WATER AND SANITATION FOR HEALTH PROJECT

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A STUDY OF THE COMMUNITY PROMOTION COMPONENT OF THE RURAL SANITATION PROJECT IN BOLIVIA

WASH FIELD REPORT NO. 121

MAY 1984

Prepared for:
USAID Mission to the Republic of Bolivia
Order of Technical Direction No. 173

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May 24, 1984

Henry Bassford, Director
USAID Mission
La Paz, Bolivia

Attention: Mr. Lee R. Hougen

Dear Mr. Bassford:

On behalf of the WASH Project I am pleased to provide you with ten (10) copies of a report on the Community Promotion Component of the Rural Sanitation Project in Bolivia (Community Participation).

This is the final report by Joseph Haratani and is based on his trip to Bolivia from January 28, 1982 to February 14, 1984.

This assistance is the result of a request by the Mission on November 18, 1983. The work was undertaken by the WASH Project on January 9, 1984 by means of Order of Technical Direction No. 173, authorized by the USAID Office of Health in Washington.

If you have any questions or comments regarding the findings or recommendations contained in this report we will be happy to discuss them.

Sincerely,

Dennis B. Warner

Dennis B. Warner
Director
WASH Project

cc. Mr. Victor W.R. Wehman, Jr.
S&T/H/WS

DBW:ybw

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WASH FIELD REPORT NO. 121

BOLIVIA

A STUDY OF THE COMMUNITY PROMOTION COMPONENT OF THE RURAL SANITATION PROJECT IN BOLIVIA

Prepared for USAID Mission to the Republic of Bolivia
Under Order of Technical Direction No. 173

Prepared by

Joseph Haratani

May 1984

Water and Sanitation for Health Project
Contract No. AID/DSPE-C-0080, Project No. 931-1176
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Washington, DC 20523

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ABBREVIATIONS AND SPANISH TERMS

AID	Agency for International Development
CEPIS	Centro Panamericana de Ingenieria Sanetaria y Ciencias del Ambiente (Pan American Center for Sanitary Engineering and Environmental Sciences)
Comite	Potable Water Committee (functions until water system construction is completed)
DSA (MOH)	Division of Environmental Sanitation
GOB	Government of Bolivia
GTZ	German Technical Cooperation Agency
HHR (USAID)	Health and Human Resources Division
Junta	Water Supply Administration Council (operates the water supply system)
MOH	Ministry of Public Health and Social Welfare
OPS/OMS	Pan American Health Organization/World Health Organization
PLANASBA	National Basic Sanitation Plan
USAID	AID Country Mission

NOTES ON CURRENCY EQUIVALENTS

The unit of currency of Bolivia is the Bolivian Peso ($b.). There exist two exchange rates between the Bolivian Peso and the dollar: an official rate and a parallel market rate. The parallel market rate fluctuates on a daily basis while the official rate remains fixed until the government changes it.

The following table provides the official exchange rates during the past four years:

DATES		EXCHANGE RATE
From	To	
1980	03/82	US$1.00 = $b.25.00
03/82	09/82	US$1.00 = $b.44.00
09/82	10/83	US$1.00 = $b.211.00
10/83	Present	US$1.00 = $b.500.00

EXECUTIVE SUMMARY

The July 1980 coup in Bolivia caused the suspension of most United States aid to that country including the U.S. supported rural sanitation project, the subject of this report. Today, three and a half years later, although the project was reactivated on paper six months ago, there is no physical sign of renewed progress in the field because certain conditions stipulated by the U.S. have not been met and funds have not been released. In spite of these long delays, it appears that the required actions will soon be completed by the Division of Environmental Sanitation (DSA) of the Ministry of Health and the tempo of the project should begin to accelerate.

FINDINGS AND RECOMMENDATIONS

The project was thoughtfully planned and appropriately designed given the physical and cultural conditions existing in rural Bolivia, and the sanitation component (latrine installation) is receiving special attention and operating effectively.

In general, the engineering aspects of the project (water system design and construction) are being addressed at an acceptable journeyman level. However the post-construction management of the water systems by the local juntas (councils) is failing.

Equipment and Materials: The requested mobile audio-visual unit should not be purchased. Instead, basic audio-visual equipment and materials should be provided as well as reference books and manuals in Spanish.

Community Promotion Program: The general community promotion plan developed by the team sponsored by the Pan American Health Organization, the German Technical Cooporation Agency, and the Goverment of Bolivia should be adapted to the needs of the project and used as the official community promotion program of the project.

Sanitation Technician Duties: Within the framework of the community promotion program, the sanitation technicians' primary responsibilities should include: latrine slab sales and installation; formation, training, and functioning of water committees and juntas; participation in monthly junta meetings, water system inspections, inspection and verification of juntas financial and operating records; and training of replacement junta members.

Evaluation Plan: Rather than attempt to measure changes in health attributable to the installation and use of potable water systems, the recommended evaluation plan measures water accessibility, quantity, quality, and cost.

Summary: This report focuses on the community participation component of the rural sanitation project. Therefore the findings and recommendations should be integrated into an overall project strategy. The planning of this strategy should be given priority in the advisor's work with DSA staff.

ACKNOWLEDGEMENTS

The writer wishes to thank the many officials of the Division of Environmental Sanitation of the Ministry of Health and USAID staff for their kind assistance in making this study possible. Special thanks go to Licenciado Jorge Ortega who acted as both colleague and guide on field visits and to Dr. Lee Hougen who provided the background briefing and overall guidance for this report.

The writer also wishes to express his sincere appreciation to Sra. Maria Olga de Indaburo and Sra. Martha de Acha for their cheerful and excellent typing of this report and for working late hours several evenings after having completed a full-day's work.

Finally, my deep appreciation goes to the long-enduring "campesinos" who were our gracious hosts, ever courteous even though some have been waiting for years to obtain a potable water supply. To all of you a special "Thank you."

Chapter 1

INTRODUCTION

1.1 Study Request and Purpose

On November 18, 1983, USAID/Bolivia through AID/Washington requested technical assistance for its Rural Sanitation Project (511-U-058) from the WASH project. Three consultants were requested: (1) a consultant to advise on types of well-drilling equipment to purchase, (2) a consultant to review the community participation project component, and (3) a consultant for project evaluation.

The cable was followed by telephone conferences between La Paz and Washington to clarify the consultants' scopes of work. At the time of this study, the well-drilling consultant had already completed his assignment.

This report deals with the community participation component of the Rural Sanitation Project and also provides an evaluation design for the project (see Appendix J). The key aspect evaluated is the effectiveness of the work of the sanitary technicians in promoting and supporting community participation during the life of the project.

1.2 Methodology

This study began with a briefing by the Chief of the Office of Health and Human Resources, USAID/Bolivia. This was followed by meetings with officials of the Environmental Sanitation Division (DSA) of the Ministry of Social Welfare and Public Health (MOH). Background documents were provided by the USAID and DSA offices for review. These documents are listed in the References.

After two days of meetings and reviewing documents, the consultant began field visits to towns where DSA had built or were building a water supply system. He was accompanied by Jorge Ortega, Chief of Community Promotion/DSA. Some of the towns visited were not in the project area but had water systems built by the DSA under similar conditions and with community participation. These towns were visited to provide controls against which project towns could be compared.

The main purpose of the field visits was to obtain information on the community promotion and participation component of the project. To this end, the consultant interviewed past and present junta and comite* officials and members of the potable water association. He also observed water system components such as the source, storage tanks, pumping stations, and house connections. On all field visits in the project area, the consultant was accompanied by at least one member of the regional staff, usually the regional engineer and/or the sanitary technician supervisor.

* The comite functions until the water system is completed. The junta operates the completed system.

The field visits in the Cochabamba regional were made over a period of four days and were followed by a day in the regional office reviewing project documents and obtaining project information. The visit to the Chuquisaca region followed the Cochabamba region visits and lasted two days. Meetings were held with the regional engineer and his staff, and field visits were made to three project sites.

