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RURAL WATER AND SANITATION PROJECT

LESOTHO, SOUTHERN AFRICA

FINAL PROJECT REPORT

(INCLUDING 8th ANNUAL REPORT)

MAY 1981-AUGUST 1989

USAID PROJECT NUMBER

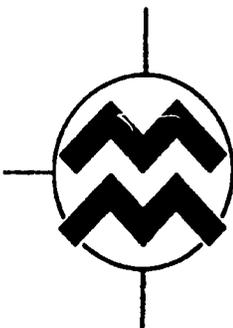
632-0088



MORRISON-MAIERLE

PROJECT NUMBER

1427-03-09-47



MORRISON-MAIERLE/SHELADIA

CONSULTING ENGINEERS

HELENA, MONTANA
UNITED STATES

MASERU, LESOTHO
SOUTHERN AFRICA



RURAL WATER AND SANITATION PROJECT
LESOTHO, SOUTHERN AFRICA

FINAL PROJECT REPORT
INCLUDING
EIGHTH ANNUAL REPORT
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RURAL WATER AND SANITATION PROJECT LESOTHO

USAID PROJECT NO. 632-0088



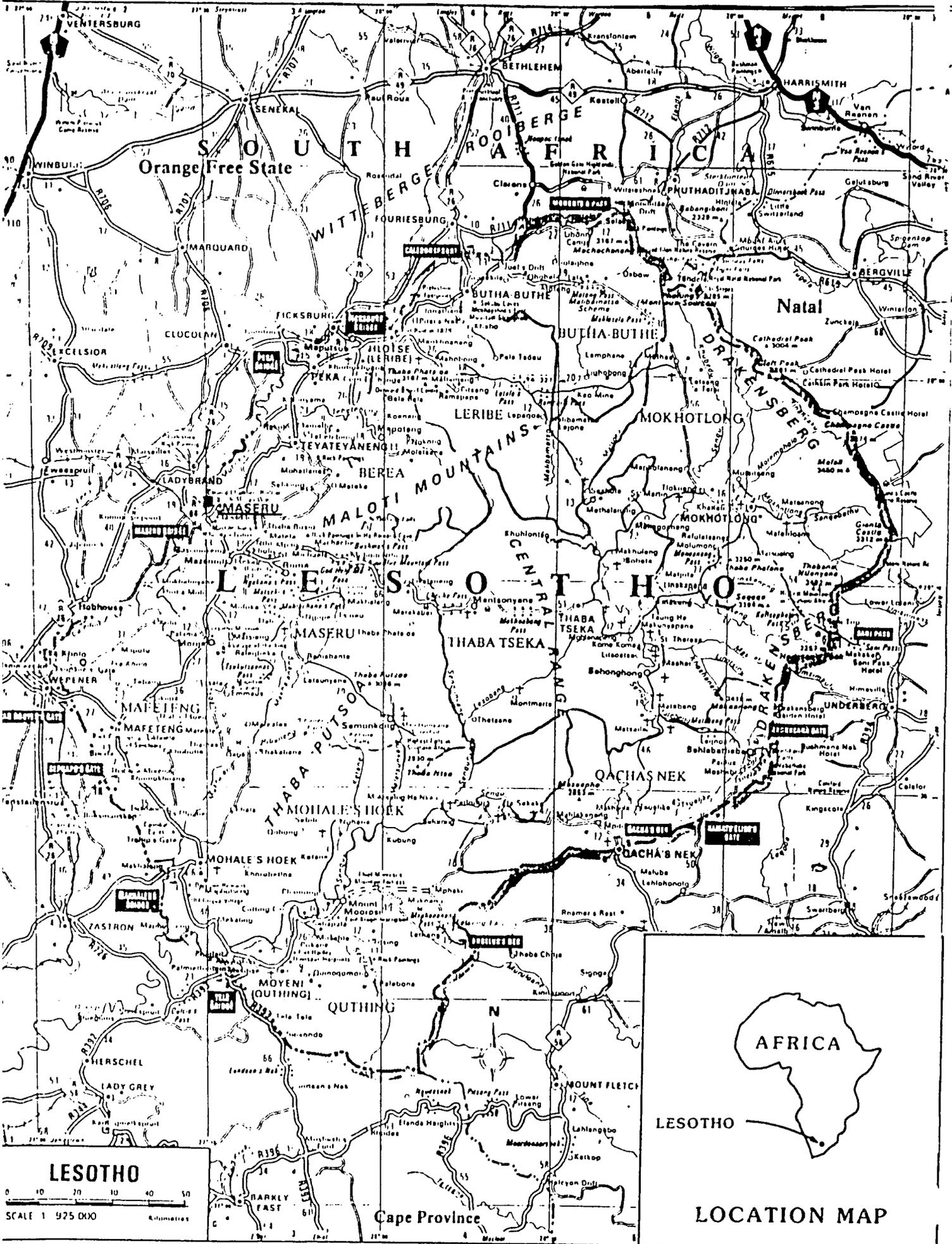
PROJECT BRIEF:

Implementation Period: May, 1981 - August, 1989

Funding Level: \$12,142,000

Progress to Date:

Water Supplies Constructed -	600
Handpumps Installed -	1500
People Served -	320,000
Skilled Technicians Trained -	150
Waterminders Trained -	590
Village Health Workers Trained -	1400



AFRICA

LESOTHO

LOCATION MAP

LESOTHO

0 10 20 30 40 50
SCALE 1:925,000
Kilometres

Cape Province



LESOTHO: HEALTH

Water supplies
for rural areas

Near the village of Ha Lumis, 80 kilometers south of Maseru, a group of Basotho women watch as a three-man team lowers a handpump into place above a water borehole.

"It's like a dream. I still can't believe it," says one of the women. "Now we will be able to wash in clean water."

Just a few miles down the road, women and children in another village draw water from a muddy, contaminated spring that they share with the ponies and livestock. The spring is beyond reclamation; but, less than 12 meters away a cable drilling machine is boring another hole into the parched ground. Within a few days, these villagers also will have potable water.

The mobile, diesel-powered drill is one of 12 operated and maintained by the Ministry of Rural Development's Village Water Supply Section (VWSS), which is bringing water to 4,000 people a month throughout this small, mountainous country. In addition to drilling boreholes and capping them with handpumps, the VWSS constructs catchments, builds gravity-fed systems from springs, and occasionally installs power pumps in rural villages.

Organization. With a \$12 million, seven-year AID grant, the Rural Water and Sanitation Project began in May 1981. Project goals included supporting and expanding the VWSS by training personnel at all levels and coordinating health education aspects of bringing clean water to some 250 villages with a combined population of 200,000.

VWSS is a flexible organization with decentralized services in 10 districts, each managed by an engineer. Each district is

divided into three regions, managed by a regional engineer responsible for planning, budgeting, maintenance, and construction. Each region has, or will have, a major vehicle and equipment repair shop, a warehousing and distribution facility, a maintenance crew, and a design and administrative office.

The project built on resources already in place—free village labor (80 percent women, most of the men work in South African mines); village stone cutters who are experts at shaping the native stone for their houses and animal enclosures; graduates of local trade schools who have some basic surveying, mathematics, and plumbing skills; and health centers and schools.

Criteria for the selection of villages for water supply aid is established by the Min-

Mission Reports from
Lesotho, Mali, and
Rwanda. By Stephen M. Goldstein

istries of Health and Rural Development, and AID. The villages have to be accessible, and the region should have a school and a health center or clinic.

Project staff meet with village chiefs to establish village water committees, to collect maintenance fees of \$3.50 per family, and to nominate water minders from the community. During construction, these minders are trained to take care of regular maintenance and report major damage to the district office.



Woman draws water from contaminated well. In background, drilling machine bores new well.

Gravity-fed systems. The project has built 100 gravity systems with above-ground, stone reservoirs of up to 30 cubic meters. Since the ground is too rocky for plastic pipe, iron pipes are used to bring the water from the reservoirs to brick-enclosed faucets in the villages. Each faucet serves about 70 to 100 people. A village of 1,000 people might have ten taps and five kilometers of piping. Average time for construction is two to three months.

The villagers dig trenches for the pipes and supply sand and stone for mixing cement for the reservoir's concrete roof, manufactured on site. "The only village laborers we pay are the stone cutters who cut the stone for the reservoirs," says AID's Project Manager David Wadsworth.

Boreholes. Wadsworth waves his hand toward another village perched on the horizon near Ha Lumis. "That was an emergency situation," he says. "Eight people died of typhoid; we managed to drill a borehole and install a handpump within two weeks."

Normally the complete operation takes between 15 days and a month. The VWSS crews follow up the drilling rigs with a masonry team, which makes the concrete pads to protect the boreholes from contamination. Another handpump installation team with three men follows on the heels of the masonry team to complete the job.

Poking into the sky, the twelve, 43-foot high drilling rigs can be counted from a hilltop. Each drill is six inches in diameter and the crew sharpens the bits on site with a coal fire. Air is piped from the diesel engine to keep the fire hot.

Computerized records of each borehole show the type of earth that was drilled and details about that particular water supply. "So when a borehole needs cleaning and redevelopment, we will have useful information about its original condition," says Wadsworth. There are 350 handpumps in the ground and another 150 holes are ready for pump installation.

The boreholes average 50 meters in depth and cost \$2,500 for a complete system, which includes \$650 for a handpump. The handpumps, made in the United States, serve 75 to 100 people.

The \$20,000 cable drilling rigs are purchased from a firm in the Republic of South Africa, which stocks spare parts. A VWSS maintenance team operates a one-day repair service.

Health education. A full-time project health coordinator is organizing district

health education workshops for extension agents and health education for villages with new water supplies. The project has trained more than 170 village health workers and completed public health workshops in three districts.

Technical training. Many of the project personnel, including masons, foremen, and supervisors, are trained in-country. The masons are trained through a Swiss-funded and operated project.

"We have the technical ability to provide on-the-job training," says Wadsworth, adding that "there is a lot of competition in the various trade schools to come and work for the VWSS after graduation."

The borehole drilling supervisor is being trained to use photography and modern geological methods to select drilling sites. The project has a 70 percent drilling success rate.

As of April 1984, the project had trained 430 waterminders, 93 masons, 27 foremen, 12 supervisors, 7 senior technical officers, 3 engineers, 8 mechanics, and 7 drivers.



Two-handed pump provides water.

Catalyst. One measure of project success has been the influx of more than \$1 million of multi-donor support to the VWSS for drilling programs. Under the programs, the other donors contract the drilling of boreholes. VWSS then provides, installs, and maintains handpumps. With this method, every dollar supplied by AID in the form of handpumps generates two dollars in new aid from donors.

For further information on this project, write to David Wadsworth, Project Manager, Rural Water and Sanitation Project, P.O. Box 333, Maseru, Lesotho. ■

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ACKNOWLEDGEMENTS

This project has been implemented over a period of 8-1/2 years. During this time there have been many changes in personnel in VWS, at the ministerial level and in technical assistance provided by donors and international volunteer agencies. Indeed, VWS has changed ministries during the course of the project and has grown under the guidance of a number of different ministers and principal secretaries. Without the willing cooperation and assistance of all concerned throughout this long period, the project could not have been successfully completed. It is appropriate that those contributing to the success of VWS and to the USAID project be recognized.

First and foremost the financial commitment and administrative support given at the ministerial level has been a key factor. We have said many times that Government of Lesotho has supported this project beyond what was required by the Grant Agreement and this financial contribution is well documented. This is because rural water development has been and still is recognized as essential to improvements in the quality of life and health of the rural population. The active and willing participation of the Government has been essential.

Equally essential has been the support of local villagers. An improved water supply is in most instances the highest priority a village will have. VWS does not provide materials and technical resources for construction unless invited to do so. All water systems constructed with international donor funding since 1981 have been at the invitation of villagers who are an equal partner in development. They must and do provide unpaid labor for construction of their water supply system.

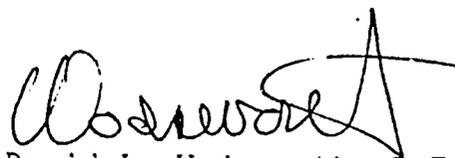
International donors have supported VWS in amounts nearly equal in sum total to the USAID project so that together this support has provided nearly 51% of the rural population with clean water.

With the completion of the USAID project, continuity in the form of technical assistance will be provided by Helvetas as it has been since 1978. Probably the greatest contribution to the professional growth of VWS has been the extremely close cooperation between Helvetas and the Morrison-Maierle/CSSA team as equal partners in institutional development. We trust the association between Helvetas and VWS will continue as long as needed.

Finally the staff of professionals and technicians who are responsible for the day to day functioning of VWS must be recognized for their dedication to duty. They are the ones who will continue to bring clean water to the rural population of

Lesotho. What they need to complete the water development goals established by the Government of Lesotho and rightly expected by the people is the continued support of all those mentioned above.

I would like to record a personal thank you to the USAID/Lesotho office and those individuals who have, over the years, given willing support to all the technical assistance team and especially to me, and who have so professionally supported VWS and the project.



David L. Wadsworth, P.E.
Project Manager
Morrison-Maierle/CSSA, Inc.
Maseru, Lesotho.
May, 1989.

I. INTRODUCTION

The Project Activity Completion Date (PACD) of the Rural Water and Sanitation Project is 30 August with the Morrison-Maierle/CSSA technical assistance contract expiring 23 August, 1989.

The last year of the project was devoted to the formulation and implementation of cost recovery and privatization of maintenance programs. Implementation results of these programs would form part of an 8th and last annual report for the 12 month period ending 30 April 1989. Since the PACD is only 6 months later it is convenient for the last annual report and this final report to be combined under one cover. Reports discussing the implementation of cost recovery and privatization have been submitted separately to USAID/Lesotho and are included in summary form in the appendices of this final report.

It is our intention that this final report be the authoritative source document for the project. Inputs and implementation outputs of all major project components have been updated with financial and production figures through June 1989 and summarized in the appendices as a final statement of project activity.

Financial accounting and reporting will be complete as far as the Lesotho project office is concerned however there will be a final statement from Morrison-Maierle/CSSA following the PACD of 30 August 1989. The final VWS reimbursement claim for local expenses incurred through 30 August can be expected in mid-September.

II. BASIC SOCIO-ECONOMIC DATA OF LESOTHO

1. Physical *

- A. Total area: 30,355 sq km (about 75% of the total area consists of high mountains and hills ranging from north to south, and the remaining 25% consists of lowlands in the west. Only 13% of total area is arable).
- B. Population: 1,578 million - 1986 estimates (15% urban and 85% rural).
- C. Population density: Population per sq km of total area is 46 people and about 460 persons per sq km of arable land.

2. Social*

- A. Annual Population Growth: 2.6% (1986)
- B. Literary rates: 60% to 80% (Source: Lesotho Distance Center).
- C. Rural Coverage with safe and adequate water supply: 43%
- D. Rural Coverage with adequate sanitation: 15-20%
- E. Infant Mortality Rate: 110/1,000 Live Births
- F. Under Five Mortality Rate: 145/1,000 Live Births.

3. Economic **

- A. GDP (At 1986 market prices): M682.7
- B. GDP per capita: M433
- C. Annual GDP Growth Rate: M150 million (1985-86)
- D. GNP (at market prices): M1,298.5 million
- E. GNP Per Capita: M540

The large difference between GDP and GNP is accounted for by net factor incomes from neighbouring South Africa, which primarily comprise remittances of migrant workers.

* Source: Government of Lesotho

** Source: Central Bank Annual Report, 1986.

III. PROJECT SUMMARY

1. Overview

To gain a brief but accurate overview of activity since 1981 we provide this summary which includes financial statements of the distribution of project funding along with Government of Lesotho counterpart funding in support of the project. The major components of the project; institution building, construction, maintenance, public health and sanitation have all been developed to a degree equal to or exceeding original project expectations. Since we intend this report to be a complete reference document of project implementation, we have included detailed summaries of these components in the appendices of this report along with reports of the final year's activities, cost recovery and privatization.

Considerable additional donor aid has been generated as a result of USAID policy to utilize project resources to encourage joint donor partnerships. But the success of VWS in implementing international aid has been the best advertisement and inducement for donors to invest development funds in rural water supplies. We have summarized all international donor assistance since 1981 as an indication of the success of the organization and the level of funding it is capable of utilizing. While substantial it has not been sufficient in later years to sustain the levels of production achieved during the height of USAID project. This has resulted in staff reductions and lowered production since the peak year of 1986

2. Project Intent

The following quotation is taken from the USAID Project Paper (August, 1979):

"The purpose and principal focus of the project is to assist the GOL in developing the institutional capacity of the Ministry of Rural Development's Village Water Supply Section (VWSS) to design, construct and maintain 210 new and existing rural water supply systems which adequately reflect health and sanitary education considerations. The proposed project is expected to directly benefit over 180,000 persons who reside in rural areas of Lesotho _____"

To accomplish this purpose the project was funded at \$12,142,000 with a 9-year implementation period ending September 30, 1988 subsequently extended to August 30, 1989. Actual on-site implementation did not begin until May, 1981, with the arrival of the technical assistance team. As an indication of project success, productivity in terms of the rural population served can be compared to original targeted goals:

	<u>Completed Projects</u>	<u>Population Served</u>
PP Objective:	210	180,000
End of June, 1989:	605	322,140

3. Technical Assistance

The Morrison-Maierle/Sheladia* technical assistance team originally consisted of six members. Following is a summary of position titles and level of effort for the T/A team.

<u>Position (Long Term)</u>	<u>Original Level of Effort (Months)</u>	<u>Approved Extensions (Months)</u>	<u>Position Termination Date</u>
Team Leader	60	40	August, 1989.
Health Coordinator	24	48	November, 1987.
Financial Specialist	24	24	June, 1985.
Training Engineer	24	0	July, 1983.
Maintenance Engineer	48	12	June, 1986.
Construction Engineer	60	4	January, 1987.

Position (Short Term)

Well Driller Advisor	9
Hydrogeologist	6
Interim Evaluator	1

The Ministry of Interior requested the PACD be extended for one year along with the Morrison-Maierle technical assistance contract to allow time to conduct the pilot privatization test program and prepare a plan for implementation of the cost recovery program.

For the short term positions the well driller advisor was utilized for 2-months. We did not need the hydrogeologist or interim evaluator. Counterparts for all long term positions (except training engineer**) have been identified and have taken over from team members.

4. Donor History

New donor assistance required to fill the capital resource void created by the winding-down of the USAID project is more positive now than a year ago (1988). Recently approved Swiss and German funding will probably not be available in time to prevent a decline in productivity (see Table S-6) in 1989 especially in those districts totally dependent on USAID sponsored construction materials. Thanks to a second phase UNCDF grant, borehole/handpump construction will keep pace

* Sheladia Associates involvement as a subcontractor ended in 1986.

** Helvetas has taken over training responsibilities. At present VWS does not plan to have a Mosotho training officer as counterpart to the Helvetas sponsored training engineer.

with decade planning targets. In Table S-1 we have outlined the history of donor assistance. New projects coming on-line in 1989 will provide \$3.0 million for gravity construction over the next 18 months and approximately \$2.0 million over a three year period for hand-pumps, a level of annual construction resources equal to that provided by USAID. Unfortunately new donor assistance was not available to prevent a decline in production in 1987, 1988 and probably again in 1989.

TABLE S-1

MAJOR DONOR ASSISTANCE TO VWS
(in U.S.Dollars)

USAID, 1979-1988:	\$ 12,142,000
EEC, Gravity Systems, 1982-1985:	380,000
EEC, Borehole Drilling Program No.1, 1984:	380,000
EEC, Borehole Drilling Program No.2, 1985:	250,000
USAID, Monitized Food Aid, 1985-1986:	250,000
HELVETAS, Technical Assistance, 1978-1991:	4,800,000
UK II, Gravity System, 1982-1985:	600,000
UK III, Gravity Systems, 1986-1989:	1,400,000
CIDA/SASK, Borehole Drilling Program No. 1, 1984-1987:	550,000
NGO's (Estimate), 1981-1988:	400,000
UNCDF Phase I, Borehole/Hand Pumps, 1985-1987:	612,000
CARE, Gravity Systems, 1985-1987:	750,000
IRISH AID, Boreholes/Hand Pumps, 1987-1988:	500,000
IRISH AID, Boreholes/Hand Pumps, 1988-1989:	500,000
USCC, Boreholes/Handpumps, 1986-1987:	90,000
Gov'n't of Lesotho (Capital Funds), 1981-1987:	1,000,000
CIDA/SASK, Borehole Drilling Program No. 2, 1988-1990:	450,000
UNCDF Phase II, Boreholes/Handpumps, 1989-1992:	1,742,000
UNDP, Technical Assistance, 1989-1992:	504,000
SWISS Development Corporation(SDC) Gravity Systems 1989-1991	1,400,000
*GERMAN (KFW), Gravity Systems, 1989-1991	1,200,000
CARE, Gravity Systems, 1989-1991	400,000

In December, 1984, the National Steering Committee (NSC), responsible for planning the implementation of the UN water and sanitation decade in Lesotho, published a Position Paper on the status of implementation including a financial plan for the five year period 1985-1989 (TABLE S-2). Of particular importance was the five year plan for construction of rural water supplies projecting financial requirements needed to sustain the production capacity of VWS to meet Water Decade goals established by the Government of Lesotho.

* Not yet finalized

The total thus far committed by international donors for handpumps is 111% of the \$5.0 million needed to meet the VWS target of 3000 handpumps by the end of 1990. VWS has also been successful in securing 100% of funding required for gravity system construction but this aid came too late to meet the objectives of the 5 year plan. The consequence has been a drop in gravity system production since USAID resources declined faster than new donor aid replacement programs could be secured. New donor programs approved in 1989 will help to improve gravity system production but achieving the objectives of the first 5 year plan will be 1 to 2 years behind schedule. Table S-2 is a summary of donor assistance required for the first 5 year plan, 1986-1990.

TABLE S-2

COUNTRY-WIDE FIVE YEAR RURAL WATER SUPPLY PROGRAMME

Elements	Units: Systems (Population)	Unit Costs per system (head) M	Total Costs 85-90 M m	Cost Breakdown		Funding Breakdown				
				Local M m	Foreign M m	Household and Community	Government M m	Foreign		
								M m	Equivalent \$m	of which not subscribed \$m
Water point ¹	333 (50,000)	3000 (20)	1.0	1.0	—	(0.7) ⁴	0.1	0.9 ⁵	0.5	0.5
Gravity System ²	400 (200,000)	26000 (50)	10.0	4.5	5.5	(0.2) ⁴	1.0	9.0 ⁵	5.3	3.2
Borehole and Hampump	3000 (300,000)	3000 (30)	9.0	4.5	4.5	(0.6) ⁴	0.5	8.5 ⁵	5.0	5.0
Totals	3733 (550,000)		20.0	10.0	10.0	(1.5) ⁴	1.6	18.4	10.8 plus technical assistance	8.7
Operation and Maintenance			1.1 ³	0.6	0.5	1.0	0.1			

¹ Spring catchment, storage and tap, mainly for mountain villages

² Gravity system comprises in most cases a spring catchment, silt chamber, storage, distribution, standposts; when the source is a borehole or a spring below the village, it includes motorized pump. Gravity systems are mostly for villages in the foothills.

³ Estimated at M40/handpump year (M2 capital in five years) and applied to all systems.

⁴ Value of village contribution in kind for construction is not included in total cost or unit cost.

⁵ External support agencies are requested to participate in costs of temporary government employees on a decreasing scale.

5. Project Inputs

As of 30 June, 1989, project expenditures totalled \$11,750,200 or 96.8% of the \$12,142,000 funding level.

TABLE S-3

SUMMARY OF PROJECT EXPENDITURES

June 30, 1989

Technical Assistance:	\$ 4,189,300
Training:	377,500
Commodities:	4,727,000
Construction (FAR):	1,003,800
Other Costs (Institutional Support):	1,327,600
Miscellaneous:	80,300
Contingency:	44,700
Total	<u>\$ 11,750,200</u>

=====

These expenditures can be translated into the project outputs noted in Tables S-4 and S-5.

6. Project Outputs

TABLE S-4

SUMMARY OF USAID PROJECT OUTPUTS

TRAINING: TECHNICAL

2- Basotho Civil Engineers(4-year degree course)
 590- Village Water Minders
 100- Masons
 42- Foremen
 26- Supervisors
 8- Technical Trade School Student Scholarships
 31- Mechanical and Technical Courses.

TRAINING: PUBLIC HEALTH

1500- Village Health Workers
 10- District Health Education Workshops (plus 10-
 follow-up Workshops)
 173- Village Public Health Pitso's
 622- Government Extension Workers

MAJOR COMMODITES

4- Cable Tool Drill Rigs
 48- Vehicles
 3600- Tons Imported Pipes and Fittings
 900- Hand Pumps.

LOCAL EXPENDITURE REIMBURSEMENTS TO GOL

As of the end of June, 1989, USAID had reimbursed to GOL \$2,730,500 which includes \$836,000 for local construction materials (See Table S-12).

TABLE S-5USAID LIFE OF PROJECT CONSTRUCTION SUMMARYMay, 1981 - June, 1989

<u>Projects Completed *</u>		<u>Population Served</u>
Gravity and Other Types:	323	152,160
Hand Pumps Systems:	249	151,635
Rehabilitations:	<u>33</u>	<u>18,345</u>
Totals	<u>605</u>	<u>322,140</u>
	===	=====
<u>Hand Pumps Installed:</u>		1,530
<u>Average Village Size:</u>		
Gravity:		471
Handpump:		609

The project production goal of 180,000 has been greatly exceeded due, in part, to joint participation with other donors in borehole/hand pump projects where USAID has provided the hand pumps. While 900 HPs were directly funded by this project, an additional 600 HPs were purchased with funds provided by USAID through its monetized food aid program.

