed		MOH/HIS/Hospitals
Conduct workshops to report on listenership/KAP study		MOH/HEU
Member of Planning Unit departs for Ph.D. training		MOH/PU, HRID
San-Plat slabs production begun		HESP
Begin renovation/remodeling of HEU buildings	Month 14	MOH/HEU,MOWS
Short Epidemiology course developed		MOH/ES (USAID Review)
4 PCVs (MPH) arrive in-country		MOH/Peace Corps
Fourth Quarterly Review		MOH/MOWS/USAID
First year technical assessment		USAID/MOH/MOWS
Send first students to Polytechnic for maintenance/ repair training	Month 15	MOH/HEU, Poly.
Conduct preliminary training in production based on new equipment		MOH/HEU
Procure equipment (2 additional jeeps)		MOH/ES
Computer specialist (center) follow-up training		MOH/HIS
Computer specialist (decentralization) follow-up training		MOH/HIS
Begin installation of new equipment	Month 16	MOH/HEU
50 additional male HSAs recruited		HESP
Preparation of Terms of Reference for Evaluation		USAID/MOH/MOWS

Begin training on new equipment as it arrives and is installed	Month 17	MOH/HEU
Review first year's progress and revise second year workplan		MOH, MOWS
Prepare PIO/T for Evaluation and secure external TA		USAID
Fifth Quarterly Review		MOH/MOWS/USAID
Second HIS person goes to data analysis course	Month 18	MOH/HIS
End "Health Awareness" campaign and assess impact		MOH/HEU
10 additional HAs recruited		HESP
Regional surveillance officers hired	Month 19	MOH/ES
Conduct First Evaluation		USAID
First short Epidemiology course given	Month 20	MOH/ES
Sixth Quarterly Review		MOH/MOWS/USAID
Member of Planning unit departs for Masters training	Month 21	MOH/PU, HRID

Appendix J

FINANCIAL REPORTING FORMATS

PHICS Project Earmarkings

(U.S. $)

Project Element	Authorized LOP	Obligations to Date	Previous Earmarkings	Earmarkings by PIO/Ts, PIO/Cs, or DOs	Cumulative to Date	Earmarkings PIL No __ (date) MOH	Cumulative Earmarkings to Date	Earmarkings PIL No. __ (date) MOW	Cumulative Earmarkings to Date	Cumulative Earmarkings to Date	Unearmarked Balance of Obligations to Date
TOTAL											

Appendix J

MOH
Advances, Expenditures, and Disallowances in Kwacha

PIL No	earmarkings to date	advances requested			advances received		expenditures reported		expenditures liquidated		disallowed
		date	for the period	amount	date	amount	date	Amount	date	Amount	Amount
		Subtotal									
		Subtotals									
		Subtotals									
		GRAND TOTAL									

Approximate US dollars

Promoting Health Interventions for Child Survival
BUDGET AND EXPENDITURES SUMMARY FINANCIAL PLAN
(US $000)

Budget Category	AID Contribution			Local Contribution				GRAND TOTAL
	FX	LC	Total	MOH	MOW	Community	Total	
TOTAL								

Appendix K

WATER QUALITY STANDARDS

Malawi, as with the vast majority of developing countries, has not developed its own set of water quality standards for rural conditions, but instead relies upon the guidelines recommended by the World Health Organization (WHO). For rural areas, it is widely accepted that the most important aspect in water quality is the microbiological safety of drinking water supplies. Few, if any, physico-chemical parameters have universal significance in rural water supplies and, as a result, bacteriological quality has become the most widespread measure of the safety of water supplies in rural areas. The primary bacterial indicator chosen for this purpose is the faecal coliform group, in particular Escherichia coli. WHO (1985) recommends as a "guideline" that untreated water supplies, whether piped or unpiped, contain no faecal coliforms in any bacteriological test.

Faecal coliforms and a related group, faecal streptococci, are found in large numbers in the faeces of humans and other warm-blooded animals. Their presence in water supplies is an indication of faecal pollution and a warning sign of potential hazards to health, although there is no clear relationship between the amount of faecal contamination and the corresponding health risk to the consumer of the water. It should be noted that faecal coliforms are characteristically found in almost all naturally occurring surface waters, including those originating in "protected" catchment areas. Chlorination, often accompanied by filtration, is usually the only way to completely eliminate such organisms.