After making the field visits to the two project regions, the Consultant returned to La Paz to obtain additional information and to confirm data obtained in the field. Before leaving the country, the Consultant drafted and submitted his report to USAID/Bolivia for review. He departed La Paz on Saturday, February 25, 1984.

1.3 Project Background

USAID/Bolivia signed a project agreement with the Government of Bolivia (GOB) on February 21, 1977 for a rural sanitation project to install latrines and water supply system and to provide health education and training through a cooperative project between the DSA/MOH and the target communities. In addition, the project was designed to create an institutional capacity in the DSA to enable it to carry out future rural sanitation programs on a significantly expanded scale.

USAID/Bolivia contribution consisted of a grant of $200,000 (later increased to $310,000) and a loan of $4,000,000. The GOB contribution was the equivalent of $2,500,000 including a contribution of $750,000 from target communities. Due to the devaluation of the Bolivian peso, the GOB contribution was later reduced to $1,075,000 and to $242,000 from the communities. The original project budget of $6,700,000 was reduced to $5,627,000 (see Appendix C). Target communities were to contribute a minimum of 30 percent of individual water system costs.

The target area was limited to the Department of Cochabamba and the five northern provinces of the Department of Chuquisaca (see Appendix D, Figures 1 and 2). Approximately 7,600 latrines and 200 water systems benefiting 11,000 families were to be installed. In addition, the DSA was to promote community participation in project activities and to provide health education and training in the operation and maintenance of the water systems.

Project activities were to be managed from La Paz and implemented through regional offices in Cochabamba and Sucre, each headed by a Chief Engineer and staffed with project engineers and sanitary technicians (see Appendix E). Warehouses for storage of pipe and other construction materials were to be built in La Paz, Cochabamba and Sucre. Vehicles for transporting personnel and materials were to be provided out of project funds.

Field activities were to be initiated with the selection of communities to receive potable water supply systems. The criteria for selection included the existence of an adequate water source, accessibility by road, community willingness to contribute voluntary labor and local materials, concentrated settlement patterns, and the capacity to pay monthly maintenance fees. Eligible communities were then ranked based on technical and cost criteria.

The second project phase was to consist of an exploratory study of the community conducted by the sanitary technician in which geographic, demographic, socioeconomic, housing, water supply, and the sanitation data were to be obtained. In doing this study, the sanitary technician also was to initiate his community promotion activities.

The third phase was to begin after the communities were selected. At this point the sanitary technician was to persuade all families to purchase a latrine slab and install a pit latrine. While this community promotion effort was going on, a topographic team would survey the community and its surroundings to gather the technical data needed to design the system. The actual system design was to be developed in the engineering office. During this phase, the sanitary technician would organize the villagers and get them to elect a potable water committee which would be responsible for all community contributions during the water system construction phase.

Once all families had installed latrines, construction of the water system was to begin. The civil works components (e.g., intake structure, pump installations, and storage and distribution tanks) were to be contracted out to local construction firms. Local and imported materials were to be transported to the job site and local volunteer labor used to dig trenches and to install the pipelines.

When the system had been built and tested, it was to be officially inaugurated and turned over to the water supply junta elected by the community to manage the operation and maintenance of the system. Once the system was turned over to the junta, the sanitary technician was to shift his attention from working with the comite to assisting the junta in the long-term activity of operating and maintaining the system.

Project activities were slow in starting, and the project never generated the momentum required to meet the planned construction schedule. In July 1980 the project was suspended as an aftermath of a government coup. It was suspended for three years. During this period small amounts of funds were made available periodically to maintain a minimum level of field activity. With this drastically reduced level of project support, the Cochabamba region was able to complete only 25 water supply systems and install 4,700 latrines. The Sucre region did not build any water systems but intalled 358 latrines.

In mid-1982, USAID/Bolivia obtained the services of a WASH consultant to review and reprogram the project. The consultant recommended significant changes in the project implementation plan, reorganization of DSA, inclusion of larger target communities, and an increase in community contributions.

In August 1983 the project was reactivated and on December 21, 1983, a Project Implementation Letter amending the original project agreement and presenting a revised project budget and implementation and disbursement system was issued.

Chapter 2

FINDINGS

2.1 Introduction

The findings presented below are based on information obtained from project and related documents, meetings with DSA and USAID officials, field visits to project sites, and interviews with comite and junta members and villagers. Fifteen target villages were visited, three in the pre-construction stage, two with systems under construction, and ten with completed systems (see Appendix F).

For the purpose of obtaining a normal picture of village activities and water system operations, the field visits were unannounced. This decision created some problems in finding key villagers to interview. However, at least one past or present comite or junta member was interviewed in all but two communities. Usually from two to four junta members or villagers were contacted and interviewed. In one village, Takgo, a second visit was made in order to attend and participate in a general meeting of the junta and villagers with over 80 persons in attendance. The consultant believes that these visits and interviews give a fairly representative picture of the community promotion component of the project.

2.2 Latrine Construction

A key and, perhaps, unique feature of the Bolivia rural sanitation project is the requirement that all families participating in the project purchase a latrine slab and install a pit privy before construction of the water supply system can be started. This requirement allows the project to divert a part of the villagers' enthusiasm for a water supply system and utilize it to do the less attractive job of installing latrines.

At the outset of the field visits, there was some skepticism as to whether the villagers were actually using the latrines once they had been installed. Field observations showed that the latrines were, in fact, being used. However, some of the latrines were poorly located and somewhat difficult to reach because of mud holes or distance from the home. The latrines were kept reasonably clean.

The relatively high degree of success of this component of the project is unusual. It would be worthwhile for other USAID missions working in rural sanitation programs to take special note of this project and to consider adopting its methodology.

2.3 Water System Design and Construction

Since the main focus of this consultation was the community promotion component of the project, the consultant did not make any specific effort to inspect or evaluate the technical aspects of the water supply system design or construction. However, while visiting target communities, the consultant did

make casual observations of certain water system components such as intake structures, pump, storage tanks, and household faucets to determine if the systems were functioning properly.

Many operation and maintenance problems of the system were observed. A few problems were caused by the severe drought of 1982-83 (i.e., spring sources dried up) or by the recent heavy rainstorms (i.e., pipeline sections were washed out) and were unforeseen. However, most of the problems were the result of inattention in the management of the water systems (e.g., intermittent service, pumps needing repair, leaks in the system).

Based on these observations it seems that the water systems have been reasonably well designed and built, but are not being managed satisfactorily.

2.4 Water System Operation and Maintenance

Of the ten completed systems visited, nine were providing water to households. The three gravity systems visited were providing full-time service now but had reduced service hours during the 1982-83 drought. The three combination irrigation/potable water systems appeared to be providing relatively reliable service. The remaining four systems were supplied by pumps. One was not operating because of flood damage and the other three, although in operation, had either major or minor defects in the pumping equipment.

No special attempt was made during the visits to inspect the transmission or distribution systems for leaks. However, several junta members reported that they had experienced either major or minor pipe or accessory breakage and leaking problems. All of the household faucets appeared to be in good working order.

Interviews with junta members gave the distinct impression that the idea of preventive maintenance was a little-known concept. The general view among the junta members was that water systems practically ran themselves, and, as a matter of fact, gravity systems virtually do run themselves, but they also require maitnenance.

In most communities visited the water system appeared to be operated on a crisis basis. The junta became active only when a pipe broke or a pump stopped operating. If no crisis existed, many junta members felt there was no need to meet or, in one case, to even collect the monthly maintenance fees.

None of the systems visited was over five years old, and at least eight of the ten systems had or were having operation and maintenance problems. Some were problems related to the physical system itself, and others were problems with the human relations aspects of managing and operating the system. One of the most common human problems is related to the prohibitions of using water for irrigation. The water systems are designed solely for household use; i.e., drinking, cooking, bathing, and washing.