TABLE S-6SUMMARY OF VWS CONSTRUCTION CAPACITY

<u>Year</u>	<u>Systems Completed</u>	<u>Total Population Served</u>	<u>% Funded By USAID</u>
1977	16	8,000	0
1978	8	4,000	0
1979	15	7,500	0
1980	27	13,500	0
1981	33	17,000	0
1982	45	24,000	30.4% (8,600)
1983	88	44,000	69.0% (30,380)
1984	108	62,000	77.6% (48,140)
1985	167	94,500	87.3% (82,455)
1986	198	105,500	88.1% (93,060)
1987	174	72,500	52.1% (37,820)
1988	196	80,500	22.5% (18,100)

* (See Appendix 8) for a listing of villages completed)

//

At the beginning of the USAID Project in May, 1981, 14.1% of the rural population had been served by improved water supplies. By June, 1989 this figure had increased to 50.8%. Tables S-7 and S-8 show the increases by district.

TABLE S-7

POPULATION SERVED BY DISTRICTS, MAY, 1981

District	Number of Villages Served	Total Population Served	Total Rural Population	% Served
Butha-Buthe	32	16,200	76,400	21.2
Leribe	53	29,500	201,800	14.6
Berea	52	22,900	140,900	16.3
Maseru	54	23,700	202,600	11.7
Mafeteng	48	17,900	153,800	11.6
Mohale's Hoek	33	9,600	137,700	7.0
Quthing	36	10,500	89,000	11.8
Qacha's Nek	47	12,900	37,400	34.5
Thaba-Tseka	23	6,800	37,000	18.4
Mokhotlong	53	12,400	75,400	16.4
TOTAL	431	162,400	1,152,000	14.1

TABLE S-8

POPULATION SERVED BY DISTRICTS, JUNE, 1989

District	Number of Villages Served	Total * Population Served	1987 * Total Rural Population	% Served
Butha-Buthe	121	67,700	95,100	71.2
Leribe	124	105,700	271,100	39.0
Berea	252	118,000	170,500	69.3
Maseru	310	141,000	213,200	66.1
Mafeteng	197	96,400	198,900	48.5
Mohale's Hoek	176	91,900	176,000	52.2
Quthing	70	38,300	113,700	33.7
Qacha's Nek	66	25,500	49,200	51.8
Thaba-Tseka	73	25,100	48,100	52.2
Mokhotlong	67	18,000	95,100	18.9
TOTALS	1,456	727,600	1,430,900	50.8

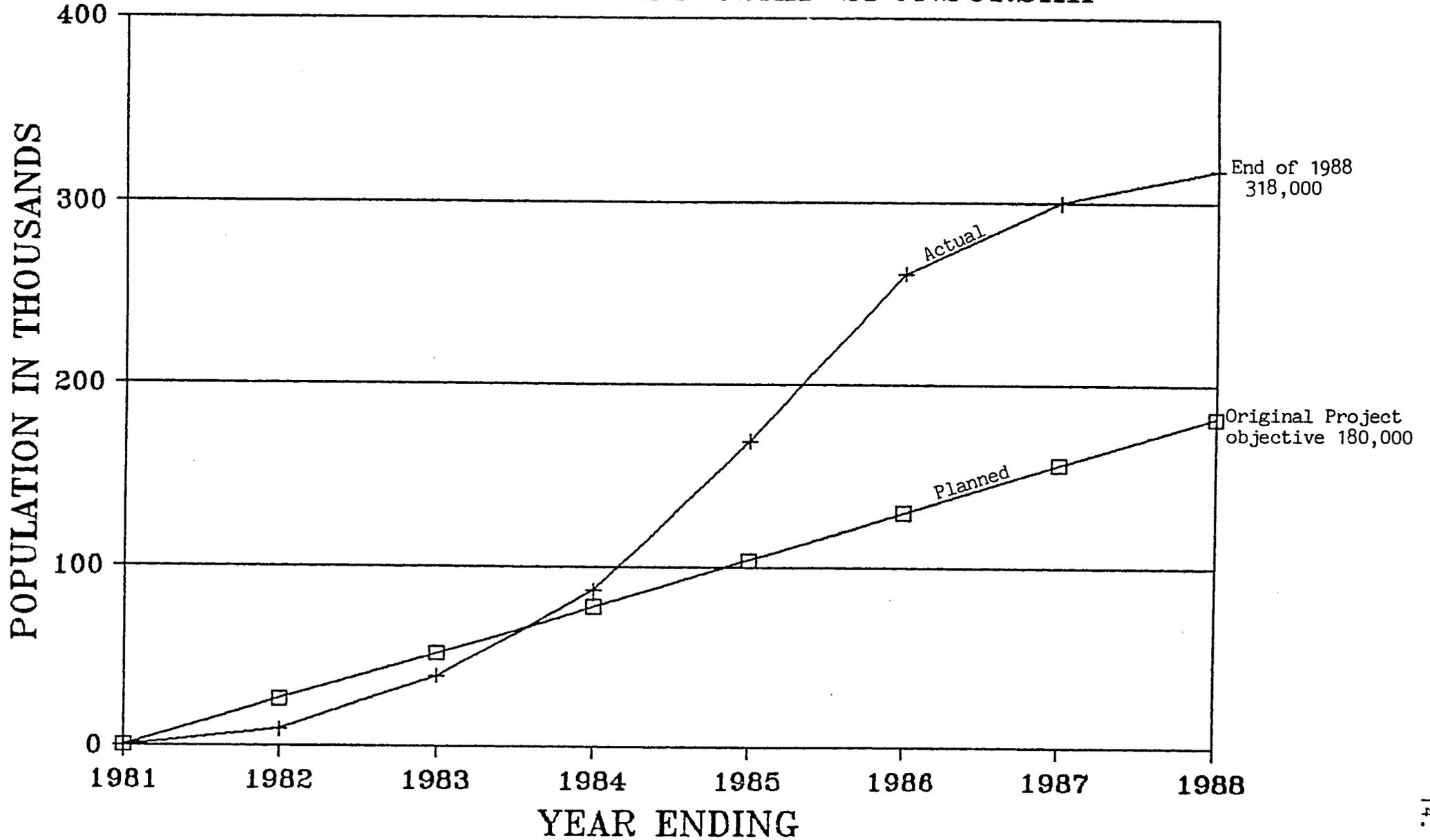
* 1982 ANNUAL STATISTICAL BULLETIN : Includes Annual Growth of 2.6% per year applied to both total rural population and population served for previous years.

7. VWS Production

To maintain the institutional capacity needed to keep pace with the VWS water decade plan, annual production should be targeted at no less than 70,000 or about a 4% net annual increase in the rural population served. Production below this level could result in a reduction of skilled field staff as happened in 1987. The long lead time to hire and retrain masons and supervisory personnel required to increase production in response to increased donor aid is inefficient and extends implementation periods. Reduced production in 1987, because VWS was not in a position to fill the USAID resource gap with newly generated aid, is clearly shown in Graph-2. VWS should aim to stabilize production (aid) at 70,000 to 85,000 people per year to prevent excessive up and down swings in technical personnel requirements. Graph-1 shows actual USAID production compared to that originally planned in the Project Paper.

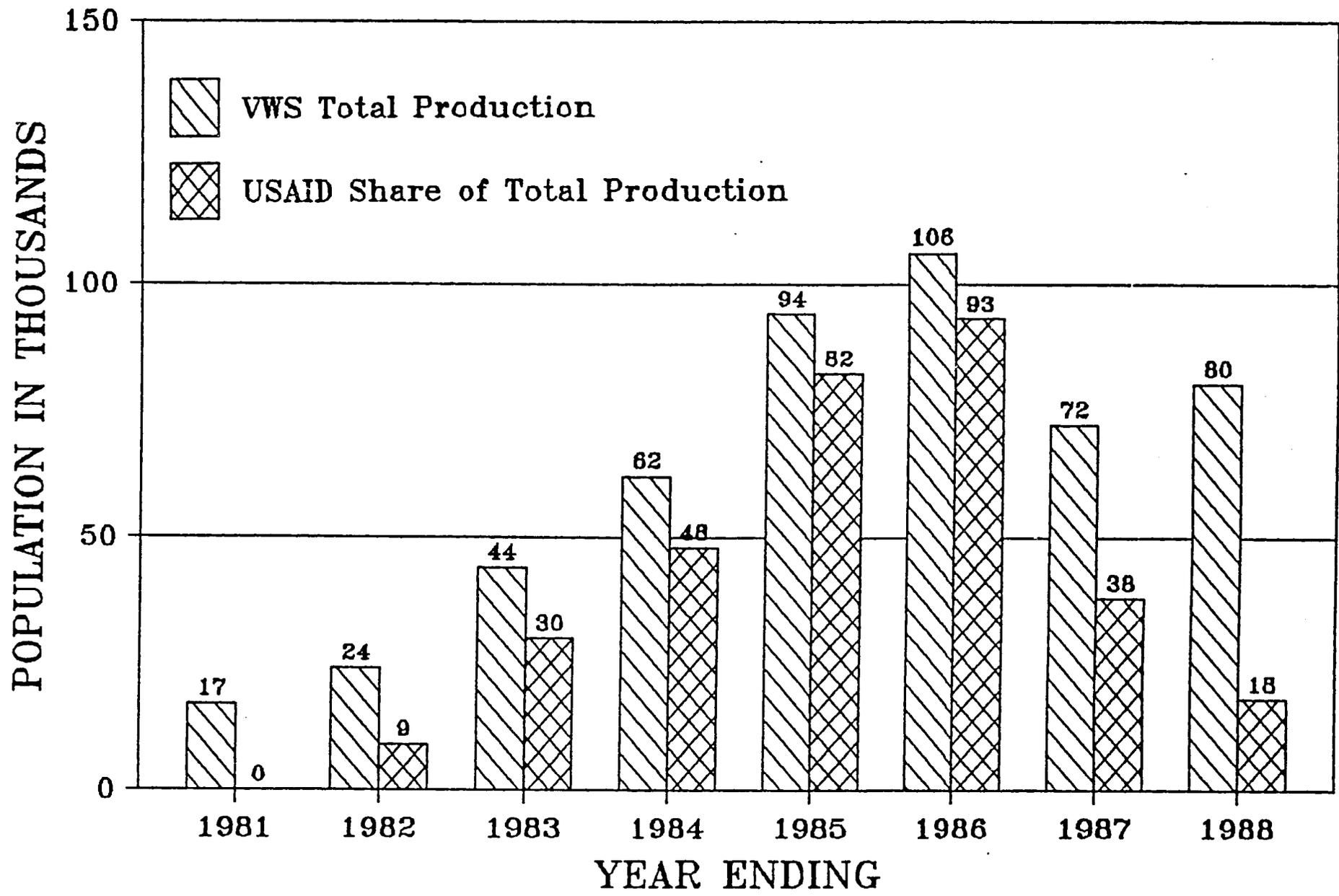
GRAPH-1

POPULATION SERVED BY USAID SPONSORSHIP



GRAPH-2

POPULATION SERVED ANNUALLY



8. Financial Accounting

A. USAID Project Budget, TABLE S-9

The project budget is revised annually in the form of a work plan and submitted to USAID and GOL for approval. Table S-9 is the 4th project work plan as revised in early 1989. The following is a comparison with the original Project Paper budget.

COMPARATIVE PROJECT BUDGETS (In 000's U.S. Dollars)

<u>Item</u>	<u>Project Paper, 1979</u>	<u>4th Project Work Plan, 1989</u>
A. Technical Assistance:	2,202.7	4,388.6
B. Training:	387.2	378.9
C. Commodities:	7,602.2	4,833.6
D. Construction:	476.1	1,003.8
E. Other Costs(Institutional Support):	1,473.9	1,417.6
F. Miscellaneous:	0	74.8
G. Contingency:	*	44.7
Totals	<u>12,142.1</u> =====	<u>12,142.0</u> =====

* (Contingency included within line items)

Deviations from the original Project Paper budget have occurred over the life of the project in response to particular needs and changing circumstances. Of particular note is the savings realized in commodity procurement which have allowed increased levels of effort for the T/A team, funding for the various studies commissioned on behalf of the project and increased institutional support for VWS.

B. Life Of Project Expenditure Report, TABLE S-10

As of June 30, 1989, total accumulated project expense stands at \$11,750,200 or 96.8%. On Table S-10 we have noted two classes of expenditure; those which are incurred by VWS and subsequently reimbursed by USAID to GOL, and expenses incurred directly through USAID. Reimbursements to GOL are further detailed on Table S-12.

C. Technical Assistance Contract Expenditure Report, TABLE S-11

This report is submitted monthly to USAID. Line item expenses are detailed and need no further explanation.

D. Local Reimbursement Expenditure Report, TABLE S-12

Government of Lesotho advances funds for local expenses in support of the USAID project. Qualifying expenses in the categories noted on Table S-12 are incurred against this advance. Each month a claim is submitted to USAID for reimbursement which is then credited to a special collection account established by GOL. USAID has reimbursed to GOL \$2,753,215 through June, 1989.

E. GOL Counterpart Contribution, TABLE S-13

Table S-13 summarizes GOL counterpart contributions to the project. The Grant Agreement provides that GOL contributions will not be less than the equivalent of \$1,861,400 (R1,573,457). At the time (February, 1979) the schedule of contributions was written the exchange rate was R1.00 = \$1.183. There has been a constant decline in the value of the Rand since the start of implementation to its present level of R1.00 = \$0.37. As of 30 June, 1989, contributions to the project stand at over R3,631,000 which is, accounting for the devaluation of the Rand, equal to or greater than the Grant requirement.

TABLE S-9

RURAL WATER AND SANITATION PROJECT

USAID PROJECT 632-0088

LIFE-OF-PROJECT BUDGET
 REVISED FOURTH PROJECT WORK PLAN
 EFFECTIVE MAY 1, 1989, FOR USAID FISCAL YEAR 1989
 (IN 000'S OF U.S. DOLLARS)

BUDGET		Expended As Of <u>Aug. 4, 1988</u>	FY <u>1989</u>	Budget <u>Total</u>
	GRAND TOTAL	11,157.5 =====	984.5 =====	12,142.0 =====
1.	<u>TECHNICAL ASSISTANCE</u>	<u>3,898.0</u>	<u>490.6</u>	<u>4,388.6</u>
	A. T/A Contractor	3,832.7	335.7	4,168.4
	B. Village Management Study	17.4	0	17.4
	C. Health Impact Study	15.0	0	15.0
	D. K.A.P. Study	4.0	0	4.0
	E. Misc. Studies and T/A	28.9	0	28.9
	F. Privatization Study	0	100.0	100.0
	G. Maintenance Contractors	0	54.9	54.9
2.	<u>TRAINING</u>	<u>367.5</u>	<u>11.4</u>	<u>378.9</u>
	A. Participant	208.9	0	208.9
	B. In-Country/In-Service)	56.5	4.0)	60.5
	C. Water Minder + Tool Kits)		0)	
	D. Public Health			
	1. Education Workshops)		0)	
	2. Equip. and Materials)		0)	
	3. VHW Training)	102.1	6.2)	108.3
	4. Chieftaincy Workshops)		0)	
	E. Cost Recovery Training	0	1.2	1.2

TABLE S-9 (Continued)
FOURTH PROJECT WORK PLAN BUDGET (con't)

	Expended As Of <u>Aug. 4, 1988</u>	FY <u>1989</u>	Budget <u>Total</u>	
3.	<u>COMMODITIES</u>	<u>4,601.2</u>	<u>232.4</u>	<u>4,833.6</u>
A.	Drilling Equipment			
	1. Cable Tool Rigs	80.8	0	80.8
	2. Tools and Spare Parts	123.0	3.0	126.0
B.	Hand Pumps	607.0	30.0	637.0
C.	System Maintenance Support	112.8	79.4	192.2
D.	Vehicles	495.1	0	495.1
E.	Tools and Power Equip.	76.7	0	76.7
F.	Water Test Equipment	6.7	0	6.7
G.	Pipes, Fittings, Const. Materials			
	1. Const. Materials (Import)	2,287.4	0	2,287.4
	2. Const. Materials (Local)	781.9	75.2	857.1
	3. Sanitation Materials (Local)	29.8	44.8	74.6
4.	<u>CONSTRUCTION (FAR)</u>	<u>1,003.8</u>	<u>0</u>	<u>1,003.8</u>
10.	<u>OTHER COSTS</u>	<u>1,181.2</u>	<u>236.4</u>	<u>1,417.6</u>
A.	Vehicle Maintenance	222.1	68.2	290.3
B.	System Maint. Support (Salaries)	238.2	0	238.2
C.	Temporary Labor (Salaries)			
	1. Masons	696.0	168.2	864.2
	2. Local Hire	24.9	0	24.9
6.	<u>MISCELLANEOUS</u>	<u>61.1</u>	<u>13.7</u>	<u>74.8</u>
7.	<u>CONTINGENCY</u>	<u>44.7</u>	<u>0</u>	<u>44.7</u>

TABLE S-10
USAID PROJECT 632-0088

RURAL WATER AND SANITATION PROJECT
Life Of Project Expenditure Report
Quarter Ending: June 30, 1989
(in 000's U.S. Dollars)

<u>ELEMENT</u>	<u>ITEM</u>	<u>L.O.P.* BUDGET</u>	<u>DIRECT USAID REIMBURSEMENT TO VWS **</u>	<u>USAID DIRECT EXPENSE</u>	<u>ACCUMULATED PROJECT EXPENSE TO-DATE</u>
1.	<u>Technical Assistance</u>	4,388.6	32.4	4,156.9	4,189.3
	A. T/A Contractor	4,168.4	0	4,091.6	4,091.6
	B. VWS Mgmt. Study	17.4	0	17.4	17.4
	C. Health Impact Study	15.0	0	15.0	15.0
	D. K.A.P. Study	4.0	0	4.0	4.0
	E. Misc. Studies and T/A	28.9	0	28.9	28.9
	F. Privatization Study	100.0	0	.0	.0
	G. Maintenance Contractors	54.9	32.4	.0	32.4
2.	<u>Training</u>	378.9	168.1	208.9	377.5
	A. Participant (Overseas)	208.9	0	208.9	208.9
	B-C. In-Country/In-Service	60.5	60.1	.0	60.1
	D. Public Health	108.3	108.2	.0	108.2
	E. Cost Recovery	1.2	.3	.0	.3
3.	<u>Commodities</u>	4,833.6	1,180.0	3,547.0	4,727.3
	A. Drilling Equipment	206.8	123.0	80.8	203.8
	B. Hand Pumps	637.0	0	607.0	607.0
	C. Repair Parts, System Maint.	192.2	168.4	0	168.4
	D. Vehicles	495.1	0	495.1	495.1
	E. Tools and Power Equipment	76.7	0	76.7	76.7
	F. Water Test Equipment	6.7	6.7	0	6.7
	G. Pipes, Fittings and Const. Materials	3,144.5	836.4	2,287.4	3,123.8
	H. Rural Sanitation, Const. Materials	74.6	45.5	0	45.5
4.	<u>Construction (FAR)</u>	1,003.8	0	1,003.8	1,003.8

TABLE S-10 (cont'd)

10.	<u>Other Costs</u>	<u>1,417.6</u>	<u>1,327.6</u>	<u>0</u>	<u>1,327.6</u>
	A. Vehicle Maintenance	290.3	254.0	0	254.0
	B. Syst.Maint. (Salaries)	238.2	238.2	0	238.2
	C. Temporary Labor (Salaries)				
	1. Masons	864.2	810.5	0	810.5
	2. Local Hire	24.9	24.9	0	24.9
6.	<u>Miscellaneous</u>	<u>74.8</u>	<u>0</u>	<u>80.3</u>	<u>80.3</u>
7.	<u>Contingency (Exch. rate adj.)</u>	<u>44.7</u>	<u>44.7</u>	<u>0</u>	<u>44.7</u>
	GRAND TOTAL	12,142.0	2,753.3	8,996.9	11,750.2
		=====	=====	=====	=====

* As of 1 May, 1989.

** USAID Reimbursements to GOL through June, 1989.

TABLE S-11

LESOTHO RURAL WATER AND SANITATION PROJECT
1427-003---47
MORRISON-MAIERLE/SHELADIA BUDGET REPORT NO. 88

REPORTING PERIOD: 19 MARCH 1989 TO 13 MAY 1989

CONTRACT NO.: AFR-0088-C-00-1025-00

DATE WRITTEN: 26 MAY 1989

CORRESPONDS TO STATEMENT: 05-0434-89

	TOTAL PROJECT		BUDGET PERIOD		
	BUDGET	EXPENDED TO DATE	OCTOBER 2, 1988 THRU AUGUST 23, 1989.		
			BUDGET	EXPENDED TO DATE	THIS PERIOD
1. SALARIES:					
A. FIELD STAFF PROFESSIONAL	\$767,758.00	\$748,016.36	\$62,125.00	\$41,945.60	\$10,486.40
B. HOME OFFICE PROFESSIONAL	65,006.00	61,115.27	5,924.00	2,474.43	505.71
C. HOME OFFICE NON-PROFESSIONAL	14,950.00	14,341.95	988.00	64.43	.00
D. FIELD OFFICE-ADMIN ASSISTANT	17,680.00	14,403.52	4,635.00	2,015.10	399.12
	-----	-----	-----	-----	-----
TOTAL SALARIES	\$865,394.00	\$837,877.10	\$73,672.00	\$46,499.56	\$11,391.23
2. OVERHEAD:					
A. FIELD OFFICE	\$662,307.00	\$644,718.55	\$55,347.00	\$37,369.35	\$9,342.33
B. HOME OFFICE	120,862.00	113,821.52	10,818.00	3,973.57	791.49
	-----	-----	-----	-----	-----
TOTAL OVERHEAD	\$783,169.00	\$758,540.07	\$66,165.00	\$41,342.92	\$10,133.82
3. SUBCONTRACTS:					
A. TECHNICAL	\$1,755,323.00	\$1,753,346.71	\$.00	\$.00	\$.00
B. WELL DRILLING	16,760.00	16,760.00	.00	.00	.00
	-----	-----	-----	-----	-----
TOTAL SUBCONTRACTS	\$1,772,083.00	\$1,770,106.71	\$.00	\$.00	\$.00
4. ALLOWANCES					
A. POST DIFFERENTIAL	\$73,373.00	\$70,690.91	\$6,213.00	\$3,486.73	\$1,048.64
B. INTERNATIONAL TRAVEL PER DIEM	6,900.00	7,003.93	100.00	.00	.00
C. DOMESTIC PER DIEM (D.C.)	1,265.00	1,265.27	.00	.00	.00
D. DOMESTIC PER DIEM HOME OFFICE	1,471.00	1,221.49	250.00	.00	.00
E. LESOTHO PER DIEM	13,248.00	11,404.18	744.00	.00	.00
F. LESOTHO-1ST ARRIVAL PER DIEM	1,612.00	1,611.87	.00	.00	.00
	-----	-----	-----	-----	-----
TOTAL ALLOWANCES	\$97,869.00	\$93,197.65	\$7,307.00	\$3,486.73	\$1,048.64
5. TRAVEL & TRANSPORTATION					
A. DOMESTIC	\$2,786.00	\$3,961.65	\$500.00	\$.00	\$.00
B. INTERNATIONAL	77,567.00	73,795.65	4,200.00	2,174.53	.00
C. UNACC. BAGGAGE	13,827.00	11,126.68	2,700.00	.00	.00
D. SHIPP. HHE & AUTO	34,038.00	25,287.99	8,750.00	.00	.00
E. STORAGE HHE	8,737.00	8,420.31	871.00	554.40	158.40
F. LOCAL TRANS.	3,089.00	3,088.52	.00	.00	.00
G. R & R TRAVEL	16,909.00	15,077.07	3,832.00	1,999.59	.00
	-----	-----	-----	-----	-----
TOTAL TRAVEL & TRANSPORTATION	\$156,953.00	\$140,757.87	\$20,853.00	\$4,728.52	\$158.40

TABLE S-11(cont'd)

BUDGET REPORT NO. 88
PAGE TWO

	TOTAL PROJECT		BUDGET PERIOD		
	BUDGET	EXPENDED TO DATE	OCTOBER 2, 1988 BUDGET	THRU AUGUST 23, 1989. EXPENDED TO DATE	THIS PERIOD
6. OTHER DIRECT COSTS					
A. DBA INSURANCE	\$24,726.00	\$25,065.19	\$1,756.00	\$2,741.00	\$.00
B. MEDICALS,PASSPORTS,BOOKS,ETC.	14,803.00	14,673.03	800.00	608.27	184.66
C. UTILITIES	18,875.00	18,687.52	1,473.00	762.96	118.71
D. TELEX	40,600.00	38,022.55	3,795.00	1,162.45	251.86
E. VEHICLE INSURANCE	2,462.00	1,765.08	510.00	.00	.00
F. GUARD SERVICE	49,632.00	47,990.13	2,688.00	1,057.80	157.77
TOTAL OTHER DIRECT COSTS	\$151,098.00	\$146,203.50	\$11,022.00	\$6,332.48	\$713.00
7. EQUIPMENT AND MATERIALS					
A. POWER TOOLS & FIELD EQUIPMENT	\$99,262.00	\$98,262.02	\$1,000.00	\$.00	\$.00
B. OFFICE EQUIP.& FIELD SUPPLIES	53,238.00	53,079.81	1,075.00	803.66	29.10
C. HOUSEHOLD FURNISHINGS	18,765.00	18,765.28	.00	.00	.00
TOTAL EQUIPMENT & MATERIALS	\$171,265.00	\$170,107.11	\$2,075.00	\$803.66	\$29.10
TOTAL COST	\$3,997,831.00	\$3,916,790.01	\$181,094.00	\$103,193.87	\$23,474.19
FEE @ 8.0% (EXCL. SUBCONTRACT A)	170,580.00	173,075.46	5,667.00	8,255.50	1,877.94
TOTAL	\$4,168,411.00	\$4,089,865.47	\$186,761.00	\$111,449.37	\$25,352.13

The undersigned hereby certifies: (A) That payment of the sum claimed under the cited contract is proper and due and that appropriate refund to AID will be made promptly upon request in the event disallowance of costs not reimbursable under the terms of the contract; (B) That information on the fiscal report is correct and such detailed supporting information as AID may reasonably require will be furnished promptly to AID on request at the contractor's home office or base office as appropriate; and (C) That all requirements called for by the contract to the date of this certification have been met.