Most countries in Tropical Africa have avoided the difficult issue of faecal pollution and health by simply adopting the WHO guidelines as national standards. As a result, most countries have unrealistically high (zero faecal coliform content) rural water quality standards that cannot be achieved with available resources and, therefore, are basically ignored. Such standards provide little guidance for operational activities and probably contribute to an overall disregard for water quality issues.

If Malawi is to effectively use the results of a program of routine water quality monitoring of all rural piped water supplies, it must have water quality standards that are appropriate to the current levels of development, available resources, and needs of the people. There is a growing international awareness of the need for such standards. At a recent United Nations conference on water resources management (United

Nations, 1987), the final report of the meeting stated: "Differential standards might be appropriate in situations where they expedited realistic, affordable goals and encouraged the expansion of water services to communities which would otherwise not receive them."

The Senior Water Chemist in the MOWS Central Water Laboratory in Lilongwe has proposed a revised set of standards for untreated drinking water supplies in Malawi. These standards are presented as "tentative guidelines" for untreated drinking water in the National Water Resources Master Plan (1986):

	Faecal Organisms per 100ml	Suggested Action
(a)	0	Satisfactory, continue monitoring at regular intervals.
(b)	1 - 10	Re-test to see if original sample accidentally contaminated. If re-test confirms presence of faecal organisms, remove obvious sources of pollution and monitor to see if situation improves.
(c)	11 - 25	As in (b), and increase frequency of monitoring to see if pollution persistent or intermittent.
(d)	26 - 50	As in (c), disinfect source if possible. If pollution reappears after chlorination, notify District Health Inspector.
(e)	51 - 100	As in (d), seek specialist advice and if possible consider routine disinfection or advise people to boil their drinking water.
(f)	100+	As in (e), if contamination persistent at this level and where routine disinfection not feasible, consider alternative supply.

As part of the new seven-year PHICS Project the above standards will be officially adopted by the MOWS as temporary guidelines for new and existing rural water systems. The WHO guidelines will remain the ideal and ultimate goal, but the criteria outlined above will provide the basis for decisions regarding the addition of water treatment and the selection of new catchments for future development.

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

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THE WASH PROJECT

With the launching of the United Nations International Drinking Water Supply and Sanitation Decade in 1979, the United States Agency for International Development (A.I.D.) decided to augment and streamline its technical assistance capability in water and sanitation and, in 1980, funded the Water and Sanitation for Health Project (WASH). The funding mechanism was a multi-year, multi-million dollar contract, secured through competitive bidding The first WASH contract was awarded to a consortium of organizations headed by Camp Dresser & McKee International Inc. (CDM), an international consulting firm specializing in environmental engineering services Through two other bid proceedings since then, CDM has continued as the prime contractor.

Working under the close direction of A.I.D.'s Bureau for Science and Technology, Office of Health, the WASH Project provides technical assistance to A I.D. missions or bureaus, other U.S. agencies (such as the Peace Corps), host governments, and non-governmental organizations to provide a wide range of technical assistance that includes the design, implementation, and evaluation of water and sanitation projects, to troubleshoot on-going projects, and to assist in disaster relief operations. WASH technical assistance is multi-disciplinary, drawing on experts in public health, training, financing, epidemiology, anthropology, management, engineering, community organization, environmental protection, and other subspecialties.

The WASH Information Center serves as a clearinghouse in water and sanitation, providing networking on guinea worm disease, rainwater harvesting, and peri-urban issues as well as technical information backstopping for most WASH assignments.

The WASH Project issues about thirty or forty reports a year. WASH *Field Reports* relate to specific assignments in specific countries; they articulate the findings of the consultancy. The more widely applicable *Technical Reports* consist of guidelines or "how-to" manuals on topics such as pump selection, detailed training workshop designs, and state-of-the-art information on finance, community organization, and many other topics of vital interest to the water and sanitation sector. In addition, WASH occasionally publishes special reports to synthesize the lessons it has learned from its wide field experience.

For more information about the WASH Project or to request a WASH report, contact the WASH Operations Center at the above address.