Few of present junta members had received formal training in the operation and maintenance of water systems from the DSA. Usually junta members serve for one year. In one community (Banda Arriba) the present junta president had also been the comite president, having served continuously since the beginning of

the project. Usually there have been changes in junta membership and on occasion the changes have been made due to general dissatisfaction of the villagers with the junta member(s) because of lack of leadership, lack of interest, lack of fiscal responsibility, or because of poor interpersonal relations.

The DSA has held one training session for junta members in the Cochabamba region and none in the Chuquisaca region. One ex-junta president interviewed had attended the training course held in Cochabamba during July 1981. No courses have been conducted in the last two and a half years.

None of the operating juntas has a complete set of official documents and forms. Some did not have a copy of the regulations for the functioning of the junta. None had sufficient forms to maintain a complete set of records as planned for the project.

One of the most common complaints voiced by junta members was that they did not have a clear understanding of the extent of their responsibilities. They knew to act when the system malfunctioned. They also knew where to go for help--the regional DSA office in Cochabamba. Junta treasurers knew that they had to collect the monthly operation and maintenance fee, and the secretaries understood that they were to keep minutes of meetings. However, beyond these basic duties, most junta members did not know what else they were supposed to do. One exception was observed in Banda Arriba where the junta president also happened to be a self-trained mechanic, electrician, and a woodworking craftsman. He knew that machines require preventive maintenance and had started to acquire some spare parts to take care of future needs.

In a few other juntas there were some members who had at least some limited skills in mechanics, electricity, or plumbing. However, none could be classified as a journeyman or even approached the classification. Consequently, it can be safely reported that all juntas need more supervision and training in both the technical and managerial aspects of water supply and sanitation.

2.5 Community Promotion Activities

The first major organizational task of the sanitation technician is to get the villagers to appoint a potable water committee (comite), consisting of a president, vice president, treasurer, and secretary. During the latrine installation and water system construction phases, the technician works through the committee to assure that latrines are installed and that local materials and labor are made available when needed for building the water supply system.

Since most villagers are not keen about installing latrines, the sanitation technician must work continuously in educating them to understand their sanitation needs and in motivating them to install latrines. Over the past years, this task has become doubly difficult because of the long delay in starting the construction of water systems. Because promised systems have not been built, the sanitation technicians' credibility with many communities is almost nil.

In some cases the technician avoids visiting certain towns because of embarrassment and because he has no solid proof that help is on the way. The technician also knows that beyond a certain point, his presence will not be welcome in the community.

In communities where systems have been built, the technician works through the junta in supervising the operation and maintenance of the systems. He also continues to provide health education to the villagers. In actual practice, this post-construction phase is the weakest link in the program. While villagers can easily visualize and accept the physical effort required to install latrines and build water systems, it is difficult for them to understand the process involved in operating and maintaining the system.

This post-construction phase has been the "achilles heel" of water supply programs the world over, and Bolivia is no exception. DSA water systems are designed to provide adequate service for at least 20 years. At the present unsatisfactory level of water system management, it is almost certain that none of the pumped systems will be operating that long. Because this phase is the most difficult, the sanitation technician must make his greatest efforts in sustaining the interest and enthusiasm of the junta members and of the villagers. To do this, the technician must spend extended periods of time working with the junta and the villagers. He must gain their confidence and respect. This can only be accomplished by having the technician live in the geographical area for which he is responsible for overseeing the water supply systems. He must be available when he is needed. This job cannot be done on a commuter's schedule and this, in the opinion of the consultant, is the single major defect in the present structure of the project. This deviation from the normal DSA operating procedures must be corrected in order to provide the attention required to keep the water systems operating throughout their design life.

As the project is currently operating with all sanitation technicians living in or near the Department capitals, their visits are so infrequent that in most communities the junta members did not even know the name of the technician assigned to their communities. Many junta members could not recall when the technician had made his last visit. It was also reported that some of the technicians were attending classes at the University or other schools in Cochabamba and were not putting in a full day's work. Under these circumstances, it is not possible to develop the close working relationship with villagers which is necessary to sustain a successful operation and maintenance program.

2.6 Community Promotion Costs

The major recurring costs of the community promotion component are salaries and per diem for the sanitation technicians. At the present time there are 19 technicians working in the Cochabamba region and 14 in Chuquisaca. The average monthly salary in Cochabamba is approximately $b.44,000 and in Sucre $b.42,000 as of November 1983. This was equivalent to US$209 and US$199 respectively at the then-official exchange rate of $b.211 = US$1.00.

In October 1983 the official exchange rate was raised to $b.500 = US$1.00. As a consequence of this peso devaluation, government salaries were increased by 57 percent. The net effect of the peso devaluation and the salary increase was a loss equivalent to $71 and $67, respectively, producing salary equivalents of $138 and $132 at the new official exchange rate. Table I presents the major recurrent and capital costs of the community promotion component of the project for the remaining three years of the life of project (LOP).

TABLE I

Project Costs

Community Promotion Component
(in U.S. Dollars)

ITEM	QUANTITY	COST			
		PER UNIT	MONTHLY	ANNUAL	TOTAL PROJECT LENGTH OF 3 YEARS
CAPITAL COSTS					
Motorcycles	30	1,300	N/A	N/A	39,000
RECURRENT					
Sanitation Technicians Salaries					
Cochabamba	19	138	2,622	31,464	94,392
Sucre	14	132	1,848	22,176	66,528
SUB-TOTAL	33	N/A	4,470	53,640	160,920
Per Diem	33	36	1,188	14,256	42,768
Gasoline	500 ltrs.	0.12	60	720	2,160
TOTAL RECURRENT COSTS			5,718	68,616	205,848

Of the community promotion costs, the $39,000 for the purchase of motorcycles had been expanded prior to the reactivation of the project. Therefore, only the recurrent costs of salaries and per diem will have to be financed out of

the $4,455,799* total project balance remaining to be disbursed. Readjusting the total at the new official exchange rate produces a balance of $3,798,799. Therefore the cost of the community promotion component ($205,848) represents only 5.4 percent of the project balance, a very small amount in contrast to its importance in assuring the long-term operation of the water supply systems.

2.7 Community Promotion Equipment and Materials

The total equipment available to the community promotion component consists of the 30 motorcycles purchased three years ago and one movie projector which is in need of repairs. The La Paz office has some movie films which are also worn and need to be replaced. The projects has no slide projectors in rural areas which are not served with electricity.

The only audio-visual material available for community promotion is a flipchart series on excreta disposal developed by technicians in the Sucre region. Beyond that, there exists no audio-visual material for community promotion activities of the project.

The sanitation technicians have no reference materials, texts or manuals to use either to expand their knowledge or to refresh their memories on the various subjects they must deal with in their daily work.

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* This project balance was calculated on October 31, 1983 when the official exchange rate was $b.200 = US$1.00. At the new exchange rate of $b.500 = US$1.00, the balance would be $3,798,799.

Chapter 3

RECOMMENDATIONS

3.1 Introduction

In general, the consultant found the project well-planned and appropriate for the physical and cultural conditions existing in rural Bolivia. The key project events, especially that of early latrine installation, follows a logical sequence of field work and assures that the often-neglected sanitation component is completed. Therefore, the overall project design and implementation plan should be retained in its present form.

A major flaw in the project was found in the placement of sanitation technicians and in the execution of community promotion activities, especially in the post-construction phase. Specific changes in this project component are described in the following recommendations.

3.2 Staff Location

The administrative reorganization prescribed in Project Implementation Letter No. 23 states that six new sub-regional offices will be created. The staff of each sub-regional office will include, among others, one technical field supervisor and four sanitation technicians. This staff siting plan should be placed into effect as scheduled.

The project regions should be divided into six geographical sub-regions and each sub-region further divided into four areas each serviced by a single technician. Each sanitation technician should be assigned a geographical work area for which he will have primary responsibility for all project activities except for conducting the topographic surveys and the design and construction of the water systems. (These latter three activities will be the primary responsibiilties of the regional engineer and his engineering and topographic staff.)