By Laurence D. Bickell

Laurence D. Bickell

Title Chief Accountant

Date 5/26/89

cc: Dave Wadsworth
Willis Wetstein
Albert N. Kraft

TABLE S-12USAID PROJECT 632-0088RURAL WATER AND SANITATION PROJECT

Life Of Project Local Reimbursement Expenditure Report

Report: Quarter Ending: June 30, 1989

Local Expenses Reported through: June, 1989

(in U.S. Dollars)

<u>USAID</u> <u>BUDGET</u> <u>ELEMENT</u>	<u>VWS</u> <u>SUB-VOTE</u>	<u>ITEM</u>	<u>LOP</u> <u>BUDGET</u>	<u>EXPENSES</u> <u>TO-DATE</u>
2B - 2C		Training (In-Country):	60,497	59,995
2D	1A	Training(Public Health):	108,347	108,266
3A	13	Drilling, Tools and Spare Parts:	125,959	122,959
3C	2	System Maint. Repair Parts:	192,228	168,384
3F	14	Water Test Equipment:	6,707	6,707
3G	6/12	Const. Materials (Local):	857,071	836,474
3G	10	Sanitation Const.Mat.(Local):	74,577	45,394
10A	5	Vehicle Maintenance:	290,346	254,099
10B	3	Syst.Maint.Support(Salaries):	238,204	238,204
10C	8	Temp.Labor, Masons(Salaries):	864,228	810,585
10C	7	Temp.Labor,Local Hire(Salaries	24,899	24,899
2E	15	Cost Recovery Training	1,176	240
1G	16	Hand Pump Maintenance	54,890	32,309
		Exchange Rate Adjustment	<u>44,700</u>	<u>44,700</u>
		Totals	2,943,829	2,753,215

USAID Authorized Expenditure Level:	2,943,829
USAID Reimbursements To Date:	<u>2,753,215</u>
Unexpended Balance:	190,614

TABLE S-13

RURAL WATER AND SANITATION PROJECT
GOVERNMENT OF LESOTHO COUNTERPART CONTRIBUTION

Counterpart Contribution Expenditure Report

Quarter Ending: June 30, 1989
(in Maloti)

	<u>Quarter Expended</u>	<u>Project To Date Expended</u>
1. <u>TRAINING</u>	-	36,177
2. <u>LAND AND UTILITIES</u>	-	358,224
3. <u>VILLAGE SELF-HELP LABOUR</u>	-	1,817,770
4. <u>OTHER COSTS</u>		
a. Maintenance Support Program	5,210	827,885
b. Administrative Support	4,975	113,648
c. Vehicle Operation	-	376,496
d. Land and Furnishings	-	101,446
GRAND TOTAL	<u>10,185</u> =====	<u>3,631,646</u> =====

IV. LESSONS LEARNED

We intend here to list those very special problems that have been a constant source of friction between VWS management (and technical advisors) and other agencies of government and that have a direct or indirect influence on the functioning of VWS. None of these problems have been successfully resolved, or are they likely to be, since they are inherent in the system.

1. Staffing Village Water Supply

The longest running problem and least successful in finding a lasting solution has been the establishment of personnel. At the very beginning of the project a plan to increase the numbers of technicians, upgrade job descriptions and improve the level of pay was accepted by government. This plan was essentially in conformance with the project Grant Agreement and fulfilled an initial requirement of GOL as a condition of the grant.

A number of times throughout the life of the project we attempted to upgrade and increase the numbers of engineers and technicians in response to the growing capacity of VWS to design and construct water systems. Success was marginal. The current state of the VWS establishment list (the official organizational structure of VWS which controls numbers and grades of personnel) does not reflect an accurate picture of the organization. This is especially true in terms of the inadequate pay levels of those technicians and engineers VWS is authorized. A major consequence has been (and will probably continue to be) loss of skilled people to other organizations in and out of Lesotho. Inadequate pay level has been the cause of the loss of three trained engineers.

The lesson: VWS should be able to compete with other government ministries and especially the Lesotho Highlands Development Authority in terms of salary levels and career paths for technicians and engineers. Under its present establishment it can not.

2. Personnel Recruitment and Transfer

Appointments of two important groups of personnel or "cadres" within VWS, namely the financial cadre and personnel and administration cadre are controlled not by individual ministries but by Treasury (Ministry of Finance) and the Public Service Commission respectively. VWS therefore has little if anything to say involving transfers into or out of VWS. This can cause numerous problems in training and continuity within an organization and VWS is not unique in having this problem.

The lesson: awareness that such a system exists would help donors to better understand personnel policy especially if "counterparts" are involved.

3. Village Level Training

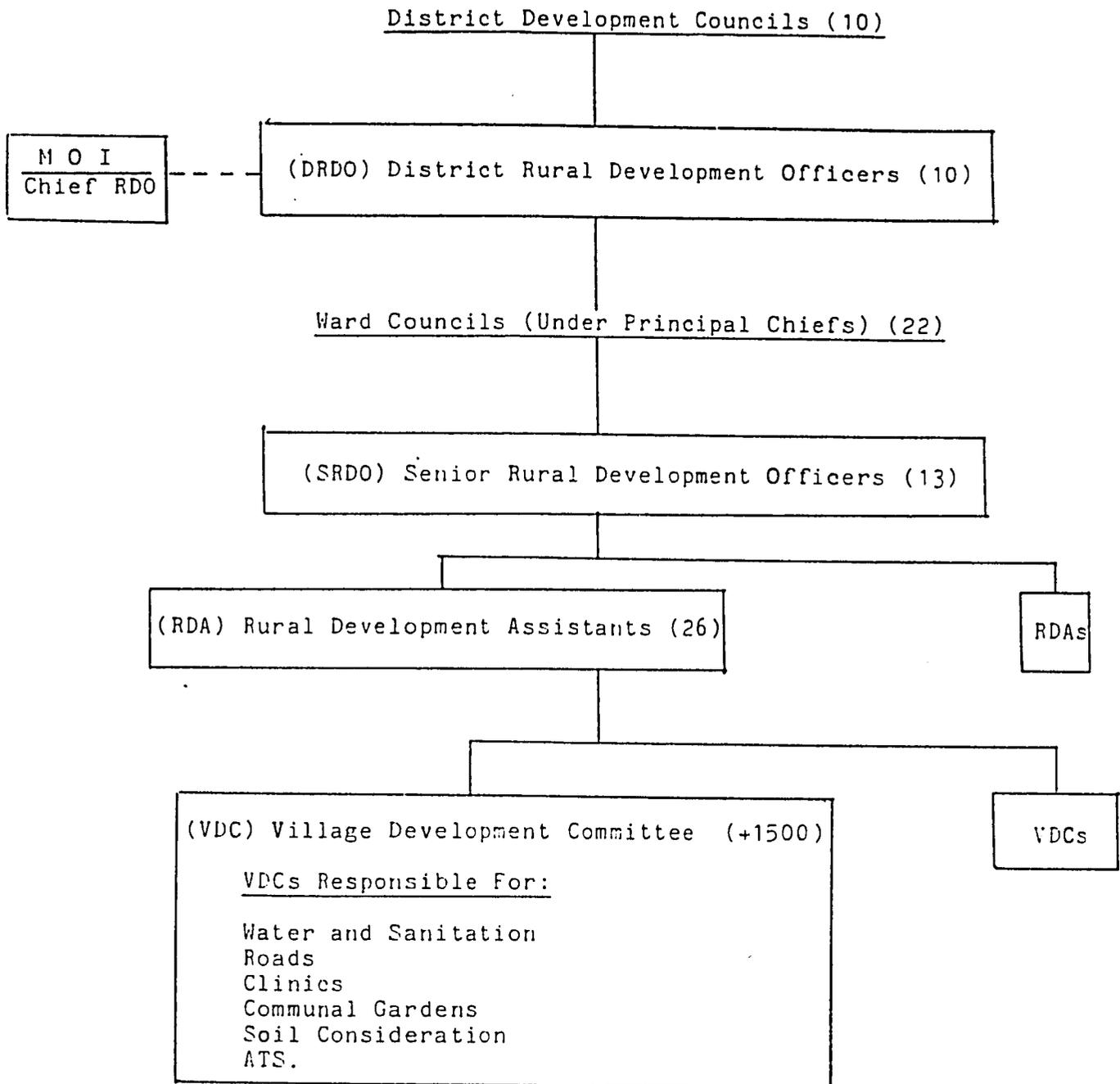
Donors have failed to understand the tremendous logistical and staffing problems associated with village level training. This may not be apparent if few villages are involved, but in the case of VWS over 1,000 new villages have received improved water supplies since 1981.

Donors, and USAID is no exception, have questioned VWS' reluctance or inability to organize village level "pitsos" for training relating to health, water system management and maintenance and cost recovery. Such training, it was assumed, would be conducted using VWS resources or the resources of the district rural development offices (DRDO). The fallacy of this assumption was recognized very early in the project with respect to village level health education and a compensating strategy was developed by the project health education officer. The reasons for VWS failing to meet certain training expectations can be briefly summarized as:

- A. The pace of water supply construction which reached a peak of 200 villages per year. The very success of VWS has created a training gap.
- B. The large number of villages involved. Nearly 1,500 villages now have improved water supplies.
- C. The nearly complete lack of resources at the DRDO level including basic transport and few trained personnel who have other rural development responsibilities in addition to water (such as roads, gardens, health and others). To illustrate this, a rural development organization chart is attached (Table L-1). The numbers of staff indicated in brackets () is for the entire country, not per district.
- D. The near lack of training resources in Ministry of Health which could be committed to VWS for water and sanitation related health education at the village level.

The lesson: VWS is a technical organization not staffed for training at the village level (except for water-minders and organization of villagers relating to construction). Special consideration must be given to improving the numbers and capabilities of Senior RDOs and RDAs to be able to cope with expanding rural development needs. This could perhaps be the focus of future aid programme and indeed one donor (the United Kingdom) has discussed such a program with VWS as a parallel program associated with a potential new program for water supply construction.

TABLE L-1
RURAL DEVELOPMENT ORGANIZATION



Nearly 1500 villages have improved water supplies.
Rate of new additions = 150-200 Villages/Year.

V. CONCLUSIONS AND RECOMMENDATIONS

In terms of the percentage of the rural population having access to clean water, Lesotho is very near the top in Africa at 51%. To realize the successful completion of the water decade goal established by the Government of Lesotho will require the continued commitment of donors. This is especially true for technical assistance at the level of engineers and technical managers. Lesotho simply does not have the professional human resources on which VWS can draw to sustain production at its present level.

As has been pointed out, VWS is not competing successfully for the professionals that are in the market and continues to loose experienced people. It is unlikely that this situation will change anytime soon especially with the growing demand of the Lesotho Highlands project for technical and professional people.

We do not wish to suggest that VWS Basotho engineers are not capable; they are simply too few in number to sustain VWS. The answer is expatriate technical assistance as part of larger donor aid packages and volunteer engineers such as US Peace Corps and others.

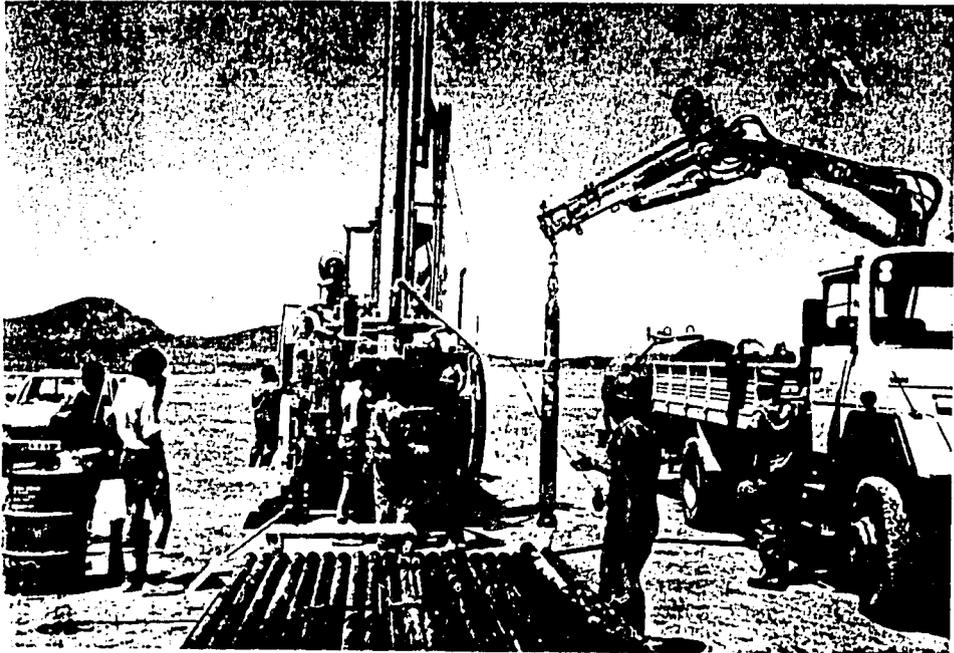
VWS is fortunate that it still has the long term commitment of Helvetas to provide continuity. With Helvetas technical assistance and volunteer engineers, new donors can be assured of consistency in application of policy and management of project implementation.

PICTORIAL RECORD
OF
PROJECT ACTIVITIES

470

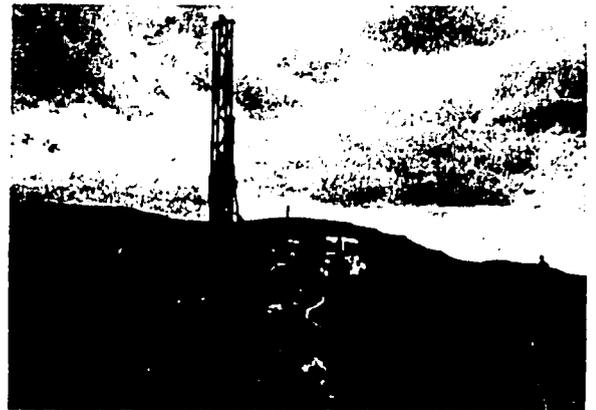
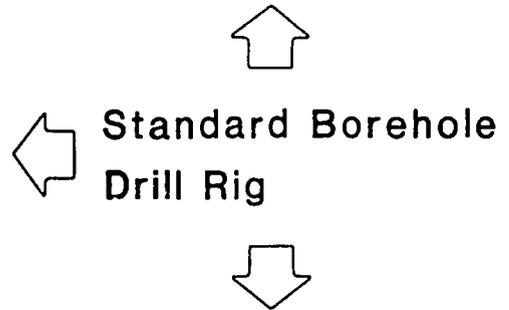
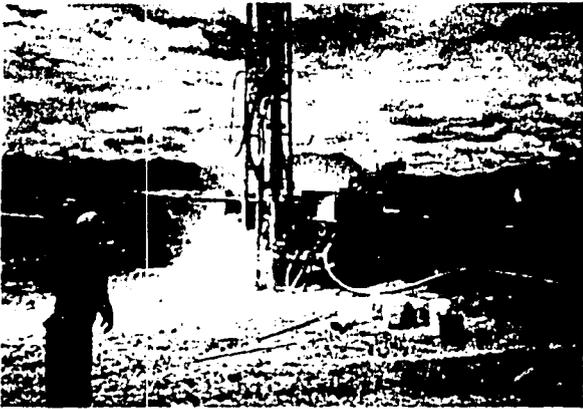
BOREHOLE-HANDPUMP CONSTRUCTION

Contracted Rotary Rig →



← VWS Owned and Operated Cable Tool Rig

ACHIEVING A GOAL OF 500 BOREHOLES PER YEAR



Horizontal Borehole
Drill Rig



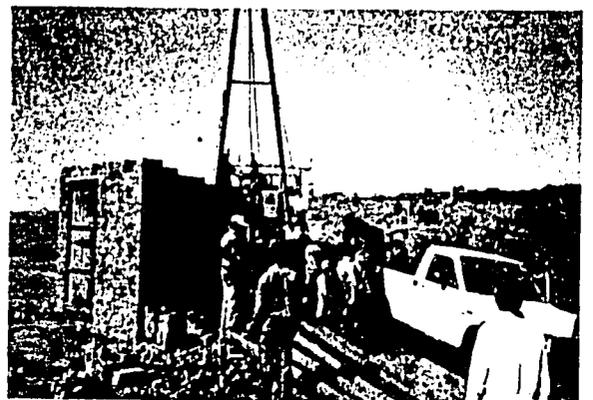
← Drilling Samples
on Display

Village Helpers →



← Test Pumping
a Borehole

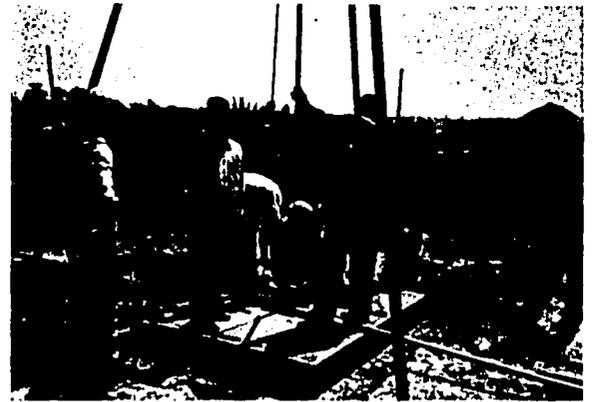
Installing Borehole
Casing →





← Hand Pump Pad Under Construction

Pump Installation →



← Completed Installation

Typical Pump House for Diesel Driven Pump →



Hand Pumps in
Operation in Rural
Lesotho



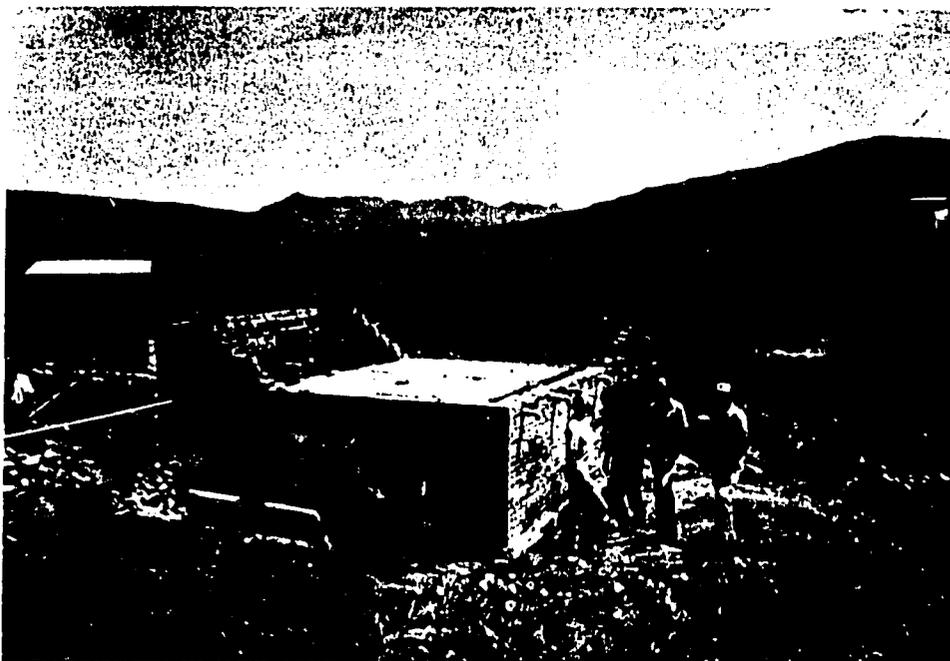
USA Made Moyno
Hand Pump

SA Made Mono
Hand Pump

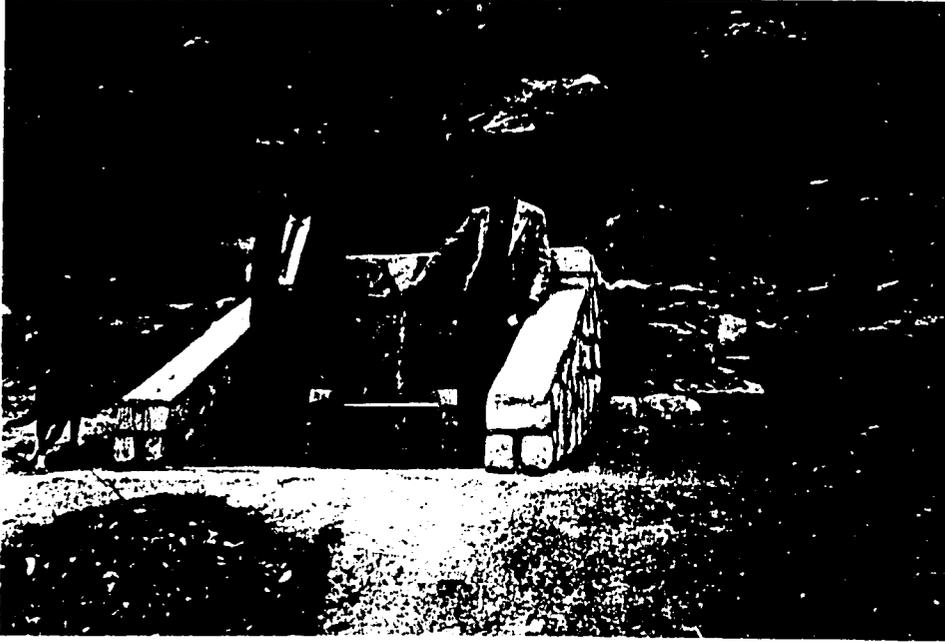


GRAVITY SYSTEM CONSTRUCTION

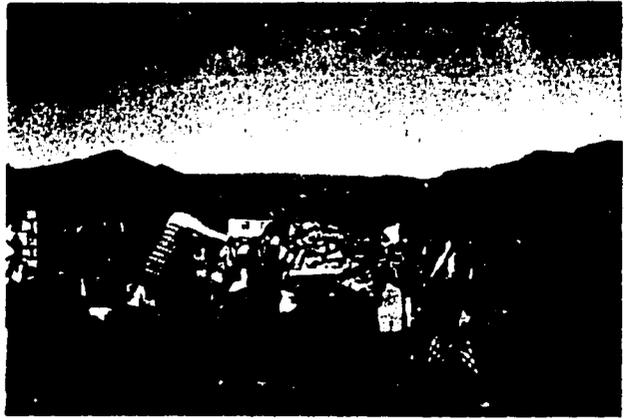
20-cm Reservoir
Constructed from
Native Stone



Examples of
Brick Reservoir



↑
← Examples of
a Water Point



↑
Examples of
Village Self-Help
Labor
↓





Collecting Stones
for Concrete

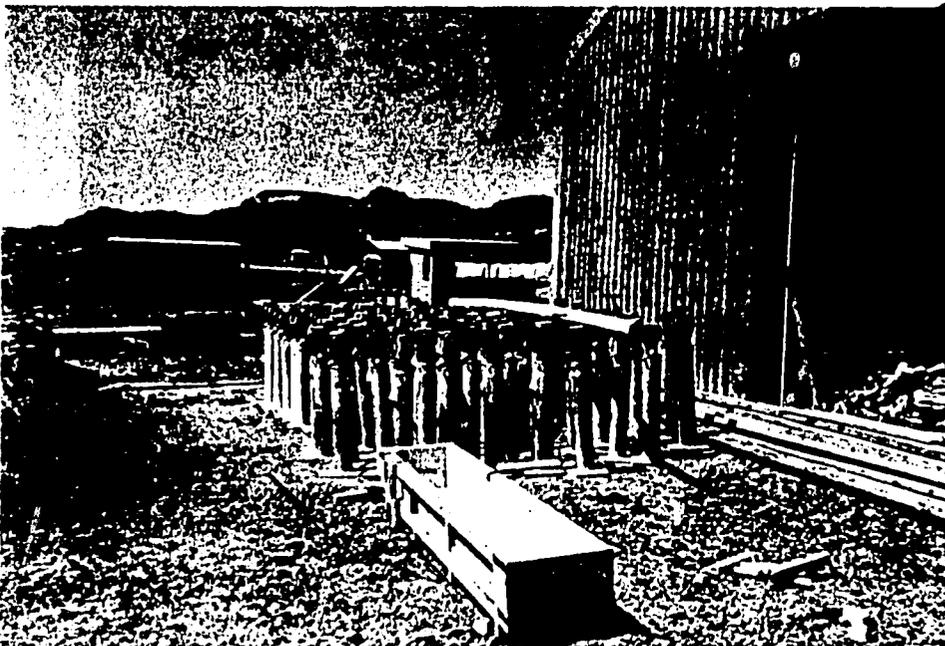
Villagers Shaping Stone



COMMODITY PROCUREMENT



↑ 3600 Tons of Pipe from South Korea

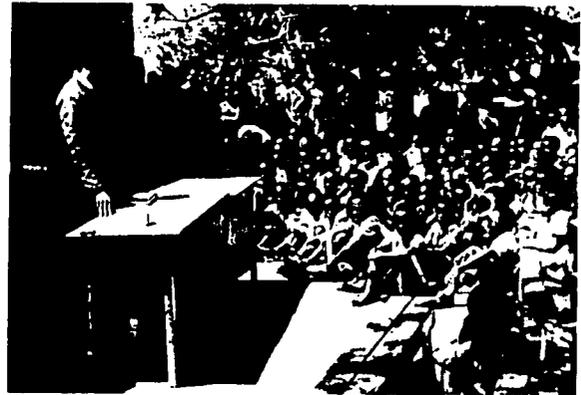


← 900 Hand Pumps Purchased in the USA

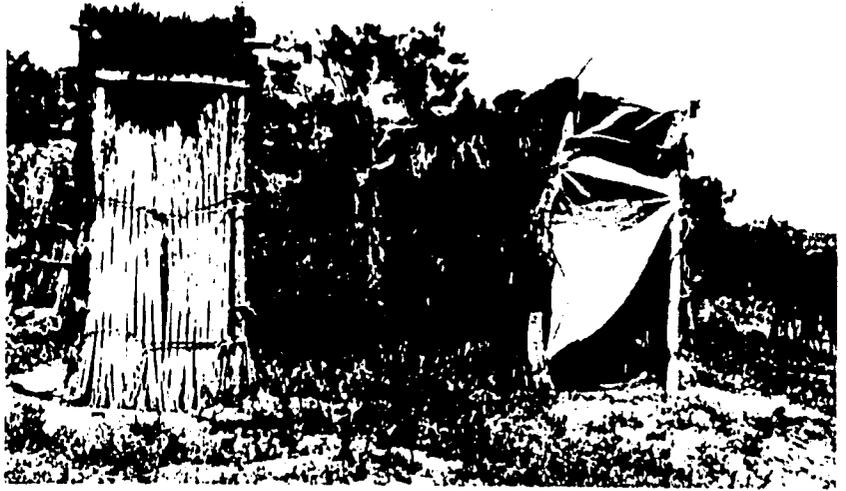
PUBLIC HEALTH EDUCATION



Public Health
Education Workshop



Oral Rehydration
Demonstration



Examples of Pit
Latrines Constructed
from Local Materials



A P P E N D I X 1

VILLAGE WATER SUPPLY AS AN INSTITUTION

APPENDIX 1VILLAGE WATER SUPPLY AS AN INSTITUTION1. General Overview

VWS organization is based on decentralization of services into regions and districts however VWS Headquarters in Maseru does provide centralized financial, administrative and personnel services and major mechanical repair support. Regional centers in Maseru (central), Maputsoe (north) and Mhale's Hoek (south) serve as distribution centers for materials and services to the districts under their jurisdiction. Regional centers have major stocks of construction materials, vehicle and system maintenance crews and provide engineering and planning support services. Districts call upon these services as required to meet construction schedules.