Because most, if not all, of the sanitation technicians have been living in or near Cochabamba or Sucre during the past years, the DSA/MOH may encounter resistance in effecting this change. If the plan for location of technicians cannot be successfully carried out using all of the resources available to the DSA/MOH, USAID/Bolivia may have to consider offering an incentive allowance. The payment of this incentive allowance should be based upon the productive working days the technician spends in the communities. The USAID and DSA should set specific criteria* which must be met for payment of the allowance. These time-in-field criteria should also be supplemented with specific community promotion functions tied to a planned schedule of periodic community

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* A minimum of 20 working days per month not counting days when the technician travelled to and from Cochabamba or Sucre is suggested.

visits. These functions should include training of junta members in the operation and maintenance of the water system, inspection of the water system (with special attention given to intake structures, storage tanks and mechanical/electrical equipment), inspection of financial records, and attendance at regularly scheduled junta meetings.

3.3 Transportation

Given that the motorcycles assigned to the sanitation technicians and supervisors are now three years old, their reliability is expected to decrease significantly before the end of the project. Therefore it is recommended that, rather than relying solely on motorcycles for transport, the technicians be encouraged to use locally available public transportation especially for travel to and from the regional office. USAID might consider reimbursing the cost of public transportation out of project funds as a part of an incentive allowance.

3.4 Recruitment

Should the need arise to hire new sanitation technicians for the project, canidates should be recruited only from rural communities within the target area. The DSA should inform the candidates that they are to return to their home or neighboring communities to work for a specified minimum period of time. The DSA should obtain a written agreement to this effect with each candidate as a prerequisite for entering into the technicians' training course. Technicians who fail to serve the required period in the designated project area should be required to reimburse the DSA for the full cost of training received.

3.5 Equipment and Materials

Other than motorcycles, the community promotion activity has no usable program equipment or materials. Also originally there were no specific plans for purchasing audio-visual equipment and materials for the project. However, most of the funds budgeted for training and education ($163,000) remain to be disbursed and could conceivably be used to purchase audio-visual and related community promotion equipment and materials.

Recent discussions have been held on the need for purchasing a mobile audio-visual unit. The consultant understands that this proposed unit would be fully self-contained with complete audio-visual equipment and materials and a power source and would be operated by a team of community promotion and audiovisual technicians.

On the surface, this mobile unit would seem to be an obvious solution to the inadequacies of the community promotion activity. However, past experience with rural projects where sophisticated equipment had been introduced indicates that project implementation has often become hostage to breakdowns of the very equipment intended to improve project effectiveness. In the specific case of the MOH/Bolivia, the consultant was dismayed to observe the

skeletal remains of a large number of inoperative vehicles collected at the regional offices in Cochabamba and Sucre. This is an indication of the difficulty experienced by the MOH in operating and maintaining its vehicle fleet. Therefore the consultant recommends against the purchase of the mobile audiovisual unit and, in its place, recommends the purchase of the items listed in Appendix G.

Finally, the consultant recommends the acquisition of reference books, manuals, and pamphlets in Spanish on the subjects of water and sanitation and their relationship to health. Each sanitation technicians should be provided with a few basic reference texts and manuals. One of the texts recommended is "Manual de Saneamiento-Vivienda, agua y desechos," EDITORIAL LIMUSA, Balderas 95, Primer Piso, Mexico 1, D.F. Other manuals are available from CEPIS in Lima, Peru. A list of other relevant texts in Spanish should be requested from the WASH project through the Office of Health, Bureau of Science and Technology in AID/Washington.

USAID and DSA should consider making improvements in the latrine installation activity. While the use of the DSA fabricated concrete slab is a vast improvement over the practice of indiscriminate excreta disposal, some villagers have expressed the desire to install flush systems and septic tanks. This will be an expensive investment that only a small percentage of the villagers will be able to afford. Rather than encourage such an expensive change in sanitary installations, the consultant recommends the installation of the "Colombian" type, porcelain pour-flush, seat-type toilet. This toilet can be imported from Colombia at a reasonable cost and is a vast improvement over the concrete slab. It is easy to keep spotlessly clean, odorless, and requires only two to three liters of water for flushing. Thousands of these pour-flush toilets are being used in a USAID-sponsored rural sanitation project in Honduras with outstanding success. Information regarding this project and the Colombian manufacturer appears as Appendix H.

3.6 Community Promotion Program

In March 1981, a three-person team under a technical cooperation agreement among the Pan American Health Organization, the German Technical Cooperation Agency, and the Government of Bolivia prepared a community promotion plan for the rural water supply and sanitation sector. A copy of the relevant parts of this plan entitled, "Propuesta para el Desarrollo del Componente de Participacion Comunitaria en el Sector de Abastecimiento de Agua Potable y Saneamiento Rural" appears in this report as Appendix I.

Although this plan was prepared for a nationwide program, the basic analysis, conclusions and recommendations are relevant to and, on a reduced scale, appropriate for use in the rural sanitation project. An adaptation of this plan supplemented with the existing "Guia para Formacion y Funcionamiento de las Juntas Administradoras de los Sistemas de Abastecimiento de Agua Potable" and "Esquema para Estudio Exploratorio de la Comunidad" developed by the DSA should be used to form the framework of the community promotion component of the rural sanitation project.

Because of the continual turnover of junta members, rather than holding formal training courses on a periodic basis, the consultant recommends on-the-job training for junta members provided in each participating community by the sanitation technicians assisted and guided by the community promotion supervisors.

3.7 Sanitation Technician Duties

It is recommended that the sanitation technicians duties be formalized as described in "Propuesta para el Desarrollo del Componente de Participacion Comunitaria en el Sector de Abastecimiento de Agua Potable y Saneamiento Rural." Generally, the sanitation technician will be directly responsible for all community promotion activities in his assigned geographical work area.

The following should be included among the sanitation technician's project related activities:

a) Sale of latrine slabs;
b) Installation of latrines;
c) Formation and training of Water Committees;
d) Through the Committees, acquire local construction materials;
e) Through the Committees, provide volunteer labor for system construction;
f) Formation and training of juntas;
g) Participate in all monthly junta meetings;
h) Make monthly water system inspections with junta members;
i) Make monthly inspection and report on financial and operating records of juntas; and
j) Train and supervise new junta members as they are elected.

Payment of incentive allowances to sanitation technicians should be made contingent upon the satisfactory performance of the duties described above.

3.8 Summary

As noted in the introduction, this report focusses on the community participation component of the project. It does not address broader project issues such as overall project management, procurement of construction materials, implementation schedules, or the timely provision of funds. Therefore the recommendations should be considered within the context of an overall project strategy. The planning of this strategy should be among the first topics to be addressed by the project advisor provided under the technical assistance component of the project.

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Agency for International Development, Project Impact Evaluation Report No. 24, PERU: CARE OPG Water Health Services Project, AID/W, October 1981.

Agency for International Development, Project Implementation Letter No. 23, AID Loan No. 511-U-0458 and AID Grant No. 511-0458, USAID/Bolivia, Dec. 21, 1983.

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Republica de Bolivia, Grupo Nacional del Decenio del Abastecimiento de Agua Potable y Saneamiento, Propuesta para el Desarrollo del Componente de Participacion Comunitaria en el Sector de Abastecimiento de Agua Potable y Saneamiento Rural, La Paz, Marzo 1981.

Republica de Bolivia, PLANASBA, Informe de Asesoria sobre Operaciones y Mantenimiento, La Paz, 19 de Octubre al 20 de Noviembre de 1981.

Republica de Bolivia, DSA, Ministerio de Prevision Social y Salud Publica, Esquema para Estudio Exploratorio de la Comunidad, La Paz (no date).

Republica de Bolivia, DSA, Ministerio de Prevision Social y Salud Publica, Guia para Formacion y Funcionamiento de las Juntas Administradoras de los Sistemas de Abastecimiento de Agua Potable, La Paz, (no date).

WASH, Reprogramming of the Rural Sanitation Project in Bolivia, WASH Field Report NO. 47, Arlington, Virginia, August 1982.

APPENDIX A

OFFICIALS CONTACTED

USAID/BOLIVIA

Lee R. Hougen, Chief, Office of Health and Human Resources

Rene Pena y Lillo, Staff Engineer

Michael Lofstrom, Loan Officer

DSA/MOH

Jose Zuleta, Chief Engineer

Enrique Torrico, Deputy Chief

Jorge Ortega T., Chief of Community Promotion

Juan Carlos Ricaldez, Regional Engineer, Cochabamba

Edgar Caviedes, Regional Engineer, Sucre

Pedro Lobo, Technician Training Course Supervisor

Freddy Mendes, Field Supervisor, Cochabamba

Nestor Perez, Field Supervisor, Sucre

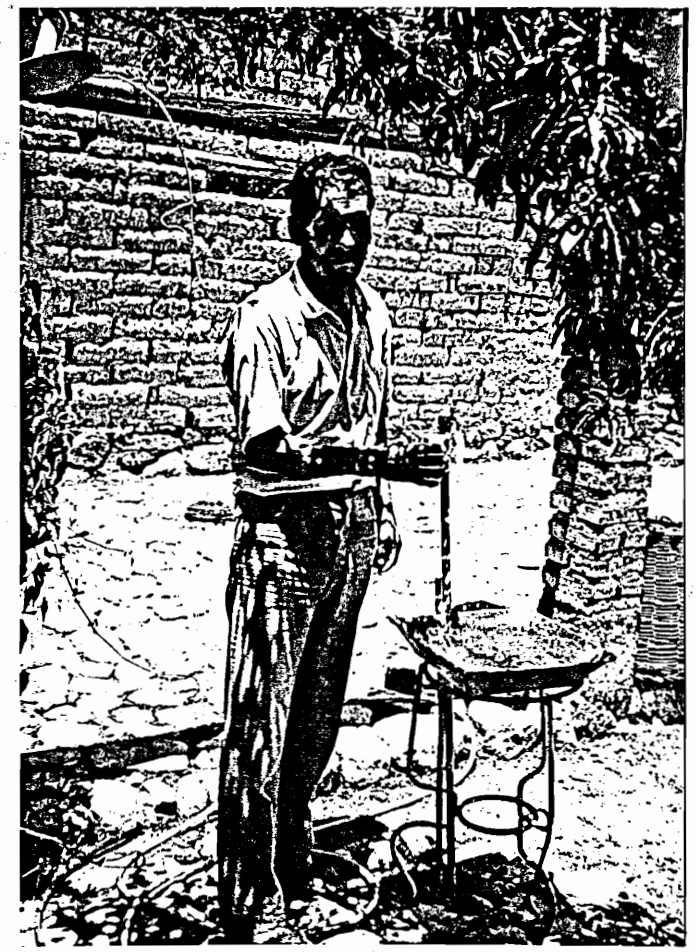
Raul Moore, Field Supervisor, Sucre

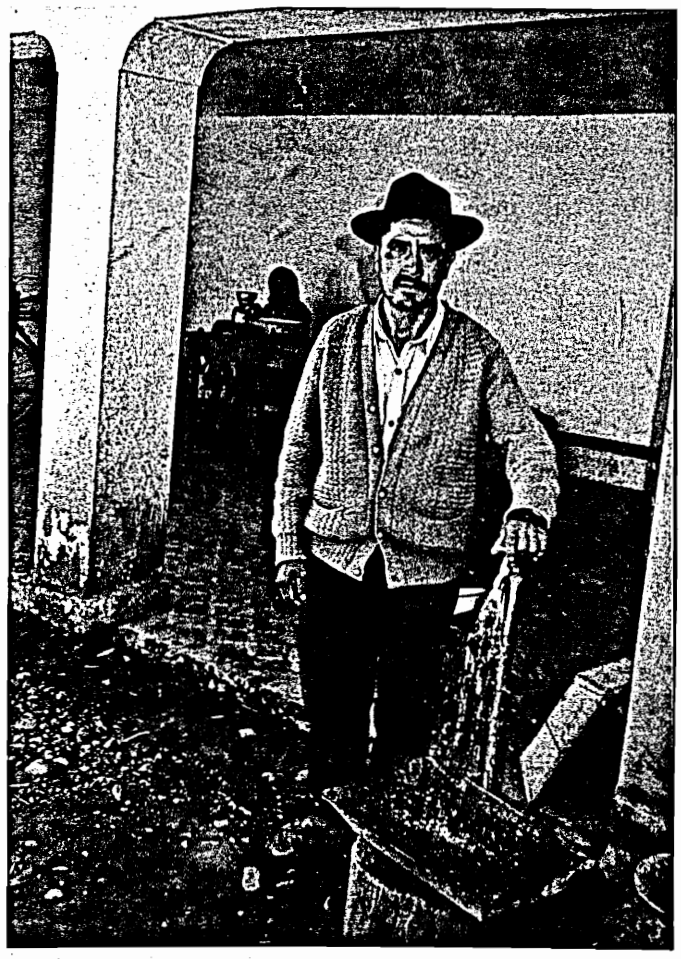
Jorge Heinrich, Regional Engineer, La Paz

APPENDIX B

PHOTOGRAPHS

Typical Junta.



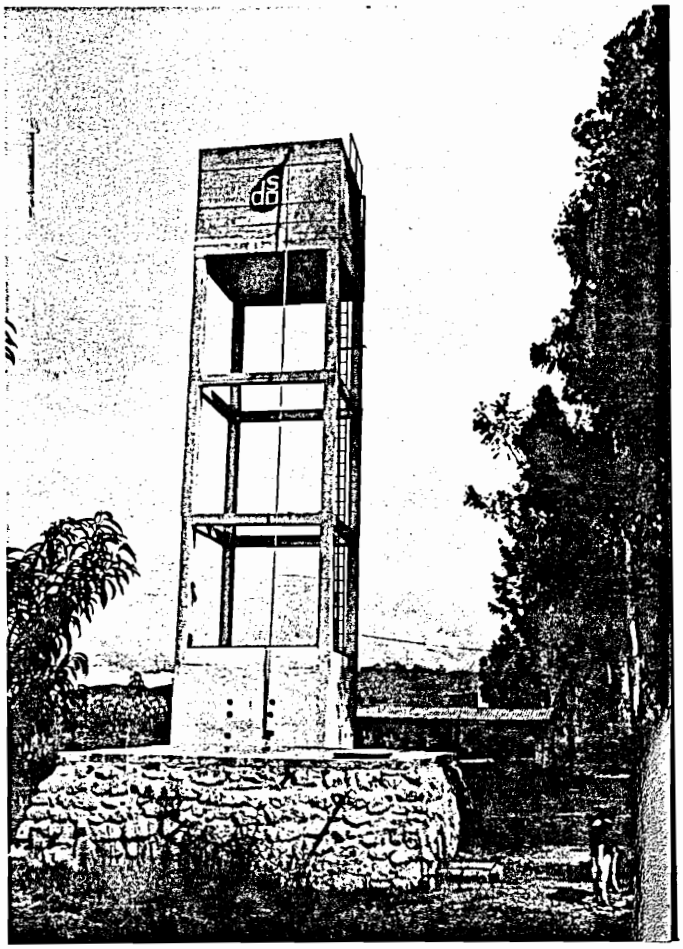


House connection faucets.