Maintenance centers, which include offices and storage facilities, have been constructed in all 10 districts. Each of the 10 districts has a district engineer who prepares construction schedules, provides logistical support and design and construction supervision for field construction crews.

2. VWS Staff

There are two technical assistance teams in VWS: USAID and Helvetas. Senior management positions are staffed with Basotho nationals however many positions, especially technical, have expatriate advisors with Basotho as counterparts. Of 10 districts and 3 regional engineers, only two of the 13 positions are held by Basotho. It is clear that one of the deficiencies of VWS is the lack of Basotho engineers. Most of the district engineering positions are held by volunteer expatriates and 2 of 3 regional engineering positions by members of the technical assistance teams. Several options are being explored to overcome this discrepancy but it will be several years before enough Basotho engineers can be educated and trained or recruited to fill the need. To keep production at its present level, expatriate engineers will be required for several years to come.

The following is a listing of staff employed by VWS in 1988:

<u>Admin. and Technical Staff</u>		<u>Expatriates</u>	
Senior Engineer	1	Construction Engineer	1
Maintenance Engineer	1	Development Engineer	1
Sanitation Engineer	1	Training Engineer	1
Regional Engineer (RES)	1	Regional Engineer (REN)	1
District Engineers	2	District Engineers	8
Engineer's Assistants	9		<u>12</u>
Supervisors	16		
San. Tech. Officers	4		
	<u>35</u>		

<u>Office Staff</u>		<u>Field Staff</u>	
Laboratory Technician	1	Foremen	36
Transport Officer	1	Masons	100
Personnel Officer	1	Drilling Foremen	11
Administrative Officer	1	Drilling Masons	17
Senior Accountant	1	San. Tech. Assts.	24
Senior Storekeepers	2		<u>188</u>
Administrative Staff	64		
	<u>71</u>		

Workshops

WS Managers	2
WS Storekeeper	1
Mechanics	7
Welders	2
	<u>12</u>

Abbreviations

RES - Regional Engineer, South
REN - Regional Engineer, North

3. Construction

VWS has instituted a national priority construction plan which is submitted to and approved by Government. This plan is updated every 12-18 months from applications collected by district rural development officers. VWS selects and prioritizes villages based on selection criteria which have been approved by GOL and donors.

Several conditions must be met by a village prior to construction. Foremost are (1): contribution to a maintenance fund on a per capita or family basis which is held by the village water committee in a local bank account, (2): establishment of a village water committee with overall responsibility for village organization, and (3): free labor as required to construct the water supply system.

Construction priorities are assigned each district according to availability of funding, construction crews, engineering and supervision. District engineers are responsible for survey and design which are approved by both the regional engineer and chief construction engineer (Maseru). System design and material specifications have been standardized to improve quality and reliability.

4. Financial Control

VWS controls financial resources received from GOL and donors. Strict accounting is maintained and financial and technical reports are submitted regularly. Operation and capital improvement funds are sub-warranted to regional headquarters through local sub-accountancy offices giving regional engineers direct access to operating funds. Regional engineers are required to account monthly for expenditures.

5. Stores and Inventory Control

Each district and regional store has a storekeeper or stores assistant but stores management is still the responsibility of the engineer in-charge. At present (1988) VWS lacks centralized procurement and inventory control but has increased the effectiveness of the stores function by the addition of a senior storekeeper to coordinate all district stores activity. Bulk purchases are centralized in Maseru but regional headquarters have discretionary powers for purchase of local construction materials and supplies.

6. System and Equipment Maintenance

VWS, Maseru, has one of the finest and most modern equipment workshops in Lesotho. Regional workshops have also been constructed at each regional center. Routine vehicle maintenance is undertaken at the regional level with major repairs referred to Maseru. Each regional workshop also has permanently assigned field maintenance crews to serve district centers and the response time for water system repairs is generally within a few days.

7. Administrative Support

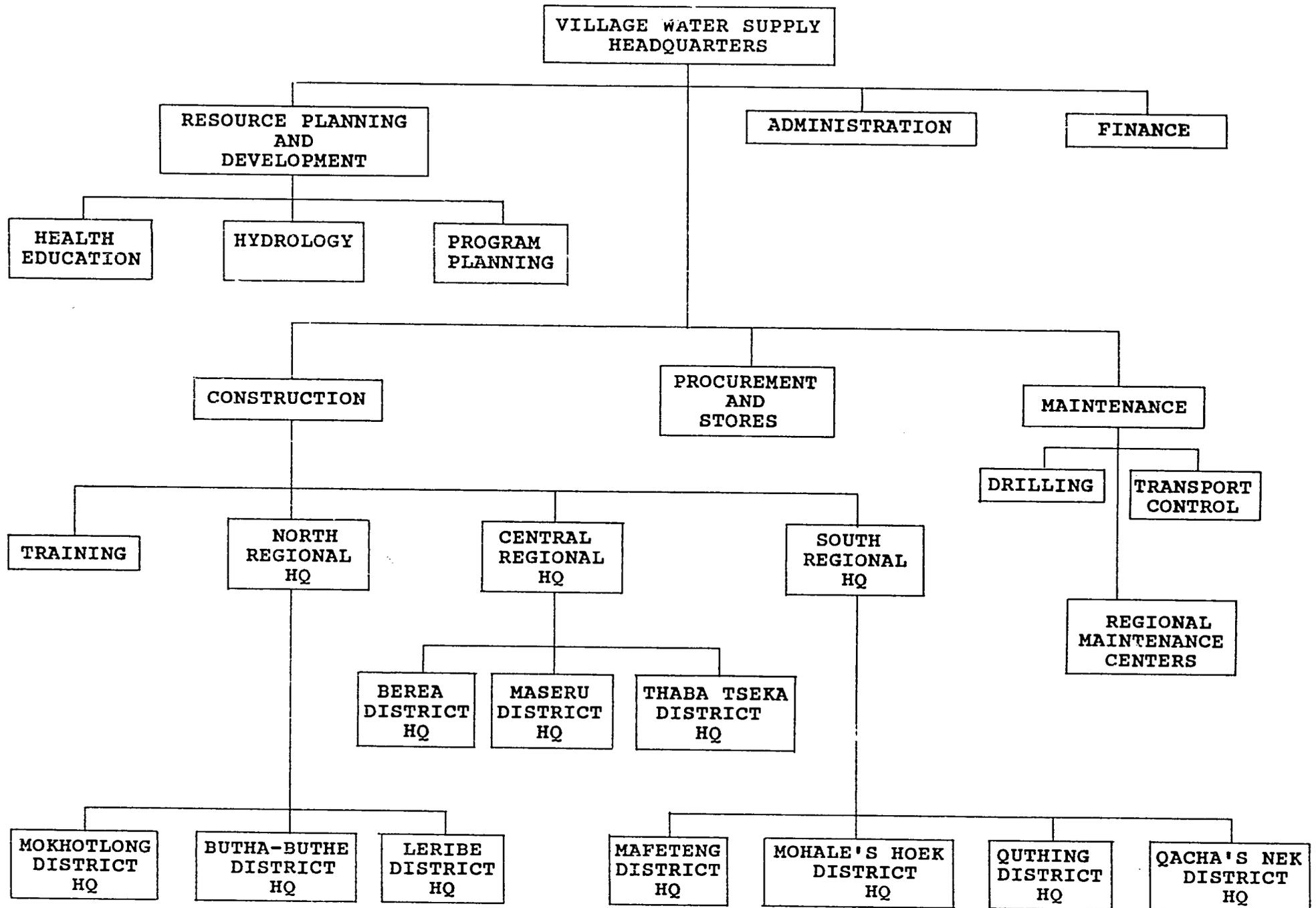
Unlike most sections of the Ministry of Interior, Chief-tainship Affairs and Rural Development, VWS has its own administrative assistant, personnel and transport officers.

8. Laboratory

VWS maintains its own lab for conducting water quality testing. Most work involves bacteriological testing of water samples. Completed water systems are monitored on a random basis to ensure continued water quality. Referrals are made to the VWS water quality laboratory when there is a problem suspected.

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VILLAGE WATER SUPPLY ORGANIZATIONAL STRUCTURE, 1988



A P P E N D I X 2

PUBLIC HEALTH

56

APPENDIX 2PUBLIC HEALTH1. Summary

The operational philosophy of this project has been that providing water supply and sanitation facilities are necessary but not sufficient conditions for improvements in public health. It is necessary that there also be a constant and continual informational and educational process occurring at the village level. In order to maximize input for effecting change, the public health education component of the project has developed and implemented a multi-faceted, multi-sectoral and multi-disciplinary health education strategy for achieving project objectives.

2. Community Health EducationA. The Health Education Pitso

After a water supply system is completed, a health education pitso is organized by members of the multi-sectoral team. Villagers gather to participate in an educational and informational experience which lasts from 2 to 3-1/2 hours. Different topics are presented and opportunities are given for questions and answers. Pitsos are conducted in Sesotho and topics discussed are:

- a. Water-related diseases (typhoid, dysentery, scabies): their cause, transmission, prevention and control. Special emphasis is placed on personal and food hygiene, water collection/storage and use.
- b. Sanitation (human excreta) as a means of controlling and preventing the spread of certain diseases. How to build, use, care for and maintain a latrine.
- c. Environmental sanitation - refuse and waste water disposal (refuse pits and heaps, soak-away pits, keeping the environment and home generally clean to reduce opportunities for fly breeding).
- d. Infectious diseases - tapeworms, their cause, transmission and prevention.
- e. ORT-Oral rehydration treatment - administration: An easy technique of preparing rehydration fluid and means of preventing continual morbidity of young children suffering from dehydration due to severe diarrhea.

For all topics discussed at the pitso, health informational pamphlets in Sesotho are given to villagers. The community approach focuses upon the community as a means of change. Community leadership and resources are tapped and the community assumes responsibility for promoting change.

TABLE PH-1

SUMMARY OF HEALTH EDUCATION PITSONS BY DISTRICT

<u>District</u>	<u>No. of Villages</u>
Mafeteng	32
Mohale's Hoek	53
Quthing	24
Berea	21
Leribe	12
Maseru	9
Thaba-Tseka	22

It is important to explain the relatively low numbers of villages which have experienced the health education pitso. The project public health team realized in the earlier years of implementation that it would be impossible to provide health education pitsons at the pace VWS construction teams were completing systems even with the assistance of the district public health and rural development teams.

Problems encountered were:

- a. The 2-3 weeks required to organize and implement each pitso to assure maximum community participation. Also pitso must not conflict with agricultural activities, thus the season of the year is a consideration.
- b. District public health teams give low priority to the health education pitsons because of other duties.
- c. The perception by some key district personnel that activities planned by the project team were 'extra duties' for the district public health teams.
- d. Poor communication and coordination in some districts between rural development and public health staff.
- e. Lack of sufficient resources, in some cases vehicles, or inadequate planning for using resources to expediting activities.

The expansion of the project and thus health education activities into all 10 districts of Lesotho led to the development of a new strategy for increasing village level health education: the village health worker.

Even though the number of village health education pitsos are low in comparison to the work of the VHWS this activity has a place in overall health education strategy.

B. Training of Village Health Workers

The intention of this program is to provide at least two VHWS in each village having a water supply. This cadre of village based health education workers is essential to obtain and to maintain positive health behaviour regarding the prevention of diseases related to water, excreta, personal and environmental hygiene. The VHWS provide a continuous presence for health education activities and also provide a link between the community and extension workers in the multi-sectoral team building approach to health education. By supporting the VHWS program, VWS is contributing to an important aspect of the MOH strategy of primary health care in Lesotho.

TABLE PH-2

DISTRICT VILLAGE HEALTH WORKERS TRAINED

Mafeteng	340	Mokhotlong	32
Mohale's Hoek	440	Maseru	38
Quthing	271	Butha-Buthe	43
Berea	74	Qacha's Nek	29
Leribe	235	Thaba Tseka	32

3. District Health Education Workshops

Since there are not sufficient MOH and MOI personnel at district and village level to conduct an on-going health education campaign, district workshops were planned and have been implemented in all 10 districts as a means to develop a cadre of health education facilitators among government extension agents from other ministries already employed in periphery activities. These ministries include Interior (Rural Development), Health, Agriculture and Education.

The workshop concept was to develop a team approach for planning, coordinating and delivering health education at the village level. These initial week long workshops provided a stimulus for extension workers to emphasize health concepts in villages in their districts targeted for new water systems.

A year after the initial workshop, a 2-day follow-up workshop is held for the same participants. The purpose is to assess progress, discuss successes and failures, provide new motivation for participatory and community health education and to ascertain how public health teams can be more supportive to extension workers and encourage their continual involvement. Thus far, eight district follow-up workshops have been held leaving only Maseru and Mokhotlong districts to be completed.

4. Regional Water Quality Testing Workshops

In an effort to decentralize water quality testing, two regional workshops were held for district engineers and senior technical officers to discuss and to demonstrate the use of equipment used for water testing at the district level. The two workshops were held at Maputsoe for Leribe, Butha-Buthe and Mokhotlong districts, and at Mohale's Hoek for Mohale's Hoek, Quthing, Mafeteng and Qacha's Nek districts. A third workshop is planned for the remaining districts.

5. Health Information Materials

There has always been a need for the public health component of the project to develop informative materials to allow for greater district coverage for promoting clean water and adequate sanitation, personnel hygiene and disease prevention. Toward this end two important health information material aids have been completed.

- A. The Village Health Workers Home Guide: This is a booklet to be used by VHWs to assist them in interacting with villagers especially when making home visits for health education purposes. The booklet serves as a guide for asking questions, making observations and disseminating health related information.
- B. The Water and Sanitation Health Information Series are 18 poster charts used by VHWs, teachers, rural development officers and others involved in promoting health education at the village level. They allow for more uniform message for dissemination and provide a better focus for health education efforts. This series will be supplemented at a later date.

6. VWS Public Health Training Programs

The public health coordinator had the opportunity to discuss and teach public health during VWS training programs for foremen and supervisors and village water minders. While these training programs are basically technical they do incorporate social and health issues which may effect the overall success of VWS construction efforts. VWS encourages its technical people to be aware of the importance of good health practices at the village level.

7. National Rural Water Supply and Sanitation Conference

In accordance with recommendation number 6 of the second external project evaluation (Feb. 1985), a national conference was held in Maseru 2-5 December, 1986, to discuss the implications of the four studies noted below. The conference was sponsored by USAID and the ministries of Health and Interior. Three of the four studies were also

funded by the project (the Rural Household Survey was funded by UNDP):

- A. Knowledge, Attitude, Practice (K.A.P.) Survey by Dr. E. Clarke(1984): This survey was conducted in selected villages to obtain baseline information on what Basotho know, think, feel and do regarding water and sanitation related disease and personal, domestic and environmental hygiene; and to identify cultural belief values and practices which may affect adaptations to innovations regarding water and sanitation.
- B. Village Water Management Study by Dr. J. Gay(1984): This study was conducted in selected villages to obtain data for improving the performance of village water committees, chiefs and other rural development agents in the administering of water supply activities on a village organizational level.
- C. Rural Household Survey by Dr. P. Evans(1984): This survey was conducted in selected villages to obtain baseline data on individual and community barriers for implementing improved sanitation.
- D. Health Impact Study by Dr. S. Esrey(1987): This research was conducted in selected villages to ascertain what impact clean water (and sanitation) has on the health status of individuals, and also to identify what other factors should be present in order to enhance the benefits of clean water and sanitation.

The conference was primarily held for key decision makers at the district level with the dual objective of informing district officials on the four studies and how they could be used at the local level to develop more comprehensive rural public health training programs. Interested ministry officials and a broad cross-section of donors were also invited. Each author was available to attend the conference and to present his or her paper. There were a total number of 150 registered participants.

District Officials Invited

Secretaries.
 Development Council Representatives.
 Rural Development Officers.
 Public Health Nurses.
 Medical Officer or Matron of District Hospital.
 Health Inspectors or Health Assistants.
 Agricultural Officers.
 Education Officers.

8. Health Impact Statement

Conclusions and recommendations from a paper presented to the USAID sponsored conference on rural water supply and sanitation in Maseru, December, 1986.

HEALTH IMPACT FOLLOWING IMPROVEMENTS IN WATER SUPPLIES IN RURAL LESOTHO

By

Dr. Steven A. Esrey
Cornell University.

Improvements in water supplies and sanitation can improve the health of young children by reducing diarrheal morbidity rates and fostering better growth. Water usage should be increased, particularly during the summer months, and greater efforts should be made to encourage hand washing after defecation and more frequent personal bathing. The installation of latrines should also reduce diarrhea and improve growth of young children. If these improvements occur together, 50 percent of infant growth faltering could be eliminated. Improvements in the quality of domestic drinking water are of less importance than improvements in water quantity and sanitation, but would be effective in reducing the infection rate of Giardia and E. Coli. Villagers should be encouraged to rely exclusively on the improved water supply for their drinking and cooking needs, particularly when children are being weaned from the breast. Greater efforts should be made, at the same time that one is installing water supplies, to encourage the use of more water and to install latrines simultaneously than have been made in the past. In summary the use of more water is more important than the quality of drinking water and should therefore be the first priority when installing improved water supplies.

VILLAGE LEVEL TEACHING AIDS



Ho hlapa matsoho ha motho a tsoa ntloaneng ke ho ipaballa



Washing hands after using a toilet promotes good health

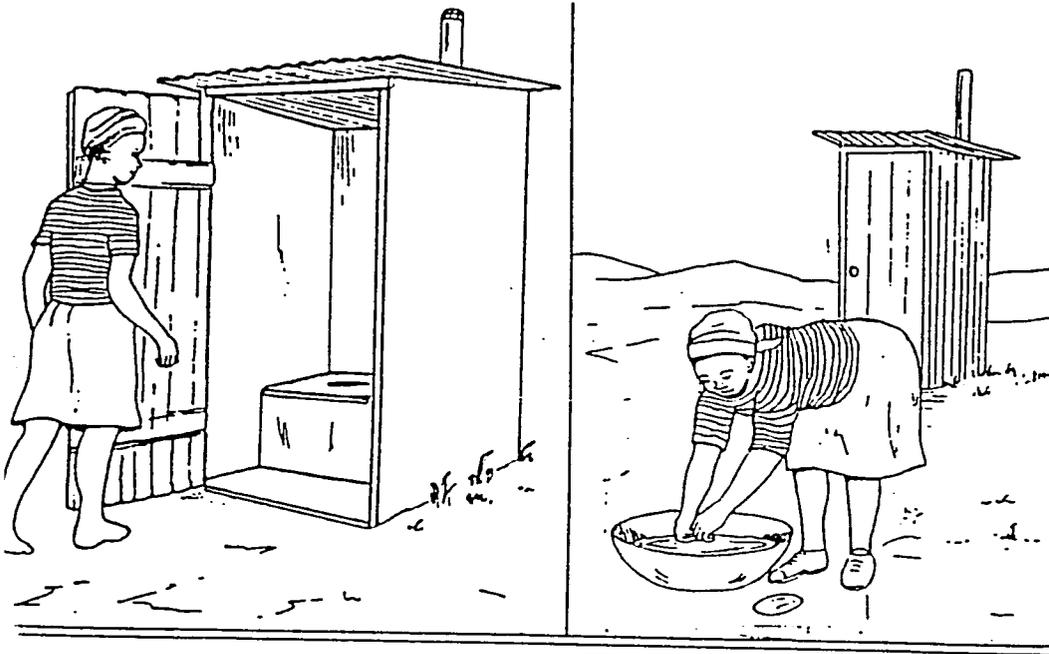
To avoid transmission of gastro-enterital diseases like typhoid, cholera, dysentery etc. teach a child to wash hands after using a toilet.

A child must use water, soap and clean dry towel after defaecating when washing hands to remove dirt and to kill disease germs.

A child must keep finger nails short to prevent dirt and disease germs from accumulating under them.

Make a child get into the habit of washing hands after using a toilet by having water ready for washing hands each time he is been to the toilet.

Hlatsoa matsoho ka sesepa le metsi
hloekileng nako le nako ha u tsoa ntloaneng



Always wash hands with clean water and soap after having been to the toilet.

To wash hands thoroughly use soap, clean water and dry clean towel.

Washing hands after using the latrine helps to prevent the spread of enteric diseases like worms, dysentery, cholera etc.

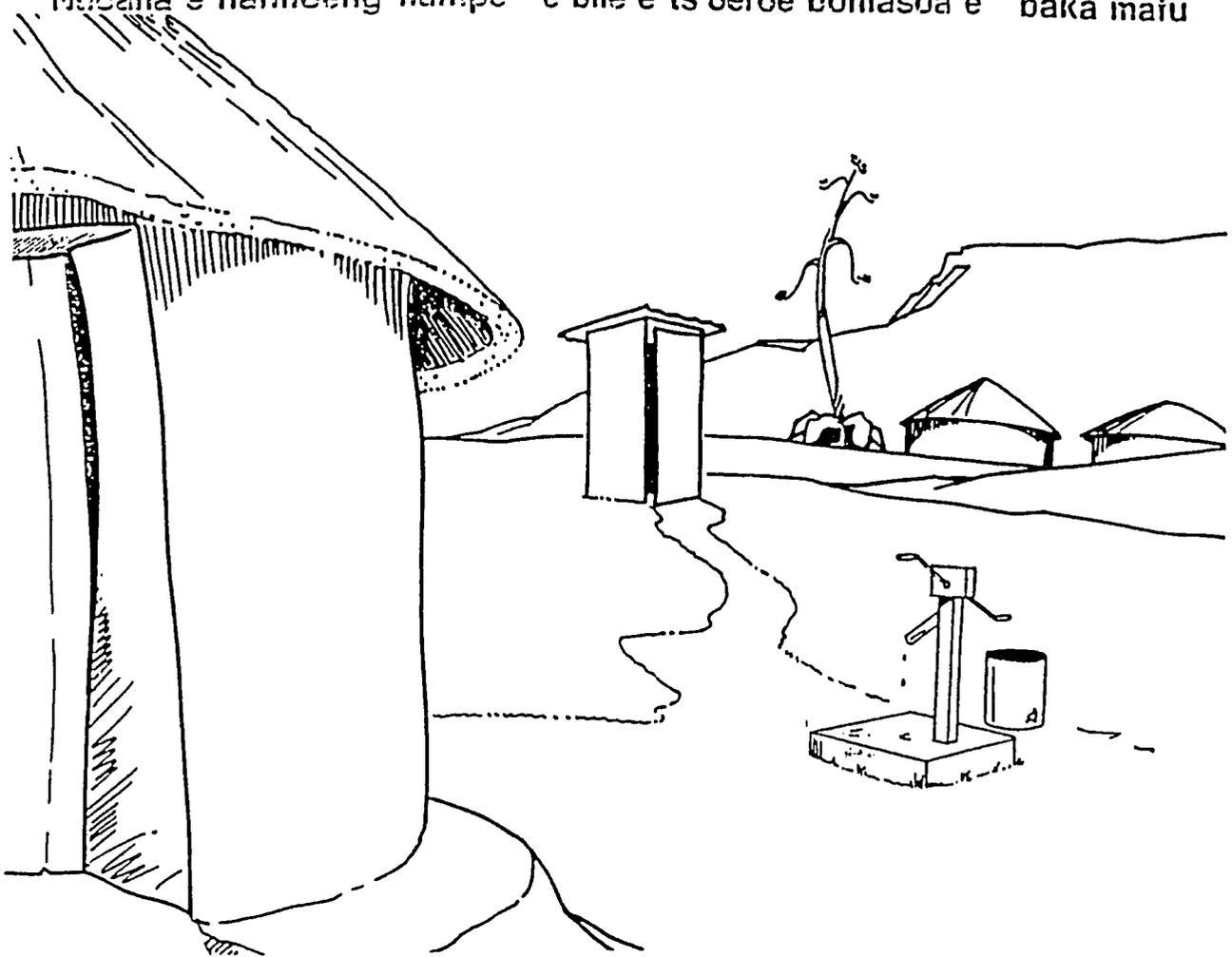
If you have been to a latrine make sure that you always wash your hands thoroughly especially before handling food and water.