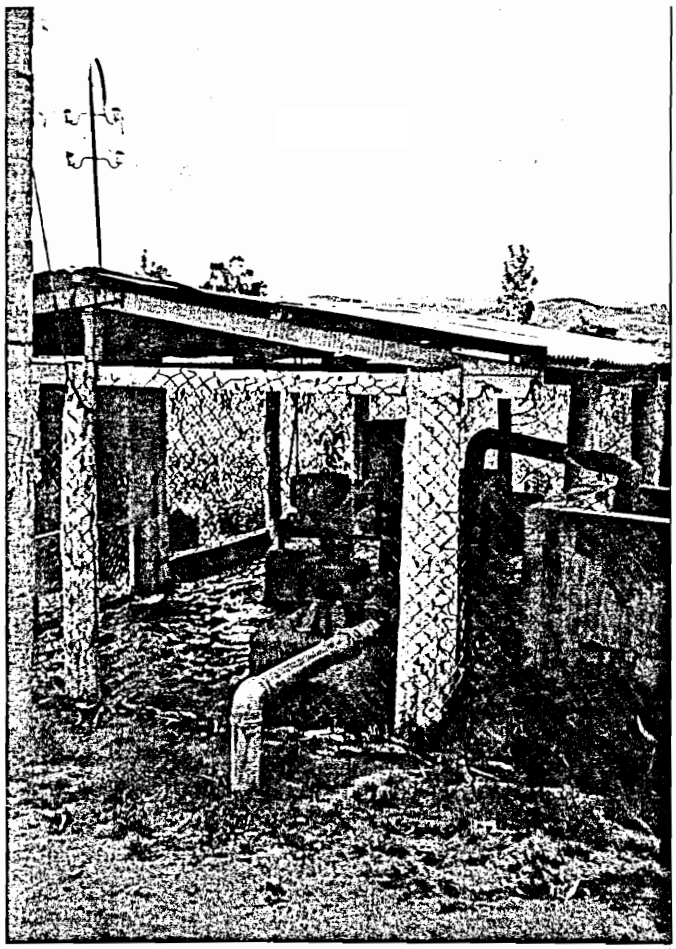
Villager collecting spring water. Water system not operating.

Masonry storage tank under construction.

Inspecting a spring box.

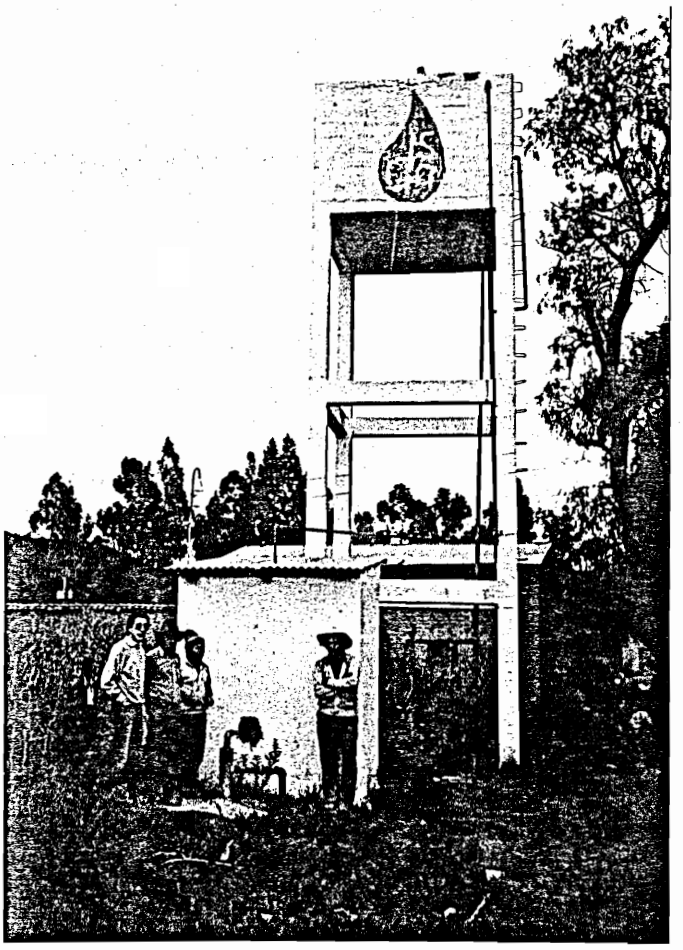


Water Tanks.



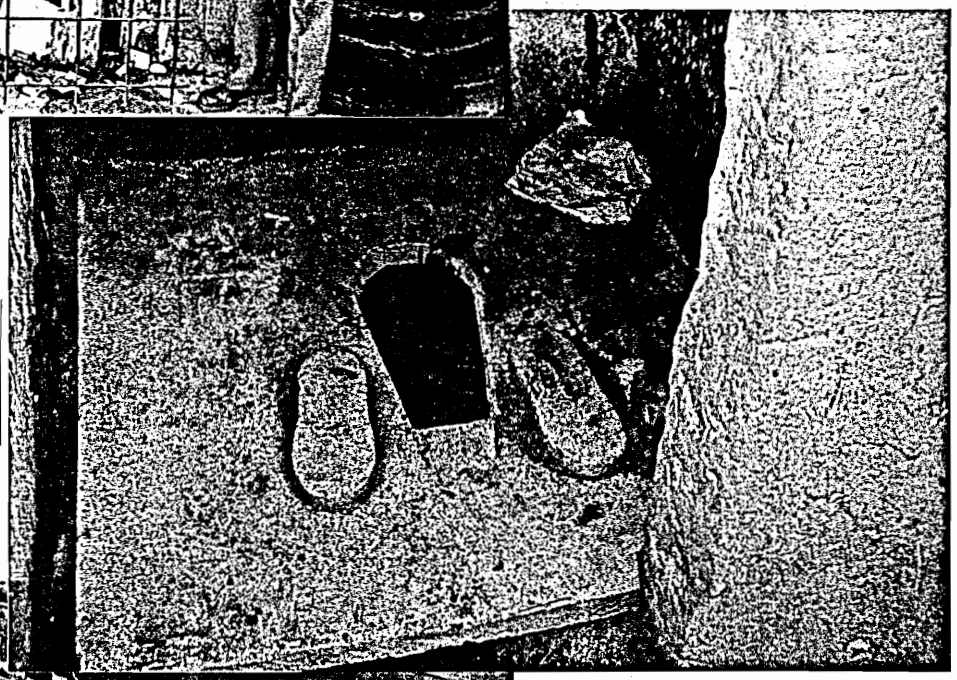
Drilled Well and Pump.

Inside pump house.

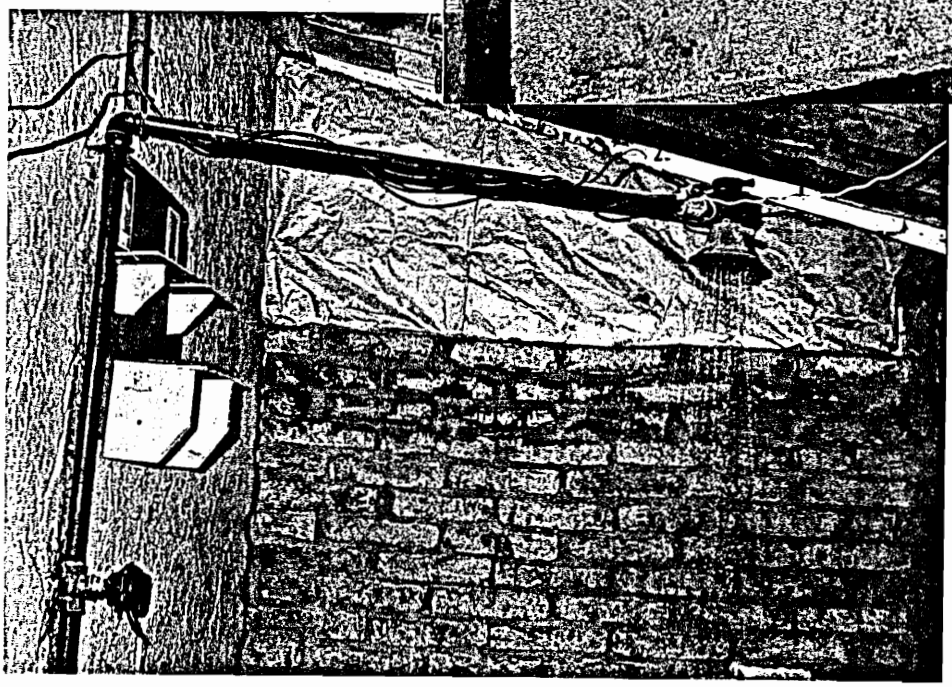


Pump house and elevated distribution tank.

Latrine fabrication materials and finished slabs.



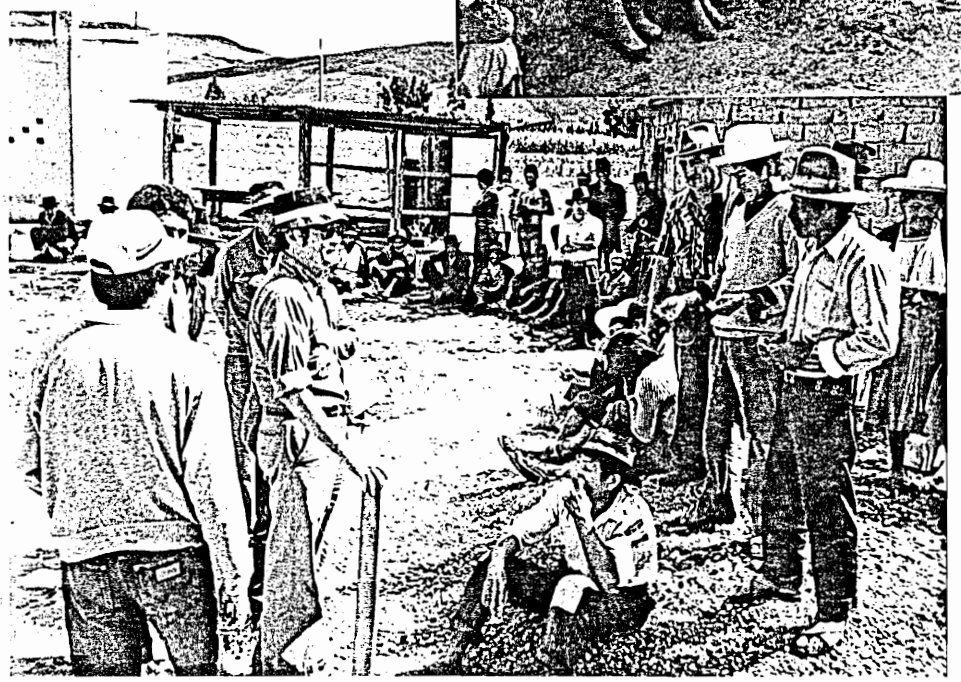
Latrine slab installation.



Shower installation with water heater.

DSA officials meeting with villagers.

Village women participating in meeting.



DSA officials and consultant attending Junta meeting with villagers.

APPENDIX C

PROJECT BUDGET

Loan/Grant Balance Remaining
($000)

Category	AID Constribution*			Disbursement/ Obligation			Balance Remaining (10/31/83
	Loan	Grant	Total	Loan	Grant	Total	
.Technical Assistance	358	310	668	0	83	83	585
.Training/Education	175	-	175	12	-	12	163
.Systems Construction	3,442	-	3,442	851	-	851	2,591
a) Equipment	683	-	683	118	-	118	565
-Vehicles/Drilling	488	-	-	-	-	-	-
-Engineering/Drafting	171	-	-	-	-	-	-
-Office Equipment	24	-	-	-	-	-	-
b) Materials	2,174	-	2,174	733	-	733	1,441
c) Contracted Labor	585	-	585	3	-	3	582
d) Skilled Labor	-	-	-	-	-	-	-
e) Unskilled Labor	-	-	-	-	-	-	-
.Support Costs	25	-	25	0.4	-	0.4	24.6
a) Fuel and Lube	-	-	-	-	-	-	-
b) Operating Expense	-	-	-	-	-	-	-
c) DES Personnel and Per Diem	-	-	-	-	-	-	-
-Engineeirng	-	-	-	-	-	-	-
-Office Support	-	-	-	-	-	-	-
d) Warehouse Construction	-	-	-	-	-	-	-
e) Evaluations	25	-	25	0.4	-	0.4	24.6
TOTAL	4,000	310	4,310	863.4	83	946.4	3,363.6

* Inflation (8%) and Contingencies (10%).