Washing hands before handling food prevents disease germs on dirty hands from reaching food and water.

It is important to always keep your finger nails short so as to prevent the accumulation of dirt which can either contain disease germs or serve as a breeding place for germs.



Milcana e nahiloeng hampe e bile e ts'oeroe bohlasoa e baka mafu



A badly sited and carelessly maintained latrine is a health hazard

leaving the toilet seat uncovered makes it easier for flies to:

- a) enter and breed inside the pit;
- b) easily transmit faeces and faecal borne disease onto human food.

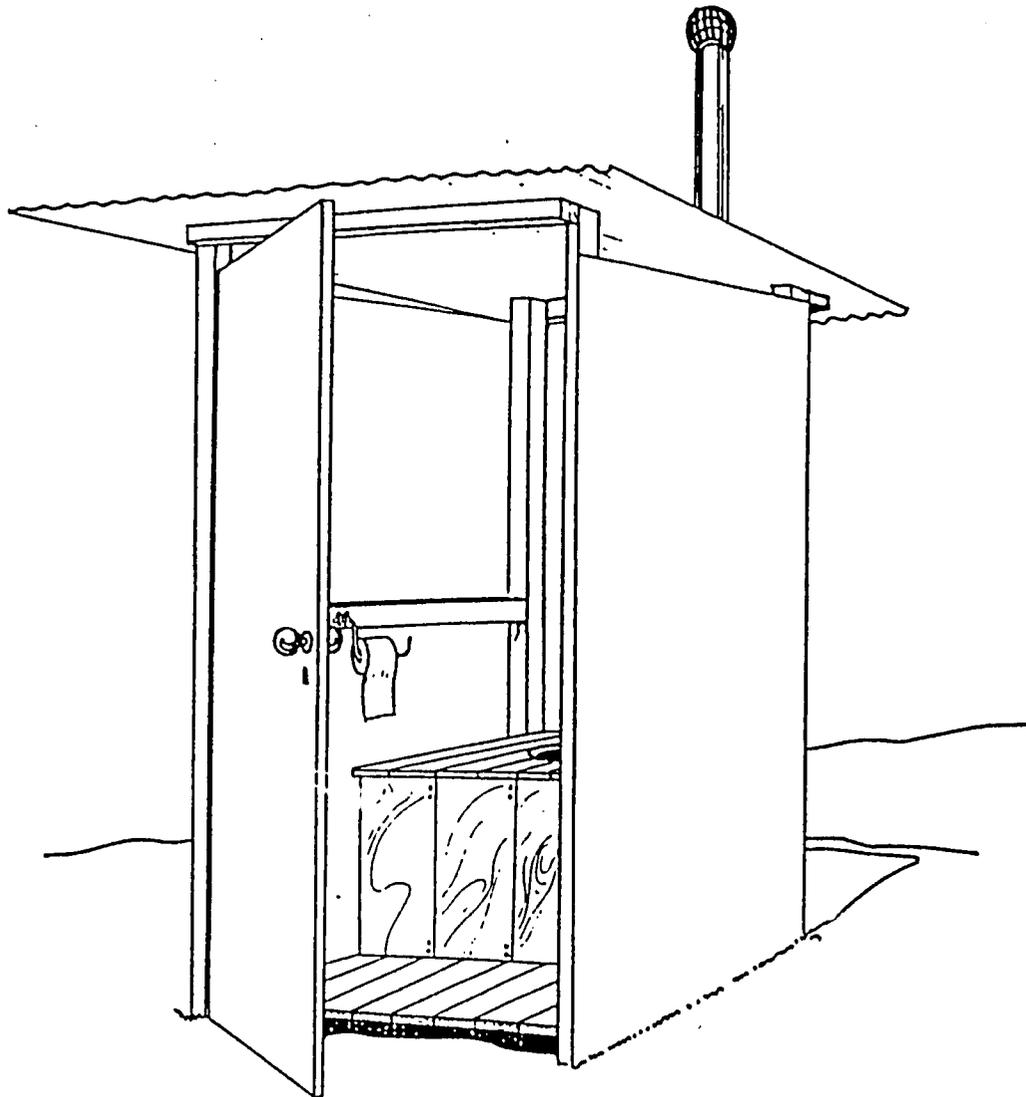
A latrine with rubbish all over the floor is not pleasant to use and promotes the breeding of rats and spiders inside the toilet.

A carelessly maintained latrine is smelly and therefore attracts flies since they like smelly and dirty places.

A latrine too close to the house may make an unpleasant smell in the house.

For the siting of a latrine get advice from a village health worker, a health assistant, a nurse, or rural development personnel.

Sebelisa Ntloana ea boithuso, thibela ho atahafu mafu



Use a Latrine

Using a latrine, prevents the spread of communicable diseases which include typhoid, dysentery, worms and other enteric diseases.

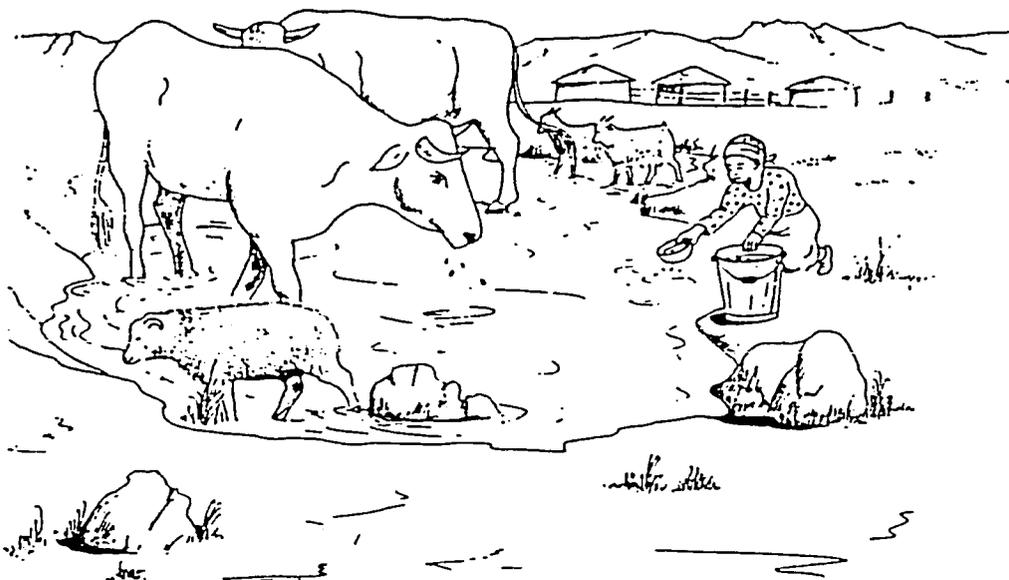
Prevents flies from being agents faecal borne diseases

Promotes environmental cleanliness

Provides privacy

Saves time and shortens distance of going to defaecate far away.

Ho belisa metsi a tsoang selibeng se sa sireletsoang
ho molemo hofetisisa.



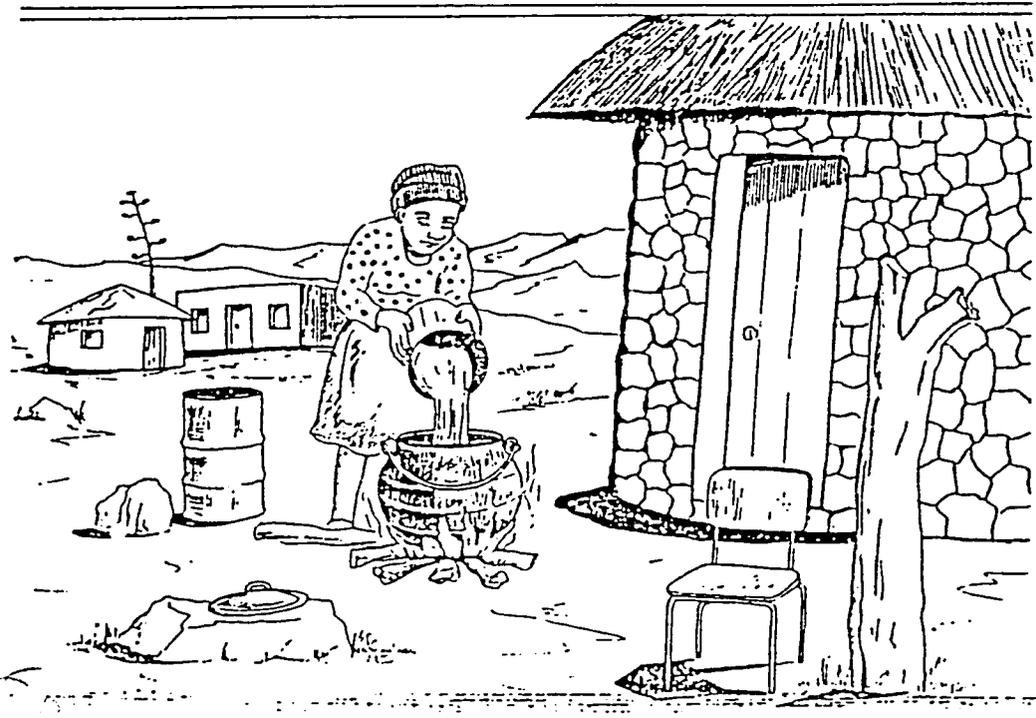
Boiling water which has come from an unprotected spring is a good habit

An unprotected spring may be contaminated with germs which can cause diseases such as typhoid dysentery, polio etc.

An unprotected spring may be contaminated by animals, faeces of human, dirty hands, buckets and collecting vessels, soil erosion etc.

Water collected for household use from an unprotected spring should be boiled and stored in a clean container with a cover to avoid contamination.

Whenever possible, the community should protect their springs, ask for advice from village health workers, Nurse, health assistant or rural development personnel.



A P P E N D I X 3

TRAINING

APPENDIX 3TRAINING1. Summary

VWS has an expatriate training engineer funded by Helvetas (formerly by USAID) who manages all in-house training programs for construction and maintenance personnel. Training of village health workers and other health related positions are conducted by VWS in coordination with the Ministry of Health. USAID is providing the major share of training funds through the project, however, other donors both within and without VWS are also involved.

2. Skilled and Technical Personnel

VWS training courses for construction and maintenance personnel from mason through the supervisory level are conducted "in-house" by senior staff under the direction of the training engineer. Special construction trades personnel are provided by Helvetas to conduct on-site training of masons and foremen. All construction maintenance personnel are promoted "through the ranks" as follows:

Masons: Entry level candidates must have a grade "B" or "C" trade certificate and undergo three-month on-site training. The rate of training is tied to donor funding. Masons are, by VWS policy, temporary employees hired for implementation of specific donor projects. Donors are expected to provide funds for wages and allowances to the extent required to meet completion schedules. As an example, the USAID project is now fully supporting 90 masons that are required to meet project goals.

Foreman: Candidates are drawn only from VWS masons having at least one-year experience and after successfully passing a qualifying examination. Nine-month course; 6-month classroom, 3-month fieldwork.

Supervisor: Drawn from VWS foremen having proven field experience with an acceptable academic background. Lerotholi Polytechnic Technical Training School (TTS) graduates are also qualified after at least one-year experience on construction projects. Six-month course in the classroom.

This training philosophy has produced skilled construction personnel in sufficient numbers to allow productivity to increase by a factor of 6 since 1980. Five years ago VWS sent its foremen and supervisor candidates to a trade school in Swaziland, however, this approach was costly and student progress could not be assessed.

The following table summarizes training programs which have been supported with project funds.

TABLE T-1

USAID PROJECT SUPPORTED TRAINING PROGRAMS
(through April, 1988)

	<u>To-Date</u>	<u>Project Objective</u>
Waterminders	590	547
Masons	100	0
Foremen	42	0
Supervisors	12	0
Senior Technical Officers	14	20
Engineers	2	3
Mechanics	8	0
Drivers	7	0
Village Health Workers	1500	0

3. Engineers

Qualified Basotho engineers are difficult to recruit because of high demand in other government agencies and few candidates to choose from. We believe that VWS will continue to rely on expatriates for several years to come only gradually replacing them with Basotho. New donor financed training opportunities have been realized in the past year. Helvetas is sponsoring 3 VWS students in 3-year technical degree courses at Witwatersrand and Technikon in the RSA. In addition, and as part of their current aid program to VWS, UK is sponsoring 2 VWS students in engineering degree courses in England.

4. Waterminders

VWS has changed its training philosophy for waterminders who were previously trained through special courses at district centers. VWS now trains 2-waterminders from each village as nominated by the village water committee, on-site, and as the system is constructed. Training is conducted by VWS masons and foremen assigned to the project and the cost is borne by the donor involved. Water minder training applies only to gravity, diesel and windmill pump systems. Villages supplied by hand pumps require no water minders because of the technical nature of repairs required.

5. Training Reference Manuals

Foreman Training Manual	(1982)
Supervisor Training Manual	(1983)
Manual of Standardization	(1983)
Caretaker Training Manual	(1986)
Mason Training Manual	(1988)
Handpump and Borehole Manual	(1989)

A P P E N D I X 4

CONSTRUCTION

12

Appendix 4CONSTRUCTION1. GENERAL CONSTRUCTION

Four basic types of systems are constructed by VWS. These, along with per capita cost, are listed below.

SYSTEM TYPE AND COST

<u>Type</u>	<u>Description</u>	<u>Per Capita Cost</u>
I	Simple Spring Protection	M15.00(\$ 7.50)
II	Gravity	M50.00(\$25.00)
III	Hand Pump	M30.00(\$15.00)
IV	Power Pumping	M50-70.00(\$25-35)

Generally, spring protection systems are appropriate in mountainous areas where villages are smaller and springs more numerous. Gravity systems are most common in the foothills and hand pumps in the lowlands.

Power pumping systems (diesel driven pumps and windmills) are avoided whenever possible because of initial cost, high maintenance and, in the case of a diesel driven pump, fuel costs which must be provided by the village.

Government of Lesotho is considered a donor for all projects regardless of the primary source of funding for construction materials. We estimate that GOL contributions to a typical project is 15% - 20% of the overall capital cost of construction which is realized through fuel for transport, salaries and wages of construction personnel and some common local construction materials.

Design and construction standards developed by VWS since 1981 reflect the quality and type of materials and designs that are best suited to conditions in Lesotho. Plastic pipe (such as PE and PVC) has very limited application due to extremely rocky conditions and its vulnerability to vandalism and none has been purchased for the USAID project. Whole systems, originally constructed with plastic pipe, have been abandoned and replaced with galvanized pipe. Donors directly involved with VWS are not allowed to provide plastic pipe but, unfortunately, small donors, particularly NGO's unwilling to associate with VWS or ignoring its advice, continue to perpetrate its use through a misguided sense of economy or, perhaps, independence. VWS has refused maintenance responsibility of such systems constructed with disregard to its standards and we believe this policy is beginning to have its desired effect.

Local construction materials, particularly stone for reservoirs and sand for concrete are, whenever possible, procured at or near the work site. In some areas where appropriate sources are available, enterprising villagers collect

or hand crush stone for use in concrete. VWS will buy this stone, if suitable, for mixing concrete and the savings in transportation costs (from Maseru) is substantial.

2. BOREHOLE AND HAND PUMP PROGRAM

The drilling program is only feasible in the lowland areas of Lesotho where VWS has projected a need for 3,000 to 4,000 HPs. The growth of the VWS borehole/hand pump program has been phenomenal. Since 1982 when VWS began to utilize its existing cable tool drill rigs, to the present time when the majority of boreholes are drilled by rotary machines under contract to VWS, 2,500 handpumps have been installed.

The potential for ground water supplies in the lowlands of Lesotho was not developed by VWS prior to the advent of the USAID project in 1981. The original project design called for 400 hand pumps but was increased to 900 following early success in organizing a hydrogeologic section in VWS. This was followed by an additional 600 HPs purchased with USAID monetized food aid. The original 6 cable tool rigs belonging to VWS were eventually increased to 12 with an annual production capacity of 150 usable boreholes (30% of BHs do not have enough water to support HPs). The increase in demand for HPs made it necessary for VWS to develop a new strategy to meet this demand which eventually resulted in a program of hiring contract drillers.

Contract drilling has proven most successful and since the beginning in 1984 over 2,000 successful BHs have been drilled. Donor attraction to the hand pump program was stimulated by a decision to offer USAID purchased HPs to potential donors if they would finance BH drilling. Some 1,100 HPs have been provided by USAID to donors both large and small. This program is particularly suited to small donors whose modest programs can be doubled in size if VWS provides and installs the HPs. If such participation is not desired VWS is in a position to offer construction specifications and provide inspection services. Three small donors of note who have cooperated with VWS are the Roman Catholic Mission at Mazenod, USCC and the Rotary Club of Maseru.

Because of the success of the contract drilling program VWS has decided to convert its 12 cable tool drill rigs from production to maintenance. Boreholes require redevelopment to maintain yield and with 2,500 producing BHs, some in service for nearly 7 years, VWS is now committing its drill rigs and other resources to BH maintenance on a district by district basis. As the number of BHs grow VWS must continue to expand this commitment and is in a good position to do so with its cable tool rigs and staff of trained operators.

VWS has standardized on two types of hand pumps: the MOYNO manufactured by Robbins and Myers in the United States and Canada and the MONO manufactured in the Republic

of South Africa. Both are progressing cavity rotary pumps and both have been tested by the World Bank sponsored hand pump test program. The major components of these pumps are interchangeable (the Mono pump cylinder can be adapted to a Moyno pump head and stand) which allows a large degree of flexibility. A third HP partially fabricated in Lesotho, the Maluti, uses major components manufactured in RSA and is compatible with both Mono and Moyno.

3. PER CAPITA CONSUMPTION

At the end of 1984 two separate studies were completed to determine per capita consumption in villages with improved water supplies. The basic results are noted in the following table compared to the 1976 study by Feachem, et al.

COMPARATIVE CONSUMPTION IN LITERS/CAPITA/DAY

<u>Study</u>	<u>Type of Supply</u>	<u>Consumption</u>
Helvetas Study(1984)	Gravity	9.5 to 18.0
Helvetas Study(1984)	Hand Pumps	7.3
VWS Mgmt.Study(1984)	Traditional Sources	8.1 to 10.3
VWS Mgmt.Study(1984)	Gravity	13.6 to 36.3
Feachem (1976)	Gravity and Traditional	18.0

Feachem concluded that there is no variation in consumption between villages with improved sources and those using traditional sources. The VWS management study conducted by Dr. Judith Gay seems to disagree. The above figures, taken at face value, and without discussion of the various conditions and limitations pertaining to the studies, seem to indicate that consumption increases with an improved source. Also, from observations and reports of the health education component of the project, villagers having improved sources do supplement their needs by collecting water from traditional, unimproved sources, for bathing, washing clothes, gardening, livestock watering and other miscellaneous uses. The studies noted above, except for Feachem, did not include consumption from traditional sources in villages also having an improved source.

We do know that villagers with an improved supply generally have a reluctance to use clean water for any other purposes than drinking, cooking and some bathing. Clean water is highly regarded in villages and villagers do need to be convinced that they are not "wasting" water used for bathing and clothes washing. As the VWS management study pointed out, some villages through their water committees, actually lock taps and hand pumps to prevent usage during certain periods of the day. This is also done during periods of shortages and to prevent use by villagers who have not contributed labor or money to system construction. VWS does not sanction locking taps but this decision must be left to villagers. An obvious result of locking a

supply is lower consumption and it does promote continued use of traditional sources. This particular problem is one being addressed by the health education component of the USAID project.

Villages supplied by hand pumps are expected to show a lower per capita consumption. The physical labor required to turn the pump and the location and distribution of pumps (established by geologic considerations) generally result in their being less convenient than taps supplied by a gravity system. The Helvetas study was limited to one village and more work will have to be done to better establish consumption from hand pumps.

A P P E N D I X 5

RURAL SANITATION

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APPENDIX 5RURAL SANITATION1. Introduction

In addition to the health education component of the project, the Project Paper also anticipated construction of demonstration latrines. With the prior approval of USAID and GOL, a decision was made to incorporate demonstration latrine construction and associated training and education into the larger and more comprehensive Rural Sanitation Pilot Project (RSP) funded by UNDP, UNICEF and GOL. To this end, \$100,000 in USAID Rural Water and Sanitation Project funding was set aside for construction materials and, later, for training in Mohale's Hoek and Quthing Districts. The remainder of this section deals with the RSP which is very closely associated with the health education component of the USAID project.

2. Background

In 1983 the pilot phase of the Rural Sanitation Project (RSP) began implementation under the Technology Advisory Group of the World Bank. At this time USAID agreed that the sanitation component of the Rural Water and Sanitation project would be integrated into the RSP project and that funds for the sanitation component of the project would be disbursed by the RSP in support of RSP activities.

The objectives of RSP were to develop a strategy for a sustainable national rural sanitation program which would be integrated with rural water supply and primary health care activities, and to develop the capacity to implement the national program. This was largely achieved during the three year life of the pilot project and a decentralized national rural sanitation program based on discrete district sanitation projects is now underway. A total of six districts now have rural sanitation projects with the Overseas Development Administration of the U.K. (ODA) supporting projects in Leribe, Butha-Buthe and Mokhotlong districts, the Irish Government funding the Berea District project, and USAID through the RWSSP providing funding in Quthing district. The Mohale's Hoek District rural sanitation project, which was established during the pilot phase, is now fully supported by the Lesotho Government.

The pilot program emphasized the active involvement of the private sector in latrine construction, and hence a relatively small investment of USAID funding was made in demonstration latrine construction. In addition, \$80,000 was made available by UNICEF for latrine construction materials further reducing the need for USAID support for this particular aspect of the sanitation program. Accordingly, at the request of the Ministry of Health, USAID agreed in 1986 to allow the USAID funds to be spent on other aspects of the sanitation programme, including training, health education and promotion. However, UNICEF has continued to support all aspects of the district program

in Mohale's Hoek which were initiated during pilot phase, once again negating the need for USAID support in this district. A second proposal was made by the Ministry of Health to use the remaining USAID funds to launch a rural sanitation project in Quthing District. This was agreed to, and the Quthing project began implementation in May, 1987. To date approximately \$25,000 in USAID project funds have been disbursed in support of the RSP and the national sanitation program leaving a balance of \$75,000 still available for sanitation activities. The Ministry of Health has requested that support for the Quthing Project with the remaining funds be continued through 1989 under an administrative extension of the RWSSP.

The Quthing District RSP is now well established and is considered to be one of the better district sanitation projects. A district sanitation team comprising a district sanitation coordinator and three Health Assistants from the Ministry of Health and four Technical Assistants from VWSS has been trained and is now implementing the project. The project is presently concentrating in the catchment areas of four clinics - Mokbanametsong, Qomqomong, Sebapala, and Ha Makoae. More than 90 local VIP latrine builders have been trained in these areas, and extended health education and social marketing campaigns have been undertaken. The district sanitation team works in an integrated fashion with other extension workers and projects in the district, most notably VWSS, Rural Development Assistants, PLENTY, the LISP Project, and the 13 Towns Urban Sanitation Project. A District Sanitation Coordinating Committee has been established to sector development and inter-sectoral cooperation. It is planned to expand the district sanitation project gradually to cover the catchments of all of the clinics in the district. The major constraints facing the district team are a shortage of MOH staff, and logistical difficulties encountered when operating in this mountainous district.

The Lesotho Government intends by 1990/91 to have all ten district sanitation projects underway. The National Rural Sanitation Programme has been incorporated in the Government's Fourth Five Year Development Plan, and Donor and Government resources are being mobilized to fully expand the Programme. It is expected that one new district project will be initiated every six months from January, 1989 through 1990.

A P P E N D I X 6

PRIVATIZATION OF HANDPUMP MAINTENANCE

Appendix 6PRIVATIZATION OF HANDPUMP MAINTENANCE1. Overview

The maintenance section of VWS is the only line function not having expatriate technical advisors. Since mid-1986 the management of maintenance activities has been the responsibility of Basotho trained in early phases of the USAID project. Also, USAID has been providing the major share of funding required for spare parts for water system maintenance, the only donor to do so. GOL budget support for maintenance has been increasing but not sufficiently to replace donor funding. The obvious questions are: can GOL increase its level of funding to adequately support system maintenance without large donor contributions or some other sort of cost recovery and, secondly, can GOL continue to fund VWS staff increases necessary to meet growing maintenance demands? The answer to both is probably no. This is the basic assumption of USAID and other donors. The magnitude of the problem and how it can be addressed is the subject of the WASH Privatization Study*.

In answer to the first question concerning sources of funding to support maintenance costs, VWS has implemented a cost recovery program with an initial goal of 50% recovery (see Appendix 7). What we intend here is to report the results of a pilot privatization program as an alternative to the second problem of increasing maintenance staff to cope with expanding maintenance demands. This program was specifically focused on the maintenance requirements associated with the greatly expanded handpump program of the past 5 years. Cost recovery and privatization are two sides to the same coin but have been implemented separately and at different times with privatization coming first so as not to compound later cost recovery demands to be placed on villagers.

2. Summary of WASH Conclusions and Recommendations

We will not attempt to reproduce the WASH report here but will draw from it as necessary. In brief, the conclusions are:

- a. GOL has not dealt to any significant degree at the policy making level with privatization but there are no apparent barriers to such efforts.
- b. There are indications that villagers are reluctant to assume maintenance responsibilities. The problem is not financial but rather their preception that government is responsible.
- c. Technical aspects of the rural water supply program appear sound. Gravity systems are

* PRIVATIZATION STUDY OF THE VILLAGE WATER SUPPLY AND SANITATION PROJECT, Lesotho. WASH Field Report No. 215, September 1987.

constructed whenever possible but there is a large and growing hand pump presents as a means of supply. Hand pumps constitute the principal maintenance problem to be addressed during the initial stages of privatization.

- d. Maintenance costs averaged about \$1.00 per capita served but this does not represent an adequate level of maintenance, especially for hand pumps. About 9% of the VWS budget is allocated for maintenance. Maintenance funding requirements will increase significantly due to inflation and a projected increase in allocated resources to insure sustainability. By 1991 maintenance funding requirements are projected at M1.6 million (at \$1.00 = M2.00) or an average of M15.00 per household. Opportunities for private sector involvement seem strongest for hand pumps.
- e. There is an existing cadre of firms willing and able to participate at some level of maintenance privatization.
- f. VWS to contract with private sector firms for large area coverage and with individual local technicians to serve small groups of villages.
- g. Cost recovery to begin at a low level and to increase gradually over a period of time (about 5 years) to a level of about 75%.

3. Boreholes and Hand Pumps

VWS recognized the need for improved borehole and hand pump maintenance long before the WASH study. In late 1986 and early 1987 VWS conducted a survey to determine the extent of the problem which required several months to complete. Results of the survey determined prior to the WASH study were made available and were incooperated into that report. Since mid-1987 VWS has committed increasing resources to hand pump maintenance to the extent that in two districts the previous backlog of repairs has been reduced to a routine maintenance level.

TABLE M-1

HP DISTRIBUTION BY DISTRICT

<u>District</u>	<u>HPs</u>
Butha-Buthe:	70
Leribe:	360
Berea:	650
Maseru:	500
Mafeteng:	500
Mohale's Hoek	350
Total	<u>2,430</u>

Of this total 1,200 are American/Canadian "MOYNOs" and the remainder South African "MONOs". Both are progressing cavity rotary pumps with interchangeability of major components possible. Both were tested in Lesotho under the World Bank/UN sponsored hand pump test program (an earlier model of the MONO was tested, not the one presently in service).

VWS has been actively drilling boreholes since 1981 first with its own cable tools rigs and then under contract to local drilling firms. The annual rate of construction is 400 to 500 boreholes but this is entirely dependent on the level of donor aid.

TABLE M-2

AVERAGE BOREHOLE STATISTICS

Success Rate (usable BH):	60-70%
Depth of BH:	50-60 meters
Water Level:	20-40 meters
Pump Setting:	40 meters
Casing Installed:	3-8 meters
Mining Daily Yield:	1,500 liters
Average Population Served/HP:	75-100
Average Village Size:	600

4. Maintenance Plan

To address the problem of maintenance, VWS has trained HP installation and maintenance crews in all districts (6) having handpumps and a much greater level of HP maintenance is now occurring than before 1987. What is not being done to any great degree is maintenance of BHs except for Berea and Maseru districts where VWS has established an experimental teams using cable tool rigs to rehabilitate boreholes. VWS will eventually convert all 12 of its cable tool rigs to maintenance of BHs. The major constraints to conversion are training the supervision required and providing tractors in each district to move the rigs efficiently. The basic plan to improve maintenance of HPs and BHs now being undertaken by VWS can be outlined as follows:

- A. Training: The level of training of HP installation and maintenance crews must be increased along with the level of skill and knowledge of cable tool rig foremen converting from production to maintenance.
- B. Crews: VWS plans for at least two HP maintenance crews in each of 5 districts to be fully equipped and mobile. At least one supervisor of HP maintenance will be required in each district. As the numbers of HPs grow, the number of crews will increase.

- C. Cable Tool Rigs: VWS plans to eventually convert all 12 cable tool rigs from production to maintenance assigning from 2 to 3 rigs to each of 5 districts. This has already been accomplished in Berea and Maseru districts. Tractors must be provided to give the rigs mobility and additional mechanics will be needed.
- D. Contract Maintenance: Eventually some maintenance of HPs will be contracted to the private sector with benefiting villages providing the major share of funding through payment of maintenance services fees. (See results of pilot project summarized below).
- E. Long Term Goal: Fully decentralize HP and BH maintenance service into the districts, reduce the annual GOL subsidy for maintenance from 50% to 75% and increase private sector involvement.

5. Pilot Privatization Implementation Plan

VWS conducted the pilot project over a period of 10 months beginning in October, 1988, in Berea, Maseru, Leribe and Mafeteng districts having approximately 1800 handpumps in over 200 villages. A local contractor was hired through competitive tendering and three individuals living in selected areas of Berea district were invited to be responsible for HP maintenance in well defined areas around their home villages. As control, selected areas were designated to remain under VWS responsibility for maintenance. To insure a minimum level of workmanship, quality and reliability on the part of the contractors, VWS conducted compulsory training programs for those involved.

So that cost of spare parts would not be a factor, and to assure spare part availability, VWS elected to stock and distribute spares to the contractors on a one for one return basis. At the start of the project, each contractor was issued with a basic stock of spares.

The participants in the test and basic responsibilities were:

- A. Village Water Supply: VWS was responsible to provide breakdown notices to the contractors on a weekly basis. Repairs were monitored to verify contractor claims and to inspect the quality of work.
- B. Villages: Villages were responsible for reporting breakdowns to VWS district headquarters or to the local office of the DRDO.
- C. Contractors: By terms of the contract agreements signed by the firm and individuals involved, repairs were to be made within 7 to 14 days of notification.

VWS hosted a meeting to discuss the program with interested local firms determined to be capable performing the work. The work was tendered on a lump sum per repair basis. Quotations were requested for repairs in Leribe and Maseru districts. A local firm supplying handpumps and spare parts to VWS won the tender with a lump sum price of M220.00 per repair in Maseru district and M286.25 per repair in Leribe district (later extended to Mafeteng district).

VWS negotiated repair agreements with the three individual contractors in Berea district at M100.00 per repair.

USAID financed the cost of the program as part of the Rural Water Project through the VWS cost reimbursement program. M200,000 was budgeted which included implementation costs and a stockpile of spare parts.

f. Contractor Performance Evaluation

- A. Only one local business contractor was involved. Two contractors would have given a more reliable insight into local interest and capabilities.

The reliability and quality of work of the local business contractor is rated very high. He formed a special repair crew of three technicians with transport and the necessary tools. This crew spent several days in a district completing all the work assigned at the time. They stayed in the district town closest to their work and sometimes in the village where the work was being done.

A partner of the firm holding the contract provided basic supervision and logistical support to the field crew. He also reviewed each repair with the respective VWS district supervisors before invoices were approved for payment. He was also responsible for collecting repair notices and scheduled the work of his crew on a weekly basis. VWS is very impressed with the work of this firm.

- B. Three individual representatives awarded the local area contracts were all from the same district. A better impression of individual interest would have been obtained if individuals in other districts could have been included. Berea district was selected because of strong VWS supervisory capability and interest in the program.

Performance was disappointing in the case of two out of three individuals. Interest seemed to wane early and repairs were late in being completed or not done at all. Weekly meetings at Berea district HQ were not attended and the two individuals in question often could not be found.

The third individual performed very well and was enthusiastic about his work. Eventually the areas reserved for the defaulting two individuals were transferred to him following their dismissal. Out of a total of 57 repairs completed by these individuals, 30 were completed by the one remaining repairman.

- C. Village reporting procedures failed to supply the breakdown notices anticipated especially in Mafeteng district. VWS crews in all districts involved were enlisted to make area inspections of handpumps. In one district, again Mafeteng, contractor capacity was not fully utilized until later in the program.
- D. Because of fewer than anticipated repair notices, the business contractor's area of responsibility was extended to Mafeteng district and those areas reserved for VWS as control. This resulted in less VWS repairs for comparison with the contractor's costs and efficiency.
- E. The cost of the contract service offered by the business firm seem high and might be reduced in a second tendering for this service. It is, however, inclusive of all costs (except spare parts) including lodging of the crew when working away from Maseru. Comparable VWS services must be estimated since districts failed to provide the necessary cost data on VWS repairs that were made. This is one of the failures of the program.
- F. The increased number of handpumps repaired by the contractor and the freeing of VWS crews for other duties offsets the failure note above.

7. Physical Results:

- A. Table M-3 is a summary of the physical results of the program. Table M-4 is raw data taken directly from repair reports and includes payments to contractors. The total of 153 handpumps repaired present about 6% of the total in service. Of this number 77 were repaired by the business firm, 57 by the individual contractors and the remainder by VWS. This data has been organized into the following class categories:

TABLE M-3

SUMMARY OF HANDPUMP FAULTS*

<u>Type of Fault</u>	<u>Faults</u>		<u>Moyno</u>		<u>Mono</u>	
	<u>Total</u>	<u>%</u>	<u>No.</u>	<u>(%)</u>	<u>No.</u>	<u>(%)</u>
Foot Valve	44	(18)	43	(98)	1	(1)
Pumping Cylinder	28	(11)	18	(64)	10	(36)
Connecting Rod	25	(10)	13	(52)	12	(49)
Pump Head	35	(14)	9	(26)	26	(74)
Lower Pump Cylinder	28	(11)	15	(54)	13	(46)
Raise Pump Cylinder	28	(11)	18	(64)	10	(36)
Pump Column Leak	5	(2)	2	(40)	3	(60)
BH Related Problem	38	(16)	31	(82)	7	(18)
HP Removed, BH Capped	14	(6)	13	(93)	1	(7)
Total	245		162		83	

Class 1, Above Ground repairs: 14% of repairs were related to the pump head for which the pump column and cylinder may not require removal. Of these repairs 74% were Mono heads and most of these were specifically the T4 head, a forerunner of the now standard T5 head.

Class 2, Below Ground, Borehole: 16% of handpump failures were related to the borehole and not the mechanics of the handpump. These faults are specifically related to lowering of the water table, cave-ins or installation faults. In many cases the pumping cylinder was raised or lowered accordingly and the pump returned to service. In 6% of all faults the handpump was removed and the borehole capped and marked for later redevelopment.

Class 3, Above Ground, Mechanical: In 41% of failures, the fault was associated with the pump column, connecting rods, cylinder or the cylinder foot valve.

Class 4, Installation Error: This class of fault can not be accurately calculated from results obtained. In most cases the fault will be in cylinder installation, either too low or too high. Cylinder setting faults total 22% but at least half this number will be borehole related.

- B. A positive result of the program has been the establishment of a baseline for BH redevelopment which can be projected for other districts for planning rehabilitation programs. As previously stated 6% of boreholes in the program were closed because of cave-ins. The great majority (13 of 14) to 1987(43 out of 44). For the Mono the T4 head has a definite identifiable problem which

* 153 repair notices were issued but 245 faults recorded since one HP/BH may have more than one fault.

has since been rectified by the introduction of the T5 head three years ago. Many T4 heads in use are still within the guarantee period and will be returned to Mono for replacement.

- C. It is clear that special problems attend the handpumps. For the Moyno it is the foot valve of the earlier models installed prior to 1987 (43 out of 44). For the Mono the T4 head has a definite identifiable problem which has since been rectified by the introduction of the T5 head three years ago. Many T4 heads in use are still within the guarantee period and will be returned to Mono for replacement.
- D. In at least 50% of all repairs, some or all of the connecting columns and rods and cylinders were removed. Complete removal and replacement requires approximately 4 hours. This result can be used when planning maintenance programs.

8. Cost Analysis

At the writing of this report (mid-July, 1989) the privatization program was still in progress and will run through the end of August. The assistant head of the VWS Hydrogeologic Section will compile a cost analysis at the end of the project using contractor repair reports of spare parts used to calculate the cost of various classes of repairs. By applying the village formula of cost recovery a more accurate estimate of the revenue to be collected from cost recovery can be projected.

A second cost analysis must be made between contractor and VWS crew doing handpump maintenance. This may prove difficult because accurate labor and transport costs have not been kept and will, of necessity, have to be estimated.

9. Conclusions

Finally, VWS must decide if continuing the program is feasible from a cost standpoint and the availability of funding to contract maintenance compared to potential gains. As can be seen from Table M-4, which is updated through the end of July, a total of M26,880 was paid for 153 handpumps repaired not including spare parts. This equates to M176 per repair. One of the tentative conclusions at this stage of the project is that more handpumps were probably maintained by contractors than would have been by VWS during the same period of time by probably at a higher labor cost.

These questions must yet be decided by VWS. Whatever the outcome one conclusion is very clear. The maintenance obligation of VWS is growing. More resources will be required if the very large investment in handpumps and boreholes is to be protected and donors are to continue to have confidence in VWS as a viable organization.

TABLE M-4

USAID Hand Pump Privatization Program
 Hand Pump Repair Summary
 Period: October 1988 Through 24 July 1989

Repairs to Moyno Hand Pumps

Contractor	Dist	HPs	FT/V	Cyl	Rod	Head	Cylinder		Pipe	Leak	BH	HP	M
							Inc	Dec					
Maseru Pumps	L	23	14	2	5	1		4		9	7		6,584
Maseru Pumps	MAS	10	5	2	3		1	2		2	2		2,200
Maseru Pumps	BB												0
Maseru Pumps	MAF	31	10	12	4	6	2	10		14	3	6	8,874
Z. Ramarou	B	15	7	1		1	6	2		4	1		1,500
M. Mosala	B	4	1			0	2			2		1	400
S. Molemane	B	3		1	1	1	2						300
VWS	L	4	4						2				
VWS	M												
VWS	B	4	2				2						
Totals		94	43	18	13	9	15	18	2	31	13	7	19,858

Repairs to Mono Hand Pumps

Contractor	Dist	HPs	FT/V	Cyl	Rod	Head	Cylinder		Pipe	Leak	BH	HP	M
							Inc	Dec					
Maseru Pumps	L	5		2	2	3		3		3			1,431
Maseru Pumps	MAS	3		1	1	1							660
Maseru Pumps	BB	2			1	1			1				573
Maseru Pumps	MAF	3		1	1	1		1					859
Z. Ramarou	B	15		4	7	8		2		2	1		1,500
M. Mosala	B	10				7	3						1,000
S. Molemane	B	10	1			5	4	1		1			1,000
VWS	L	2		1				2				1	
VWS	M	6		1			3	1	2	1			
VWS	B	3					3						
Totals		59	1	10	12	26	13	10	3	7	1	1	7,023

Grand Total 153 44 28 25 35 28 28 5 38 14 8 26,880

List of Abbreviations:

L = Leribe FT/V = Foot Valve Cyl = Pump Cylinder
 M = Maseru Rod = Connecting Rod Inc = Cylinder lowered
 B = Berea Head = Pump Head Dec = Cylinder Raised
 BB = Butha-Buthe BH = Problem associated with BH such as a cave-in
 BH Cap = BH capped and HP removed
 HPs = Number of HPs actually repaired
 HP Repl = HP completely replaced

Note: for any given horizontal row, the types of repairs will add up to more than the number of HPs repaired since one HP can have several faults.

A P P E N D I X 7

C O S T R E C O V E R Y

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Appendix 7
COST RECOVERY

1. Background

It has been policy since the beginning of the USAID project in 1981, to require each village to establish a fund for maintenance of the water supply constructed by VWS. This requires a contribution of M1.00 per person or M5.00 per family however individual villages may exceed this minimum. This is not a one-time contribution but must be renewed by villages to meet continuing maintenance costs. Cost recovery will initially draw on maintenance funds established by villages.

In 1986 VWS proposed a cost recovery plan based on approximately 50% recovery which recently received official approval and is now being implemented. While the level of recovery is modest we believe it is achievable. From this beginning it may be possible to increase recovery to 75% as projected by the WASH study.

In October 1987 an International Drinking Water Supply and Sanitation Consultation was held in Interlaken, Switzerland. The objectives of the consultation "were to carry forward coordinated strategies and resource mobilization activities to the end of the water and sanitation decade and beyond." Cost recovery was one of the six "Global Sector Concepts" chosen for amplification. A summary resulting from the consultation is included at the end of this appendix.

2. Implementation

The VWS cost recovery program was implemented in all districts of Lesotho in mid-May 1989. The Government of Lesotho has established a receiving account at the sub-accountancy office in each district into which payments are made.

VWS has prepared special repair and invoicing forms in Sesotho for the convenience of villagers. A spare parts cost catalogue has been prepared by the maintenance engineer and issued to each district to ensure that charges are uniform. The catalogue will be updated as required to keep current with price changes.

3. Cost Analysis

In an analysis of estimated direct maintenance costs for fiscal year 1986 made in the WASH* study the following break own into expense categories was made. While this analysis was more extensive than the one made by VWS for

* PRIVATIZATION STUDY OF THE VILLAGE WATER SUPPLY AND SANITATION PROJECT, LESOTHO. WASH Field Report No. 215, September 1987.

its cost recovery plan, the percentages allocated to major direct expenses groups; labor, materials and transport, were similar. Considering these expenses only, the following distribution applies:

TABLE CR-1

COMPARISON OF MAINTENANCE EXPENSE

	WASH	VWS
Labor:	<u>37.3%</u>	<u>36.8%</u>
Materials:	18.1%	17.4%
Transport:	<u>44.6%</u>	<u>45.8%</u>
	100.0%	100.0%

The WASH report also included the capital cost of vehicles and equipment and the direct cost of depreciation, and supplies and operating expenses which were not calculated in the VWS study and which account for a full one third of all maintenance cost (See Chapter 6 of the WASH report for a detailed analysis of projected maintenance costs).

In applying cost recovery policy VWS will charge for on-site labor, actual material cost, and a service charge which is planned to be the same for all villages to eliminate distance travelled to a village as a factor in maintenance charge calculation. This common fee, or service charge, applied evenly throughout Lesotho will initially be M15.00. To help reduce the impact on villages during the initial implementation period the VWS study of 1986 recommended an equal distribution of costs between village and government. What the VWS cost recovery plan does not take into account is the capital cost and depreciation of vehicles and equipment and overhead costs. If these factors are included (as in the WASH study) then GOL would carry about 60% of the financial load during the initial phase of cost recovery.

Based on 540 actual job card records of repairs from January 1983 to July 1985 the distribution of the various maintenance cost factors recommended to government were:

TABLE CR-2

DISTRIBUTION OF MAINTENANCE COSTS

<u>Average Costs (1986)</u>	<u>Village</u>	<u>GOL</u>	<u>Maloti</u>
Labor cost to and from villages:	0	10.5%	13.50
Transport cost to and from villages:	0	45.8%	58.80
Labor costs on-site:	26.3%	0	33.73
Spare parts:	<u>17.4%</u>	0	<u>22.30</u>
Total Direct Costs	<u>43.7%</u>	<u>56.3%</u>	<u>128.30</u>
	=====	=====	=====

When the M15.00 service charge is added to the village share the distribution of costs between villages and government is equal. Since 1986, costs have increased however it is assumed that the percentage distribution noted above is still valid.

The average spare parts cost of M22.30 (17.4%) for a hand pump repair may prove insufficient especially where a cylinder replacement is concerned. VWS experience has been that if a hand pump is going to exhibit a mechanical failure (not a failure related to the borehole) it will be within the first six months to 1 year of operation. This is one of the reasons VWS offers a 1 year guarantee on all hand pump installations however handpumps used by VWS carry a 5 year guarantee against mechanical defects. The same guarantee is offered for all other types of systems (the majority of which are gravity supplies) but which are not subject to the same type of mechanical breaking-in period as are hand pumps.

4. Cost Recovery Plan

The basic components of the cost recovery policy can be summarized into areas of responsibility.

A. Village Water Committee:

1. Organize and provide free labor as needed to assist the VWS repair crew. Whenever possible the village water minder should make repairs.
2. Pay the cost of repair which will include the following components:
 - Labor of the VWS crew spent on-site making the repair.
 - Actual cost of spare parts and materials used.
 - A service charge in lieu of transport cost and crew travel time (this will be the same for all villages).

B. Village Water Supply:

1. Guarantee each new system for a period of 1 year during which VWS will make repairs at no charge to the village. The exception would be obvious cases of vandalism.
2. Continue to train village water minders so that dependency on outside assistance can be kept to a minimum.
3. Assume the cost of major repairs and rehabilitations in excess of M1.00 multiplied by the population of the village.
4. Assume the total cost of repair and rehabilitation of boreholes.

C. Government:

1. Establish receiving accounts in district sub-accountancy offices where village representatives can make payment.
2. Create a national VWS credit account into which all district payments are made for later credit against annual GOL maintenance subsidies.
3. Subaccountancy offices to report monthly or quarterly to VWS district HQ and DRDO on status of village payments.
4. DRDO or DC to take responsibility for enforcing village payments. (VWS can, of course, refuse further repairs but this defeats the purpose and benefit of having an improved water supply).

A very direct approach was taken by VWS in advertising the program. This was done via Radio Lesotho over a period of several days. Over 62% of rural villagers own or have access to radio and Radio Lesotho is the most listened to station. A question and answer format was designed with the assistance of the Ministry of Interior public relation officer and presented by the VWS Senior Engineer during the time slot normally reserved for Interior. Following the major presentation a number of shorter reminder notices were broadcasted to the rural areas. Before going on radio a summary of cost recovery was prepared for presentation to district officials to gain support for implementation.

Based on a number of meetings with district engineers a comprehensive policy establishing the basis of repair charges was developed. These are summarized as follows:

A. Guarantee:

VWS will guarantee each new water supply system and handpump for a period of one year from the date of completion against faulty design and construction and material failure. During this period any repairs will be at no charge to the village. Repair of damage done by vandals or caused through neglect of the village must be fully paid by the village.

Offering the VWS guarantee to water supplies designed and constructed by NGO's or others will depend on the recommendation of the district engineer.

B. General Repair:

Each village is responsible for the cost of repairs up to a limit of M1.00 multiplied by the population of the village using the latest population census

figures. The cost of repairs over this amount will be the responsibility of VWS. Repair of damage done by vandals or caused through neglect of the village must be fully paid by the village.

C. Handpump Repair:

In the case of handpumps it is necessary to further define the VWS guarantee to recognize cases of failure not resulting from common wear or from negligent operation on the part of villagers. District engineers and repair crews will be called upon to interpret repair cost responsibility on the basis of the following definitions and common sense. In application of this policy no distinction between Moyno or Mono is made except for the actual cost of the spare parts used.

Handpump failure can be classified into the following categories along with the corresponding guarantee period and responsibility for maintenance cost.

<u>Type of Failure</u>	<u>Guarantee Period</u>	<u>Responsibility</u>
Vandalism or neglect.	None	Village
Common wear.	1 year	VWS
Faulty equipment.	1 year	VWS
Faulty installation by VWS.	1 year	VWS
Lowered water table.	Indefinitely	VWS
Borehole cave-in.	Indefinitely	VWS

In the case of lowered water table and borehole cave-in, VWS has an interest in maintaining the integrity of a handpump system. As an incentive to villagers to value and wish to continue to have access to clean water, VWS will lower a HP to match a correspondingly reduction in water level and will clean-out, case, re-develop or replace a caved-in borehole at no charge to the village.

VWS recognizes that the most critical and costly component of a HP is the cylinder. We do not yet know the life expectancy of a cylinder however manufacturers do guarantee both it and the head from material defects for a period of 5 years from date of purchase.

The 1 year guarantee period begins from the date of installation for any HP and is retroactively applied to the actual date of installation for all existing HPs. During the guarantee period no charges will be made for HP repair except for damage caused by vandalism or village neglect.

Replacement cylinders and heads will also carry the 1 year guarantee from date of replacement. This does not apply to rods, pipe, couplings or other drop pipe components of the HP. After the expiration of the guarantee period the maximum charge for repair of any one HP will be M300.00 including labor and materials. The maximum charge will only be made if a head or cylinder is damaged beyond repair.

D. Diesel Engine Repair:

- a. Routine repair and servicing: actual cost of on-site labor and spare parts.
- b. Overhaul: actual cost of on-site and workshop labor plus spare parts up to the maximum allowed.
- c. Replacement of stolen engine or one damaged by vandals or village neglect: village pays total cost of repair or replacement and labor.

E. Service Charge:

A service charge currently set at M15.00 is to be made for each repairs.

F. Price List for Materials, Labor and Spare Parts:

VWS has prepared a price book for labor, materials and spare parts to be used by repairmen to calculate villages charges. These charges will be subject to periodic changes. The VWS maintenance engineer will be responsible to keep price books up-dated and districts notified of changes.

G. Payment Period:

90 days will be given villages for payment which allows time in case the village must raise money for payment.

5. Conclusions

A number of repair invoices have been issued especially for handpump repairs and all districts have implemented the program. At the time of writing this report not enough time had elapsed to determine the acceptance of cost recovery.

It is important that VWS does have an active cost recovery policy and program. The challenge now is one of collection. VWS must look to district officials for assistance with enforcement. It is in the best interest of all concerned to keep water systems operational. VWS must be careful in the application of cost recovery that charges are reasonable from a village point of view. Poorly managed, the program could result in a rural backlash with breakdowns going un-reported.

It is doubtful that cost recovery at the level projected by WASH is practical or feasible and GOL may always be in a position of subsidizing maintenance. The target of cost recovery for the immediate future may be villages learning the discipline of payment, however little, for repairs that have for years been free. From this beginning advances can be made.

Constraint

Cost recovery is generally ineffective

Actions needed

1. Cost Recovery Objectives

The cost of water supply and sanitation services must be borne, or at least shared by the beneficiaries, to ensure adequate operation, maintenance and expansion of installed facilities. Cost recovery is a crucial step towards the financial viability and, eventually, autonomy of sector agencies. Full cost recovery involves recuperation of investment costs as well as those for operation and maintenance.

To achieve any degree of cost recovery, developing country governments must have the political will to require consumers to pay for water supply and sanitation services. The population's willingness to pay must be motivated where necessary, by public awareness campaigns which make clear the benefits deriving from the services provided. In dialogues with recipient countries, external support agencies need to emphasize the need for maximum cost recovery. Project designs and technical cooperation activities should be based on the principle of cost recovery.

2. Urban Policy

In urban areas, developing countries, with the aid of external support agencies where required, should establish a cost-recovery strategy based on the criteria of: making drinking water and sanitation accessible to all segments of the population; ensuring the gradual financial autonomy of the water supply and sanitation agency; and discouraging the waste of water. Full cost recovery (operation and maintenance, depreciation of equipment, and debt servicing) is a long-term objective, to be reached preferably by cross-subsidizing tariffs. No single group of the population should be privileged by external subsidies (e.g. for household or yard connections) while other groups in the project area have no access to any reliable water supply. In the short run, operation and maintenance costs, including replacement of equipment, should be recovered as a minimum target. In all cases, water supply and sanitation costs should be affordable by all consumer income groups. Revenues of water and sanitation agencies should remain in the sector.

3. Rural Policy

In rural areas, income levels are generally low. Wherever possible, beneficiaries should contribute towards construction, operation and maintenance costs of new services, through a mixture of cash payments, labour, and the supply of local materials, as part of the process of community participation. Before projects are prepared, governments and donor agencies should discuss with communities the implications of operation and maintenance costs and provision of labour, and the choice of technology should be appropriate for available resources. In some special cases, particularly in Africa, a transition period may be necessary, during which operation and maintenance costs are co-funded by external support agencies. However, the objective should be that beneficiaries should gradually assume responsibility for the full costs of operation and maintenance. Financial contributions for replacement of equipment is a longer term objective.

The Role of External Support Agencies

- Emphasize in all dialogues with recipient country governments, the crucial importance of cost recovery in sustainable and replicable programs.
- Encourage the establishment of strongly progressive, cross-subsidizing tariffs.
- Support public awareness campaigns which stress the benefits of water supply and sanitation services and so promote willingness to pay.
- Promote and support urban project designs based on full cost recovery from affordable technologies. Back sector agencies in strategies to achieve self-sufficiency and financial autonomy.
- Use early community participation in rural areas to establish commitments to contribute cash, labour and materials for construction, operation and maintenance of appropriately designed facilities.
- Extend support where necessary into the operation and maintenance phase of projects, but always with the long-term aim of establishing community responsibility for recurrent costs.

COST RECOVERY

1. There is a widespread agreement that inadequate cost recovery remains a serious constraint hampering accelerated progress. Achievement of full cost recovery, though an ultimate goal, may take different times to achieve in different countries and from area to area in the same country.
2. As well as developing appropriate tariff structures, countries need to keep down construction and maintenance costs, to make community contributions affordable. Installed systems must also be reliable, or users will soon become unwilling to pay. Adoption of appropriate standards helps to reduce costs by avoiding overdesign.
3. Technology choice has an important impact on the potential for cost recovery. As the Lesotho example showed, contributions required from consumers rise dramatically when motorized pumping is used. The system is more costly to maintain and less reliable.
4. Before tariffs are raised, all potential cost savings must be assessed. Staff reductions, leak repairs, and improved collection procedures may be effective ways of boosting net revenue. Starting tariffs can be based on previous prices paid to water vendors, or on the calculated savings produced by a more convenient supply.
5. The rapid turn from loss to profit in Lusaka Water and Sewerage Department required strong political commitment to correct past deficiencies. It will also require a lengthy continuing involvement of the consultant, though a possible move to private management may speed things up.
6. The relationship between willingness to pay and system reliability applies as much to sanitation as to water supply. People will be willing to pay to use clean community latrines, but will soon stop paying if the condition is allowed to deteriorate.
7. ESAs normally give priority to physical targets or expenditure levels in assessing progress of projects. More emphasis on qualitative aspects and process development would encourage better allowances for community participation and hygiene education.

A P P E N D I X 8

USAID PURCHASED VEHICLES

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APPENDIX 8USAID PURCHASED PROJECT VEHICLES

<u>Reg.No.</u>	<u>Year</u>	<u>Type</u>	<u>Status</u>
Y-6315	1982	I.H. 8 Ton	Poor tTo Be Sold
Y-6316	1982	I.H. 8 Ton	Wrecked And Scrapped
Y-6317	1982	I.H. 8 Ton	Poor To Be Soldn
Y-6256	1982	Dyna 2.5 Ton	Poor To Be Sold
Y-6257	1982	Dyna 2.5 Ton	Poor To Be Sold
Y-6258	1982	Dyna 2.5 Ton	Sold At Auction
Y-6081	1981	Landrover S/W	Sold At Auction
Y-6082	1981	Landrover S/W	Sold At Auction
Y-6101	1981	Landrover P/U	Sold At Auction
Y-6102	1981	Landrover P/U	Sold At Auction
Y-6169	1981	Landrover P/U	Sold At Auction
Y-6053	1981	Datsun P/U	Sold At Auction
Y-8761	1986	Toyota S/W	Wrecked To Be Scrapped
Y-8744	1985	Toyota 4x4 P/U	Good Condition
Y-6168	1981	Toyota 4x4 P/U	To Be Reconditioned
Y-6234	1981	Toyota 4x4 P/U	To Be Reconditioned
Y-6254	1982	Toyota 4x4 P/U	Sold At Auction
Y-6255	1982	Toyota 4x4 P/U	To Be Reconditioned
Y-6235	1982	Toyota 4x4 P/U	To Be Reconditioned
Y-6335	1982	Toyota 4x4 P/U	Sold At Auction
Y-6336	1982	Toyota 4x4 P/U	To Be Reconditioned
Y-6337	1982	Toyota 4x4 P/U	Sold At Auction
Y-6338	1982	Toyota 4x4 P/U	To Be Reconditioned
Y-6339	1982	Toyota 4x4 P/U	To Be Reconditioned
Y-6500	1983	Toyota 4x4 P/U	To Be Reconditioned
Y-6501	1983	Toyota 4x4 P/U	Sold At Auction
Y-6502	1983	Toyota 4x4 P/U	To Be Reconditioned
Y-6776	1984	toyota 4x4 P/U	Fair To Poor Condition
Y-6777	1984	Toyota 4x4 P/U	Fair To Poor Condition
Y-6778	1984	Toyota 4x4 P/U	Fair To Poor Condition
Y-0050	1986	Toyota 4x4 P/U	Good Condition
Y-0051	1986	Toyota 4x4 P/U	Fair Condition
Y-0052	1986	Toyota 4x4 P/U	Good Condition
Y-0053	1986	Toyota 4x4 P/U	Good Condition
Y-0103	1986	Toyota 4x4 P/U	Good Condition
Y-0105	1986	Toyota 4x4 P/U	Good Condition
Y-0106	1986	Toyota 4x4 P/U	Good Condition
Y-0107	1986	Toyota 4x4 P/U	Fair Condition
Y-6099	1981	Toyota 2x4 P/U	Sold At Auction
Y-6100	1981	Toyota 2x4 P/U	To Be Reconditioned
Y-8624	1985	Toyota 2x4 P/U	Good Condition
Y-0432	1987	Toyota 4x4 P/U	Good Condition
Y-0433	1987	Toyota 4x4 P/U	Good Condition
Y-0434	1987	Toyota 4x4 P/U	Good Condition
Y-0464	1987	Toyota 4x4 T/C	Good Condition

NOTE:

I.H. = International Harvester
 P/U = Pick-Up
 S/W = Station Wagon
 T/C = Twin Cabin

A P P E N D I X 9
PROJECT SOURCE DOCUMENTS

Appendix 9USAID Project Source Documents, Studies, Reports and Papers

Multi-Sectorial Approach to Health Education and Coordination for Water Supply and Sanitation.

Analysis and Evaluation of Hand Pumps: Three village field reports by NUL students.

Knowledge, Attitude and Practice (K.A.P.) Preliminary Studies. Eight village field reports by NUL students.

Temporary Wage Labor Program.

System Maintenance Support Program.

Borehole and Hand Pump Program.

Knowledge, Attitude and Practice (K.A.P.) Survey (May, 1984). Dr. Edward T. Clarke, National University of Lesotho.

VWS Transportation Control Policy.

Accounts Procedure Manual.

Village Water Supply Management Study (October, 1984). Dr. Judith S. Gay, Sociologist, Maseru, Lesotho.

Village Water Supply Maintenance Cost Recovery Policy (1985).

USAID Project Evaluations (1982, 1983, 1985).

Technical Assistance Contractor Annual Reports (1982, 83, 84, 85, 86).

Village Water Supply Management Handbook (1986) Dr. Judith S. Gay, Sociologist, Maseru, Lesotho.

The Effect of Improved Water Supplies and Sanitation on Child Growth and Diarrheal Rates in Lesotho (1987). A Thesis by Dr. Steven A. Esrey.

VWS Donor Prospectus (1988, Revised 1989)

VWS Source Documents, Studies, Reports and Papers

Foreman Training Manual (1982)

Supervisor Training Manual (1983)

Manual of Standardization (for design and construction)

IDWSSD: Sectoral Action Plan (1983)

IDWSSD: Position Paper: 5-Year Plan (1986-1990)

Care Taker Manual for Rural Water Supplies (1986)

Mason Training Manual (1987)

Handpump and Borehole Supervisors Manual (1989).

A P P E N D I X 10

SUMMARY OF USAID PROJECT IMPLEMENTATION

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Appendix 10SUMMARY OF USAID PROJECT IMPLEMENTATION

D+0	June	79:	Project Paper Submitted
D+2	Aug.	79:	Project Paper Approved
D+2	Aug.	79:	Grant Agreement Signed
D+22	Mar.	81:	T/A Contract Signed
D+24	May	81:	T/A Team Leader Arrives
D+24	May	81:	Interim Work Plan Completed
D+26	July	81:	T/A Team Complete
D+27	Aug.	81:	VWS Organizational Plan Completed
D+28	Sept.	81:	Training Participants depart for USA (3)
D+28	Sept.	81:	System Maintenance Support Program Approved
D+29	Oct.	81:	Temporary Wage Labor Program Approved
D+32	Jan.	82:	1st Two-Year Work Plan Approved
D+32	Jan.	82:	System Construction Begins
D+32	Jan.	82:	1st Visit, Drilling Consultant
D+32	Jan.	82:	1st Foreman Training Class (10)
D+35	Apr.	82:	Maintenance Centers Opened (4)
D+36	May	82:	1st Project Evaluation
D+38	July	82:	GOL Establishes 43 Project Positions
D+40	Sept.	82:	250 Hand Pumps Delivered
D+42	Nov.	82:	900 Tons Pipes Delivered
D+43	Dec.	82:	All Counterparts Appointed
D+44	Jan.	83:	2nd Foreman Training Course (10)
D+49	June	83:	2nd Project Evaluation
D+49	June	83:	2nd Visit, Drilling Consultant
D+52	Sept.	83:	1st Supervisor Training Course (12)
D+53	Oct.	83:	USAID Management Audit
D+55	Dec.	83:	900 Tons Pipe Delivered
D+55	Dec.	83:	150 Hand Pumps Delivered
D+56	Jan.	84:	2nd Two Year Work Plan Approved
D+60	May	84:	KAP Study Completed
D+65	Oct.	84:	Village Management Study Completed
D+66	Nov.	84:	500 Hand Pumps Delivered
D+69	Feb.	85:	900 Tons Pipe Delivered
D+69	Feb.	85:	3rd Project Evaluation
D+70	Mar.	85:	Health Impact Study, Preliminary Report
D+73	Mar.	85:	T/A Financial Specialist Completes Term of Service
D+79	Dec.	85:	3rd Foreman Training Course (14)
D+81	Feb.	86:	900 Tons Pipe Delivered
D+83	Apr.	86:	3rd Two-Year Work Plan Approved
D+83	Apr.	86:	Exceeded Project Population Served Goal of 180,000
D+85	June	86:	T/A Maintenance Engineer Completes Term of Service
D+91	Dec.	86:	Project Sponsored Rural Water and Sanitation Conference
D+91	Dec.	86:	Final Report of Health Impact Study
D+91	Dec.	86:	4th Foreman Training Course (14)
D+92	Jan.	87:	T/A Construction and Design Engineer Completes Term of Service.
D+102	Nov.	87:	T/A Health Coordinator completes Term of Service
D+108	May	88:	4th Project Work Plan Approved
D+110	July	88:	Project Extended for 1 year.
D+113	Oct.	88:	Implement Pilot Privatization Program
D+120	May	89:	Implement Cost Recovery
D+123	Aug.	89:	T/A Ends, PACD 30 August 1989.

A P P E N D I X 11

USAID SPONSORED VILLAGE CONSTRUCTION PROJECTS

Appendix 11VILLAGE WATER SUPPLY PROJECTS FINANCED IN WHOLE OR IN PART BY USAIDUSAID RURAL WATER AND SANITATION PROJECT NO.632-0088Type of System, Abbreviations:

HP = Hand Pump; G = Gravity; WM = Windmill; PP = Power Pumped;
 HR = Hydroram; E = Expansion; R = Rehabilitation; SP = Spring
 Protection.

Donor Abbreviations:

UNDP = United Nations Development Program; CIDA = Canadian Government
 RCM = Roman Catholic Missions; EEC = European Economic Community;
 USCC = United Service Club of Canada; ITA = Italian.

PROJECTS COMPLETED MAY 1981 - DECEMBER 1982

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Letsoara	HP	MAF-137	300	USAID/UNDP
Qalabane	HP	MAF-136	600	USAID/UNDP
Patsa	HP	MAF- 20	500	USAID/UNDP
Ramohajane	HP	MAS-151	300	USAID/UNDP
Katu	HP	MAS- 67	400	USAID/UNDP
Lihanela	HP	MAS-179	300	USAID/UNDP
Mphoto	HP	MAS-154	300	USAID/UNDP
Mokhakaso	HP	MAS-167	200	USAID/UNDP
Kotisephola	G	MAF-	800	USAID
Ha Chaka	HP	MAF-100	300	USAID/CIDA/RCM
Lechesa	HP	MAF-153	400	USAID/CIDA/RCM
Thoahlane	HP	MAF-188	1,100	USAID
Matelile	G	MAF-144	1,800	USAID

Total through December, 1982:
13 Villages, 7,300 People Served

PROJECTS COMPLETED IN 1983

Maputo	HP	MAF- 19	300	USAID
Ha Paki I	HP	MAS- 48	200	USAID/CIDA/RCM
Khatleng	G	MAF-191/1	350	USAID
Bakhomi	HP	MAF- 90	1,100	USAID
Shoeane	HP	MAF-140/1	300	USAID
Van Rooyen's I	PP-R	MAF- 5	100	USAID
Boluma Tau	HP	MAF- 50	700	USAID

Appendix 11
1983 (Continued)

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Motholo	HP	MAF-140	300	USAID
Thabana Mohlomi	HP	MAF-150	900	USAID
Tsekelo	PP	B - 89	1,200	USAID
Qobete	HP	MAF-131	600	USAID
Tlebere	G	BB - 9	100	USAID
Motlohelo	PP	MAS- 52	1,350	USAID
Lithoteng	HP	MAS- 23/1	500	USAID
Mathinya	HP	MAS- 99	150	USAID/CIDA/RCM
Lempeche	HP	MAF-162	700	USAID
Makhonofane	HP	MAF-134	400	USAID
Blue Gums	G	MH - 84	600	USAID
Motanyane	HP	MAF-195	650	USAID
Makhakhe	G	MAF- 69	1,200	USAID/US EMB.
Tsakholo (B)	G	MAF- 97/2	150	USAID
Rothoko	HP	MAS- 98	270	USAID/CIDA/RCM
Salemane	HR	B -164	70	USAID
Mohalinyane	PP/G	MH - 17	1,600	USAID
Joele	HP	MAF-194	600	USAID
Mohapi	HP	MAF-162/1	300	USAID
Ramakhooa	HP	MAF-150/1	200	USAID
Makhalong	G	MAF-144	500	USAID
Mahaheng	G	MAS-180	200	USAID
Ramokoatsi	HP	MAF-125/1	300	USAID
Koranta	HP	MAF-125	300	USAID
Makeneng	G	MAF-190/4	350	USAID
Tsakholo (D)	G	MAF- 97/4	70	USAID
Lepolesa	HP	MAF- 98	700	USAID
Liphiring	PP	MH - 10	1,000	USAID/DUTCH
Qobete	G	MAF-190/2	1,050	USAID
Lifelekoaneng I	HP	MAF- 1/1	150	USAID
Lhaseng	G	MAS-129	420	USAID
Ha Khohloa	G	B - 24	300	USAID
Tsakholo (A)	HR	MAF- 97/1	330	USAID
Khubetsoane I	PP	MAF- 1	220	USAID
Matsatsaneng	G	BB - 69	350	USAID
Koali	G	B -134	300	USAID
Seiso	HP	MAF-143	1,000	USAID
Ntlhakeng	HP	MAF-125/2	200	USAID
Lebeta	HP	MAF-125/3	300	USAID
Manganeng	G	MAF- 5/2	150	USAID
Lifelekoaneng II	PP	MAF- 1/1	200	USAID
Basieng	G	Q - 4	1,000	USAID
Matebeng	G	QN - 27	550	USAID/DANIDA
Mokhosi	G	MH - 33	300	USAID
Bokoro Khukhune	G	BB - 4/8	1,600	USAID
Ha Ntlama I	G	B - 47	600	USAID
Lerata	HP	MAS- 23/2	200	USAID
Mopenyeki	HP	MAS- 23/3	600	USAID
Hata Butle	HP	MAS- 23/4	300	USAID
Rammoko	HP	MAF-172	850	USAID
Mokanametsong	G	Q - 4	1,100	USAID

Total for 1983: 58 Villages, 30,380 People Served

Appendix 11PROJECTS COMPLETED IN 1984

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Tsakholo Clinic	PP	MAF- 97	50	USAID
Ramathalea	G	MAF- 65/1	250	USAID
Ramatsue	G	B - 81	400	USAID
Ha Thafeng	SP	B -	350	USAID
Ha Mphobe	HP	MAF-127	500	USAID
Ha Lebohang	HP	MAF- 34	500	USAID
Tsangoane	G	MAF- 73/2	460	USAID
Tsakholo "C"	R/G	MAF- 97/3	350	USAID
Matholoane	R/E/PP	B - 4	1,200	USAID
Lithabaneng	HP	MAF-141	500	USAID
Motsekuoa	R/PP	MAF- 22	450	USAID
Nkau	R/PP	MH - 15	300	USAID
Mapote	R/G	QN - 18	1,080	USAID
Ha Makoili	HP	MH - 83	300	USAID/CIDA
Holy Cross Area I	HP	MH -	1,200	USAID/CIDA
Ha Mahosi	G	MAF- 93/2	150	USAID
Ha Mokhathi	HP	B - 25	500	USAID
Ha Khojane Area	HP	MAF-141/1	600	USAID
Mohlapiso	R/G	QN - 53	790	USAID
Sekhutlong	G	MH - 33/2	200	USAID
'Mantsebo	G	MAS- 24	1,700	USAID
Ha Khoeli	G	MAS-130	450	USAID
Ha Bulara	G	Q - 3/1	300	USAID
Ha Pomela	HP	MAS-103	230	USAID/RCM
Ha Sekepe	HP	MAS-141	700	USAID/RCM
Ha Panta	HP	MAF-148	500	USAID/DUTCH
Machafeela	HP	MAF-148/1	300	USAID/DUTCH
Ha Lengolo	HP	MAF-148/2	350	USAID/DUTCH
Ha Ntsekhe	R/G	B - 29	850	USAID/DUTCH
Noka-Ntso	G	MH - 40	350	USAID
Kolone	G	B - 5	300	USAID
Masilo	G	MAS-185	500	USAID
Maliepetsane	G	MAF- 23	200	USAID
Mpharane	PP	MH - 42	1,300	USAID
Khalahli	R/G	B - 12	350	USAID
Lower Maneheng	R/G	B - 29	500	USAID
Ha Mamathe	R/G	B - 15	1,300	USAID
Ha Pita	SP	MAS-184	300	USAID
Ha Matsaba	PP	MAF- 93	500	USAID
Tsoeneng	G	MAF- 65/2	200	USAID
Ha Likupa	HP	MAF- 8	600	USAID
Ha Thobi	G	MAF- 17	90	USAID
Maralleng	HP	MAF-148/3	1,000	USAID/DUTCH
Ha Ramohapi	HP	MAF- 24	600	USAID
Holy Cross Area II	HP	MH -	600	USAID/CIDA
Ha Pena Pena Area	HP	MAS-193/190	450	USAID/EEC
Khongoana Nts'o Area	HP	MAS-194/179	700	USAID/EEC
Ha Ralintsi I	HP	MAF-123	600	USAID
Ha Mapetla	HP	MAS-192	400	USAID/EEC
Abia	HP	MAS-191	300	USAID/EEC
Ha Phoofolo	SP	B - 90	450	USAID
Ha Chefa	G	MH - 16	400	USAID
Maieaneng	HP	MAF- 8/1	1,000	USAID
Ha Tsese	G	MH - 40	400	USAID

Appendix 11
1984 (Continued)

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Tsoeneng	G	Q - 38/2	250	USAID
Ha Falatsa	G	MAS-1306	150	USAID
Ha Lekhobanyane	HP	MAS-105	1,000	USAID/RCM
Tsikoane	HP	L - 59	2,200	USAID/EEC
Ha Lumisi	HP	MAF- 56	700	USAID
Ha 'Matsie	HP	MAF-222	500	USAID
Phahameng	R/G	Q - 45	460	USAID
Ha Mabote	G	L -169	150	USAID/CARITAS
Tsekong	G	MAF- 92/2	120	USAID
Water Falls	G	MH - 33/3	300	USAID
Ha Mohlehli	HP	MAF- 76	750	USAID
Ha Pii	HP	MH - 4	700	USAID/CIDA
Thaka Mpholo	HP	B -102	530	USAID
Ha Koali I	HP	B -134	1,800	USAID/EEC
Ha Koali II	SP	B -134	900	USAID
Ha Leluma	G	B - 54	240	USAID
Bela Bela	SP	B - 21	200	USAID
Motloi Area	HP	MAF- 12	1,600	USAID
Matlapaneng	HP	MAF- 66	1,800	USAID
Ha Oni	HP	MAF-255	600	USAID
Qalaheng I	R/G	B - 28	300	USAID
Qalaheng II	R/G	B - 58/45	1,100	USAID
Mantsebo II	G	MAS- 24	150	USAID
Ha Ntsi	G	MAS- 7	700	USAID
Ha Nkesi	G	MAS-176	200	USAID/CARITAS
Koma Koma	G	TT - 20	400	USAID
Motsolane	G	TT - 31	200	USAID
Kopialena	G	MH - 40/2	700	USAID
Ha George Ntho	G	Q - 3/3	540	USAID

Total for 1984: 83 Villages, 48,140 People Served

PROJECTS COMPLETED IN 1985

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Montoeli	HP	MAF-156	600	USAID/EEC/ITA
Ha Tsela	G	MH - 27/1	250	USAID
Ha Peter	WP	MH - 22/3	200	USAID
Lovely Rock	G	B - 20/18	1,050	USAID
Ha Raselepe	HP	MH - 95	300	USAID/CIDA
Ha Rashapa	HP	MH -138	100	USAID/CIDA
Mohapeloa	HP	MH - 94	600	USAID/CIDA
Ha Moko	HP	MH - 81	600	USAID/CIDA
Maphutsaneng Area	HP	MH - 41/67/ 100/141	500	USAID/CIDA
Ha Snei	HP	MH -144	200	USAID/CIDA
Ha Khotu	HP	MAF-193	500	USAID/EEC/ITA
Ha Monyalotsa	HP	MAF-210	400	USAID
Ha Maoela	HP	MAF-210/1	300	USAID
Ha Matsepe	G	MAF- 92	300	USAID
Matheneng	G	MAF- 92/1	500	USAID
Ha Poulo	HP	L - 77	2,100	USAID/EEC

Appendix 11
1985 (Continued)

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Lithakaling		G	MH - 16/1	400	USAID
Ha Motsoene		HP	B - 84	400	USAID/EEC
Ha Takalimane		HP	MAS-115	300	USAID/RCM
Ha Ramokhele	II	HP	MAS-109	300	USAID/RCM
Popopo		HP	L - 32	900	USAID/EEC
Mafotholeng		HP	B - 155	1,800	USAID/EEC
Ha Khitsane		HP	MH - 53	640	USAID/CIDA
Majapereng		HP	MH - 8	780	USAID/CIDA
Ha Masupha		HP	MAF-	200	USAID/ITA
Ha Au		HP	MAS-183	200	USAID/USCC
Ha Tseka		HP	MAS-113	200	USAID/USCC
Malefane		HP	MAS-128	130	USAID/USCC
Mahuu		HP	MAS-184	200	USAID/USCC
Ha Tlali		HP	MAS-107	150	USAID/USCC
St. Monica's		HP	L - 29	1,600	USAID/USCC
Mokhethoaneng	II	G	B - 16	420	USAID
Letsatseng		G/R	B - 18A	50	USAID
Lilimala		WP	MOK- 38	100	USAID
Ha Jubile		HP	B - 95	600	USAID/EEC
Liphiring		HP	B - 95/1	500	USAID/EEC
Boinyatsi		SP/R	B - 83	100	USAID
Ha Majake		HP	MAF- 25	600	USAID
Ha Tang		HP	MAF-201	1,000	USAID
Likhetlane		HP	L - 87	2,500	USAID/EEC
Hloahloeng		G	TT - 33	350	USAID
Ha Caswell		G	Q - 16	800	USAID
Phokojoe		G	MAF- 92/3	150	USAID
Ha Maqele		HP	L - 30	2,150	USAID/EEC
Sechaba		SP	MAS- 7/1	250	USAID
Khoiti Ntle		G	MAS- 84	600	USAID
Tajane		G	MAF- 17/1	700	USAID
Ha Souru		G	MAF- 92/4	150	USAID
Ha Ramosoeu		G	Q - 38/2	1,200	USAID
Motse Mocha		G	Q - 68	800	USAID
Tabola		HP	L - 126	1,100	USAID
Ha Mokheti		HP	L - 159/1	200	USAID/EEC
Ha Makhehle		SP	B - 173	100	USAID
Pontseng	II	SP	TT - 57	150	USAID
Leteng		G	MAF-154	400	USAID
Ha Daemane		HP	MAF-130	800	USAID
Ha Leketa		G	MH - 22/4	260	USAID
Ha Belemane		G	MH - 38	350	USAID
Ha Tsepo		G/R	MH - 50	1,200	USAID
Ha Sechele		G/R	BB - 31	520	USAID
Maqhaka		PP/R	B - 13	650	USAID/RED CROSS
Tokonye		HP	MAF-285	400	USAID
Bela Bela	II	HP	B - 21	1,300	USAID/EEC
Ha Rantuba		HP	L - 44	1,100	USAID/EEC
Ha Mphobe	II	HP	MAF-127	400	USAID/ITA
Ha Rakoloi		HP	MH - 149	530	USAID/CIDA
Marabeng		HP	MH - 166	720	USAID/CIDA
Ha Mane		HP	MH - 148	670	USAID/CIDA
Makhate		HP	MH - 61	700	USAID/CIDA

Appendix 11
1985 (Continued)

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Majakaneng		HP	MH - 56	1,000	USAID/CIDA
Ha Thetso		HP	MH -169	670	USAID/CIDA
Ha Moiloa Area		HP	MH-20/2168/167	300	USAID/CIDA
Ha Tumiso		HP	MH -130	350	USAID/CIDA
Ha Jarateng		HP	MH -145	290	USAID/CIDA
Abia Radio Tower		HP	MAS-143	300	USAID/EEC
Ha Paki		HP	MAS- 48	400	USAID/EEC
Ha Seetsa		G	L - 51	300	USAID
Makhaloaneng		G	MH - 40/3	650	USAID
Mahloibi		G	MH - 22/2	850	USAID
Mahlalela		G	MH - 36	1,000	USAID
Ha Mokheti		SP	L -159/2	70	USAID
Ha Makintane		HP	MAF-113	600	USAID
Ha Mpalami		HP	MAF-128/2	75	USAID
Ha Machaha		G	MAF- 17/2	100	USAID
Maliepetsane		G/R	MAF- 23	300	USAID
Ha Mosotho		G	MH - 99	500	USAID
Lifateng		G	MH - 25	260	USAID
Morabe		G	MH - 88	70	USAID
Makafane		G	MAS- 11	210	USAID
Matooane	II	SP	B - 50	100	USAID
Matseng		G	B -147	250	USAID
Ha Manama		HP	L -116	900	USAID/EEC
Ponoane		G	MAS-201	400	USAID
Ha Mokoma		G	MAS- 13	430	USAID
Mpalipali		G	MAF-166	600	USAID
Tsupane		G	MAF-136	400	USAID
Tollo		G	MH -134/2	40	USAID
Shalane		G	MH - 71	290	USAID
Makilanyaneng		G	MH -134/1	500	USAID
Ha Tsepo	II	SP	B -135	150	USAID
Matooane	I	HP	B - 50	600	USAID/EEC
Letsoela	I	HP	B - 8	1,200	USAID/EEC
Ha Maqasane		HP	L -128	1,000	USAID/ROTARY
Mosamo		G	L -103	600	USAID/CARITAS
Ha Tsepo	I	HP	B -135	200	USAID/EEC
Ha Maama		G	M - 12	860	USAID
Ha Mosala		G	MAF-178	250	USAID
Maqoala		G	MH - 29	500	USAID
Makhube		G	MH - 68	700	USAID
Teronkong		G	MH -134/3	140	USAID
Mpharane		HP	MH -102	300	USAID/CIDA
Tsoating/Makoanyane		HP	MH -131-180	200	USAID/CIDA
Thabaneng/Nkhetheleng		HP	MH -140- 12	400	USAID/CIDA
Lipeleseng		HP	B - 14	650	USAID/EEC
Malebesana		G	B -194	800	USAID
Bela Bela	III	WM/R	B - 21	350	USAID
Kolojane	I	HP	B - 36	1,600	USAID/EEC
Bakaneng		HP	B - 97	800	USAID/EEC
Nyapholing		HP	MAF-197	600	USAID
Majakaneng		HP	BB - 1	700	USAID/EEC
Tlokoeng		HP	BB - 51	800	USAID/EEC
Qalabane	II	HP	MAF-136	1,000	USAID

Appendix 11
1985 (Continued)

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Bosofo		HP	MAS-122	675	USAID/RCM
Ha Koali	III	G	B -134	800	USAID
Ha Lebina	II	SP	B -124	150	USAID
Ha Neko		G	B -156	180	USAID
Ha Senekane		HP	B -110	1,100	USAID/EEC
Ha Makebe		HP	B - 11	800	USAID/EEC
Mokhethoaneng		HP	B - 16	1,690	USAID/EEC
Qopo		HP	B -136	400	USAID/EEC
Ha Tomo		HP	B -131	220	USAID/EEC
Thabana Tsooana		HP	B - 98	525	USAID/EEC
Mohlanaeng		HP	MAF-235	400	USAID
Khapung		HP	L - 23	1,700	USAID/EEC
Ha Motjoka		G	MAS-162	540	USAID
Shepheseli		HP	L - 83	2,530	USAID/EEC
Mototane		G	Q -	400	USAID
Alwyrskop		G	Q - 38/2A	800	USAID
Ha Kubutu		G	MAF- 3	730	USAID
Sekoakoaneng		G	QN -106A	300	USAID
Mpharane		G	QN -174	170	USAID

Total for 1985: 141 Villages, 81,435 People Served

PROJECTS COMPLETED IN 1986

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Mahaheng		G	MH - 27/2	500	USAID
Ha Mapuru		G	MH -210	200	USAID
Ha Mokone		G	MOK- 86	240	USAID
Ha Lepolesa		G	MAS-123/124	600	USAID
Mokhele		G	MH - 72	280	USAID
Petlane		HP	MAF-283	150	USAID
Hlakcaneng		HP	MAF-245	500	USAID
Ha Lebenkele		HP	MAF-	400	USAID
Mantsonyane		G	TT - 51	850	USAID
Ha Mpesi		HP	MAS-122/1	150	USAID/RCM
Ha Sekéte		HP	MAS- 49	700	USAID/RCM
Ha Mohalanyana	I	HP	MAS- 54	560	USAID/RCM
Maqakeng		HP	MAS-149/1	160	USAID/RCM
Monyakoana		HP	MAS- 62	175	USAID/RCM
Likhutlong	II	HP	L - 38	350	USAID/EEC
Kolojane	II	SP	B - 36	200	USAID
Ha Setenane		G	MAS-119/2	400	USAID
Mapeleng		G	Q -128	1,000	USAID
Sekoakoaneng		G	QN -106B	320	USAID
Motse-Mocha		HP	MAF-280	800	USAID
Pontseng		G/F	MH - 27	700	USAID
Tsereoane		HP	B -172	700	USAID/EEC
Ha Nkafane		G	MAF-215/2	120	USAID
Khomo-Ea-Leburu		HP	B -129	900	USAID/EEC
Majaheng		HP	B -130	800	USAID/EEC
Ha Phiri		HP	B - 88	1,100	USAID/EEC

Appendix 11
1986 (Continued)

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Phoofolo	HP	B - 90	1,050	USAID/EEC
Mesa Pela	G	B - 26	200	USAID
Mohatlane	SP	B -113	100	USAID
Mpharane/Paulosi	G/R	QN - 83	230	USAID
Ha Khitione I	HP	MAS-156	750	USAID/RCM
Ha Rasenkisi	HP	MAS- 93	180	USAID/RCM
He Keiso I	HP	MAS- 90	300	USAID/RCM
Monyakoana II	HP	MAS- 62	245	USAID/RCM
Ha Mamotho	HP	MAS- 60/1	450	USAID/RCM
Ha Sefabata	HP	L - 61	200	USAID/EEC
Moramang	HP	L - 6	400	USAID
Tsikoane II	G	B -118	100	USAID
Ha Lebina	HP	B -124	700	USAID/EEC
St. David	HP	B - 23	1,250	USAID/EEC
Ha Rapopo	HP	B -192	200	USAID/EEC
Ha Mokhehle	HP	B -173	500	USAID/EEC
Liforong	G	MAF-215/1	200	USAID
Sekoati	HP	MH - 74	1,200	USAID/CIDA
Ha Chopo	HP	MH -208	200	USAID/CIDA
Sebetleng	HP	MH -165	150	USAID/CIDA
Ha Jobo	HP	MH -212	200	USAID/CIDA
Brakfontein	HP	MH -102	200	USAID/CIDA
Mokhesi	HP	MH -232	300	USAID/CIDA
Ha Khitsane	HP	MH - 53	790	USAID/CIDA
Soere	G	MH - 26	500	USAID
Matsetseng	G	MH - 1/1	300	USAID
Ha Pekene	G	MH - 28	200	USAID
Cana II	G	B -107	450	USAID
Khotseng	G	MAS-161	650	USAID
Ha Jobo	G	MAS-102	470	USAID
Tumaole	G	MAS- 82/1	300	USAID
Sequebela	G	MAF-215	230	USAID
Ha Nohana	G	MH -122	310	USAID
Jacobo	G	QN - 34	640	USAID
Bolepeletsa	G	Q -129	300	USAID
Shepheseli II	G	L - 83	550	USAID
Ha Lethinya	G	MH -182	200	USAID
Linakeng	G	TT - 40	450	USAID
St. Michaels	G/R	MAS-120	1,800	USAID
Kotanyane	G	L -153	750	USAID
Ramahotetsa	G	MAF-148	850	USAID
Lesaoana	G	MAF-165	500	USAID
Phamong	G	MH - 89	1,660	USAID
Ha Qacha	G	MH - 01	430	USAID
Matsatseng	HP	MAF-272/1	800	USAID
Tobalete	G	B - 91	450	USAID
Maneheng Top	HP	B - 72	950	USAID/EEC
Cana	HP	B -107	600	USAID/EEC
Kolone	HP	B - 5	300	USAID/EEC
Sekamaneng	HP	B - 30	300	USAID/ITA
Bethel	G	MH - 87	440	USAID
Ha Ntloana	G	MH -216	125	USAID
Ha Joang	G	MH - 74/1	300	USAID

Appendix 11

1986 (Continued)

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Mofalali		HP	MAF-	100	USAID
Likhutlong	I	G	L - 38	350	USAID
Sekhutloaneng		G	MAS-102/1	232	USAID
Sekokong		G/R	MOK- 1	335	USAID
Boikano		HP	MH -231	385	USAID/CIDA
Kobo Tsoeu		HP	MH - 69	335	USAID/CIDA
Mahoete		HP	MH -227	305	USAID/CIDA
Makhineng		HP	MH -124	785	USAID/CIDA
Ha Mofoka	I	HP	MAS-150	600	USAID/RCM
Ramaqanyane		HP	MAS- 42	900	USAID/RCM
Ha Bosofo	II	HP	MAS-122	350	USAID/RCM
Ha Keiso	II	HP	MAS- 90	150	USAID/RCM
Mesitsaneng		HP	MH - 30	2,950	USAID/CIDA
Lefikeng		HP	MH - 51	2,890	USAID/CIDA
Phororang		G	B -178	700	USAID
Maqhaka Ext.	II	G/R	B - 13	400	USAID
Thota Peli		HP	B -190	500	USAID/EEC
Rantung		HP	B - 75	800	USAID/EEC
Ha Sakia		G	MAS-139	360	USAID
Taha-Lia-Tloka		G	MAS- 94/1	340	USAID
Tlapa-Letsotso		G	MH - 87/1	1,030	USAID
Ha Chabeli		HP	MH -165	680	USAID/CIDA
Mohalenyane		G	MAS- 82	340	USAID
Kapung	II	G	L - 23	470	USAID
Ha Maseli		HP	MH -246	420	USAID/CIDA
Mofubetsoana		HP	MH -220	240	USAID/CIDA
Ha Lesoiti	I	HP	MAS- 54/2	450	USAID/RCM
Ha Mofoka	II	HP	MAS-150	1,800	USAID/RCM
Ha Sekepe School		HP	MAS-141	375	USAID/RCM
Ha Paki School		HP	MAS- 48	450	USAID/RCM
Ha Mokhoba		HP	MAS- 67/2	185	USAID/RCM
Ha Sefuli		HP	MAS-248	170	USAID/RCM
Ha Matobo		HP	MAS-250	140	USAID/RCM
Manamela		G	BB - 21	2,140	USAID
Thota-Peli		G	B -190	450	USAID
Khokhoba		G/R	B -126	150	USAID
Mphele Mosola		HP	B - 87	800	USAID/ROTARY
Ha Thaabe		G/R	MAS-168	800	USAID
Ha Matela		G	MAS-118	650	USAID
Ramashilika		G	MAS- 82/2	430	USAID
Ha Rakhoboso		G	MAF- 45	470	USAID
Metlaeeng		G	MAF-290	430	USAID
Ha Setotoma		G	MH -110	195	USAID
Maboneng		G	MH -194	290	USAID
Kotisephola		G	Q - 55	800	USAID
Makoloane		G	Q -136	1,100	USAID
Rabeleng		PP	MAF-128	800	USAID
Mahlabatheng		SP	L - 26	800	USAID
Maliepetsane		G	MAF- 23/1	405	USAID
Libibing		G	MOK- 31	140	USAID
Tlhakoaneng		G	MOK-123	80	USAID
Ha Mamoana		G	MH - 75	130	USAID
Lexeni		G	Q -132/B	240	USAID

Appendix 11
1986 (Continued)

<u>Name</u>		<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Thaba		G	QN - 60	490	USAID
Ha Laka		G	L -103/1	300	USAID/CARITAS
Lekokoaneng	I	HP	B - 85	2,300	USAID/ADB
Ha Maope		HP	B - 88	500	USAID/ADB
Qhalasi		HP	MH - 31	1,235	USAID/CIDA
Ha Panta		HP	MH - 52	365	USAID/CIDA
Ha Sephapos		HP	MH -224	680	USAID/CIDA
Mokoroane		HP	MH -226	310	USAID/CIDA
Raubi		HP	MH -243	425	USAID/CIDA
Majoale		HP	MH -226	335	USAID/CIDA
Matebeleng		HP	MH -162	360	USAID/CIDA
Ha Ramabele		HP	MH -245	335	USAID/CIDA
Ha Matsipa		HP	MH -229	345	USAID/CIDA
Raphuting		HP	MH -221	265	USAID/CIDA
Matseetsela		HP	MH -240	235	USAID/CIDA
Ha Samo		HP	MH -241	150	USAID/CIDA
Meeling		HP	MH -223	540	USAID/CIDA
Ha Khorola		HP	MH -228	535	USAID/CIDA
Ha Tieli		HP	MH -222	280	USAID/CIDA
Ha Sekoala		HP	MH -236	590	USAID/CIDA
Ha Moketsi		HP	MH -247	190	USAID/CIDA
Ha Rajane		HP	MH -235	150	USAID/CIDA
Ha Jimisi	II	HP	MAS-110	300	USAID/RCM
Ha Lesoiti	II	HP	MAS- 54/2	475	USAID/RCM
Ha Raphuthi		HP	MAS-149	320	USAID/RCM
Ha Mantsebo		HP	MAS-249	250	USAID/RCM
Ha Paki	II	HP	MAS- 48	275	USAID/RCM
Ha Josias		HP	MAS- 74/1	550	USAID/RCM
Ha Mothae		HP	MAS-157	575	USAID/RCM
Ha Mantitane		G	MAF- 40/1	240	USAID
Sekhutlong		G	MH -106	335	USAID
Ha Ntseno		G	MH -191	465	USAID
Sekiring		G	MH -135	645	USAID
Makhineng		HP	MH -124	785	USAID/CIDA
Linareng		HP	MH -162	935	USAID/CIDA
Ha Louis		HP	MH -242	295	USAID/CIDA
Makeruo		HP	MH -244	80	USAID/CIDA
Lekokoaneng	II	WP	B - 85	400	USAID
Mpela-Mosola		WP	B - 87	150	USAID
Ha Tjopa		G	MAS-246	250	USAID
Ha Lephoi Clinic		WP	TT - 86	70	USAID
Thaba Ntso		G	Q - 26	2,300	USAID
Sebetia		G/R	B - 17	850	USAID
Nkobilweni		G/R	Q -132A	130	USAID
Ratsoleli		G/R	QN - 15	900	USAID

Total for 1986: 178 Villages, 93,060 People Served

Appendix 11
PROJECTS COMPLETED IN 1987

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Matsa	G	MAF- 29/1	415	USAID
Ha Raposholi	G	MAF-	180	USAID
Ha Patsoane	HP	MAF-	115	USAID
Ha Raknapu	HP	MAF-263	190	USAID
Phepheng	HP	MAF-307	120	USAID
Ha Manthekei	G	B -157	215	USAID/CARITAS
Ha Sebe	SP	B -187	150	USAID/CARITAS
Matukeng	G/R	MAS-173	-	USAID
Tsoloane	HP	MH - 44	1,190	USAID/ROTARY
Ha Matseo	G	MH - 11	420	USAID
Masemouse	G	MH - 78	500	USAID
Ha Ramarumo	G	MH - 2	385	USAID
Ntjepeleng	G	MH - 49	700	USAID
Ha Ntsane	HP	MAS- 87	150	USAID
Lekhalong	G	MAS-102/2	360	USAID
Ha Mpeshe	G	B -193	400	USAID
Ha Maope	SP	B -188	100	USAID
Tsitsa II	SP	B - 42	200	USAID
Drie Hoek	G/R	B - 76	120	USAID
Tsifa-Li-Mali	G	L - 76	1,500	USAID
Tsitso II	SP	B -191	200	USAID
Ha Taka	G	MAS-227	450	USAID
Ha Leronti	G	TT - 78	500	USAID
Ha Makere	G	TT - 22	180	USAID
Ha Tsoloane	G	MAF- 46	375	USAID
Ha Shakhane	G	MAF-153	485	USAID
Phomolong	G	MAF-291	300	USAID
Ha Koki	G	MAF- 40	365	USAID
Phohlokolong	G	MH -265	300	USAID
Tlokoeng	G	MH -178	260	USAID
Liqalabeng	G	QN - 30	265	USAID
Ramokhele	HP	MAS-109	160	USAID/CIDA
Ha Motsu	HP	MAS-253	330	USAID/CIDA
Ha Tlebere	HP	MAS- 57	900	USAID/CIDA
Ha Ntsirele	G	B -119	320	USAID
Motloang	SP	B -103	200	USAID
Thuathe	SP	B -189/4	75	USAID
Thuathe Ha Raumo	SP	B -189/5	100	USAID
Ha Phohleli	G	MAS-119	1,500	USAID
Linakotseng	PP	MAS-126	1,200	USAID
Ha Leutsoa	SP	MAS-133/3	200	USAID
Ha Matsa	G	MAF- 29/2	200	USAID
Bereng	PP	MH -115	570	USAID
Sebapala	G	Q -121	1,000	USAID
Maboloka	G	TT - 58	270	USAID
Ha Malebo	G	L -103/2	200	USAID
Monontsa Post	G	BB -103	435	USAID
Boinyatso	G/R	B - 83	500	USAID
Ha Mpiti	WM/R	MAS- 88	680	USAID
Ha Mokuoane	G	MAS- 58	400	USAID
Mankoaneng	G	Q -140	360	USAID

Appendix 11
1987 (Continued)

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Leronti School	G	TT - 78/2	50	USAID
Ha Makabo	G	B - 39	350	USAID
Tloutle	SP	MAS- 71	350	USAID
Mathuleng	G	TT - 17	610	USAID
Ha Mofumotse	HR	MAF-314	200	USAID
Likhotoleng	G	MAF- 86/2	100	USAID
Thaba Tsoeu	G	MH -23/211	2,500	USAID
Ha Moiloa	PP	MH - 20	560	USAID
Ha Philipi	G	MAS- 6	500	USAID
Thiba Koali	G	MAS-236	250	USAID
Ha Khoeli	G/R	MAS-130	680	USAID
Ha Makoroana	G	B - 37	800	USAID
Thuathe Lekhalong	G	B -189/1	450	USAID
Sefateng	G	B -109	550	USAID
Thuathe Thuntsana	SP	B -189/3	150	USAID
Thuathe Masaleng	SP	B -189/3	225	USAID
Ha Kooko	G	MH -127	200	USAID
Kautu	G	Q -134	200	USAID
Ha Motsepa	SP	TT - 26	125	USAID
Draai Hoek	G	MH - 18	385	USAID
Marakong	G	Q -132/C	600	USAID
Mphethi	G	Q -142/A	300	USAID
Ha Raposholi	G	MAF- 86/1	180	USAID
Ha Khori	G	MAF- 86/3	140	USAID
Ha Joele II	G	MAF-194	580	USAID
Ha Kaleche	G	MAS-234	600	USAID
Ha Shale	G	MAS- 71/2	350	USAID
Ha Tlhakanelo	G	MAS- 79/2	100	USAID
Ha Soko	G	MAF- 86	120	USAID
Reisi	SP	MAF-235	620	USAID
Mataoeng	PP	MH -219	450	USAID
Ha Dyke	G	B - 2/2	180	USAID
Ha Liphakoeng	G	B - 2/1	200	USAID
Ha Mosiuoa	G	B -187	450	USAID
Mosuoe	G	QN - 67A	1,325	USAID
Phapanong	G	QN -180	1,100	USAID
Ha Mothibe	G	MAS-183	600	USAID

Total for 1987: 88 Villages, 37,820 People Served

Appendix 11PROJECTS COMPLETED IN 1988

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Mahleke	G	B -182	400	USAID
Masoeling	G	B - 75	900	USAID
Makaeng	G	MAS- 30	800	USAID
Lekhalong	G	MH - 54	315	USAID
Ha Nthonyana	G	MAF-131	720	USAID
Makaung	G	MAF- 69	420	USAID
Qaqatu	G	MH -103	480	USAID
Moseneke	G	Q -143	1,100	USAID
Maokeng	G	Q -138	300	USAID
Letete	G	QN - 44	590	USAID
Makeoana	G	QN -189	290	USAID
Ha Nakeli	G	TT - 23	500	USAID
Ha Mokoto	HR	TT - 43	345	USAID/USCC
Pontseng	G	MAF-121/1	160	USAID
Ha Masiu	G	MAF-217	300	USAID
Ha Malephane	G	MH -215	600	USAID
Ha Seliane	G	MH -262	285	USAID
Lekhalong I	G	MH - 54	320	USAID
Mesa Pela III	D	B - 26	1,000	USAID
Mahlatsa	G	B -174	450	USAID
Malephane	G	Q -133	800	USAID
Ha Maphohloane	G	MH -	1,700	USAID
Potomane	G	Q - 21/I	350	USAID
Sekokong	G	MH -179	275	USAID
Manteko	G	QN - 57	480	USAID
Ha Ntja	G	MH -	125	USAID
Tseviso	G	QN - 58	620	USAID
Sethebeng	G	QN - 67B	200	USAID
Ha Ntsibane	DP	MAF- 59	800	USAID
Ha Nkeo	G	MAF-327	750	USAID
Ha Setimela	G	MAF-328	120	USAID
Tsoelike	G	Q -142/L	900	USAID
Maralleng	G	Q -142/D	1,000	USAID

Total for 1988: 33 Villagers, 18,115 People Served

PROJECTS COMPLETED THROUGH JUNE, 1989

<u>Name</u>	<u>Type</u>	<u>Code</u>	<u>Population</u>	<u>Donor</u>
Ha Sehlabo	G	MAF-126	650	USAID
Liphokoaneng	G	MH -187	160	USAID
Ha Ntabanyane	G	MH -184	710	USAID
Methinyeng	HR	MAF-138	990	USAID
Ha Ramololi	G	MH -277	280	USAID
Telite	G	MH -299	200	USAID
Try Hoek	G	MH -278	210	USAID
Malimong	G	QN - 92	400	USAID
Hilltop	G	QN - 92	540	USAID

Total for 1989: 9 Villagers, 4,140 People Served