APPENDIX D

Figure 1

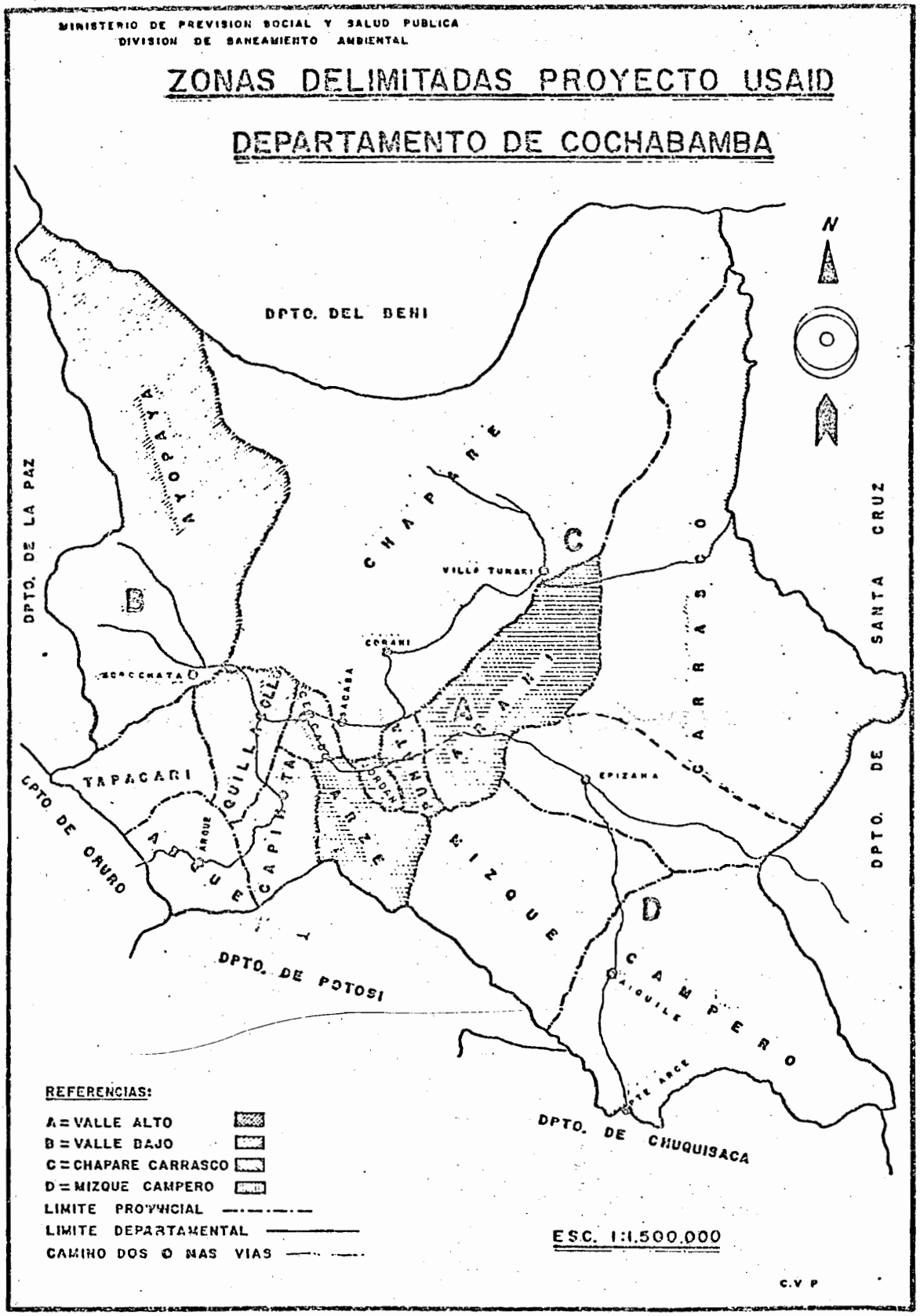


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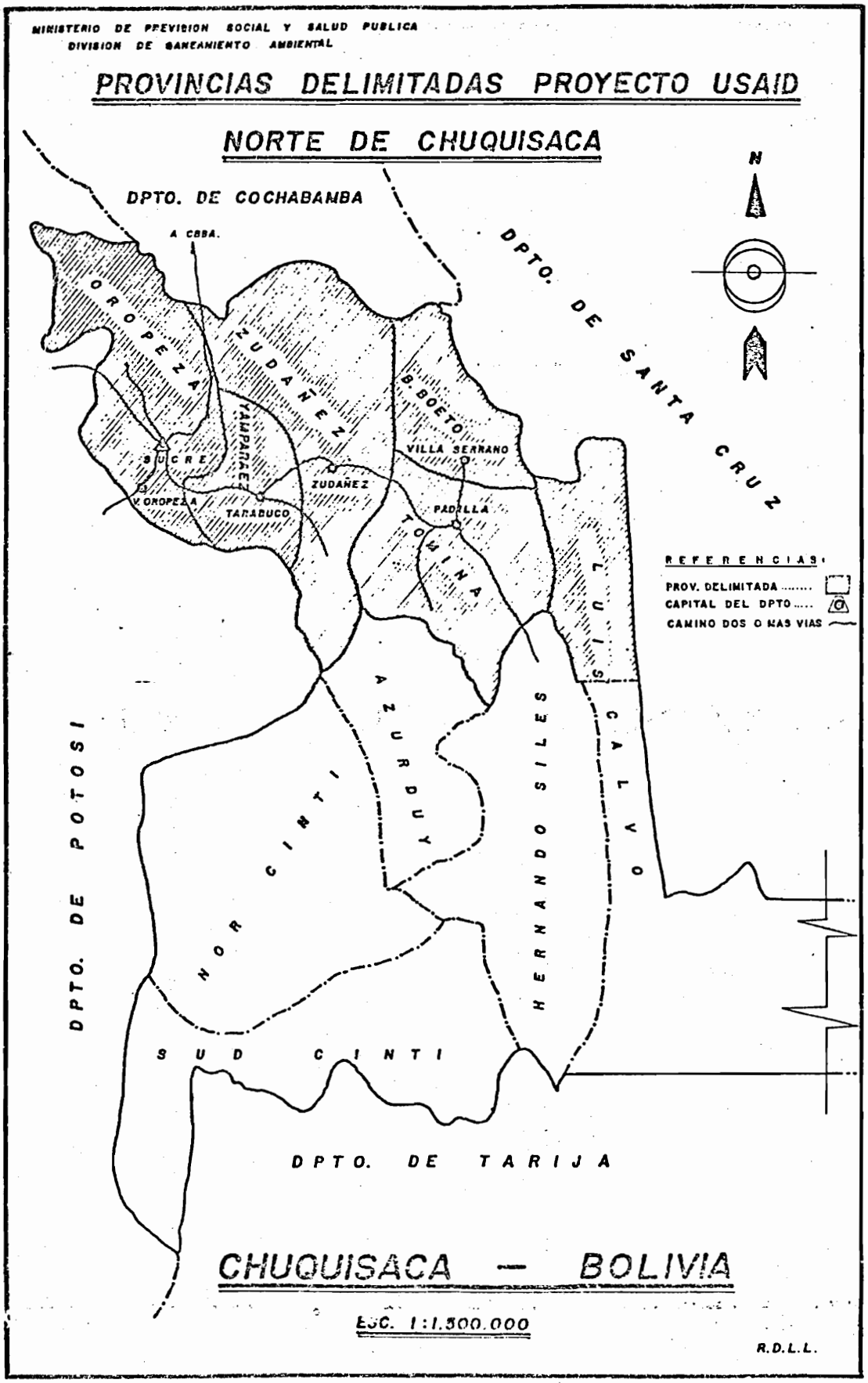
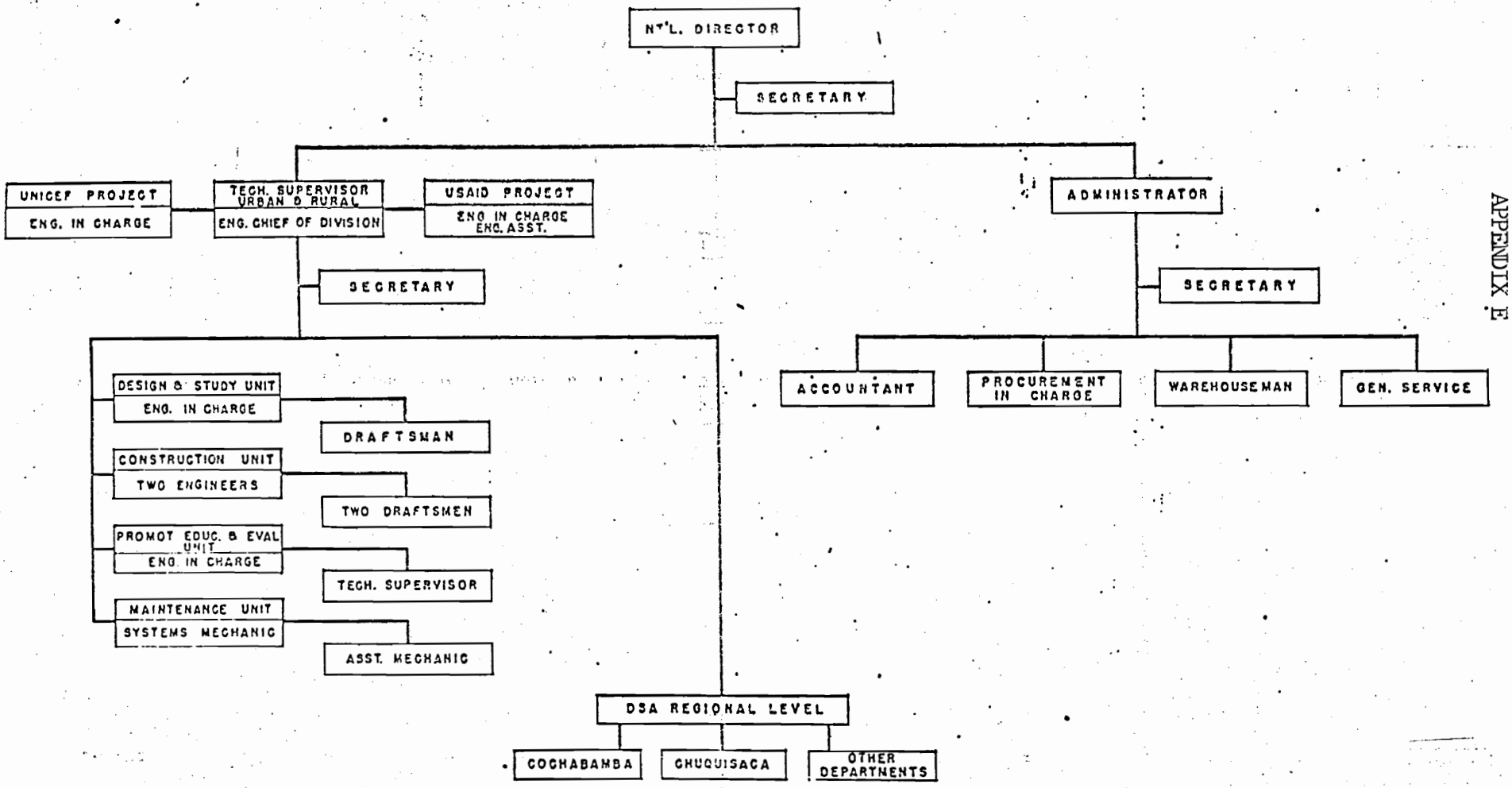
Figure 2

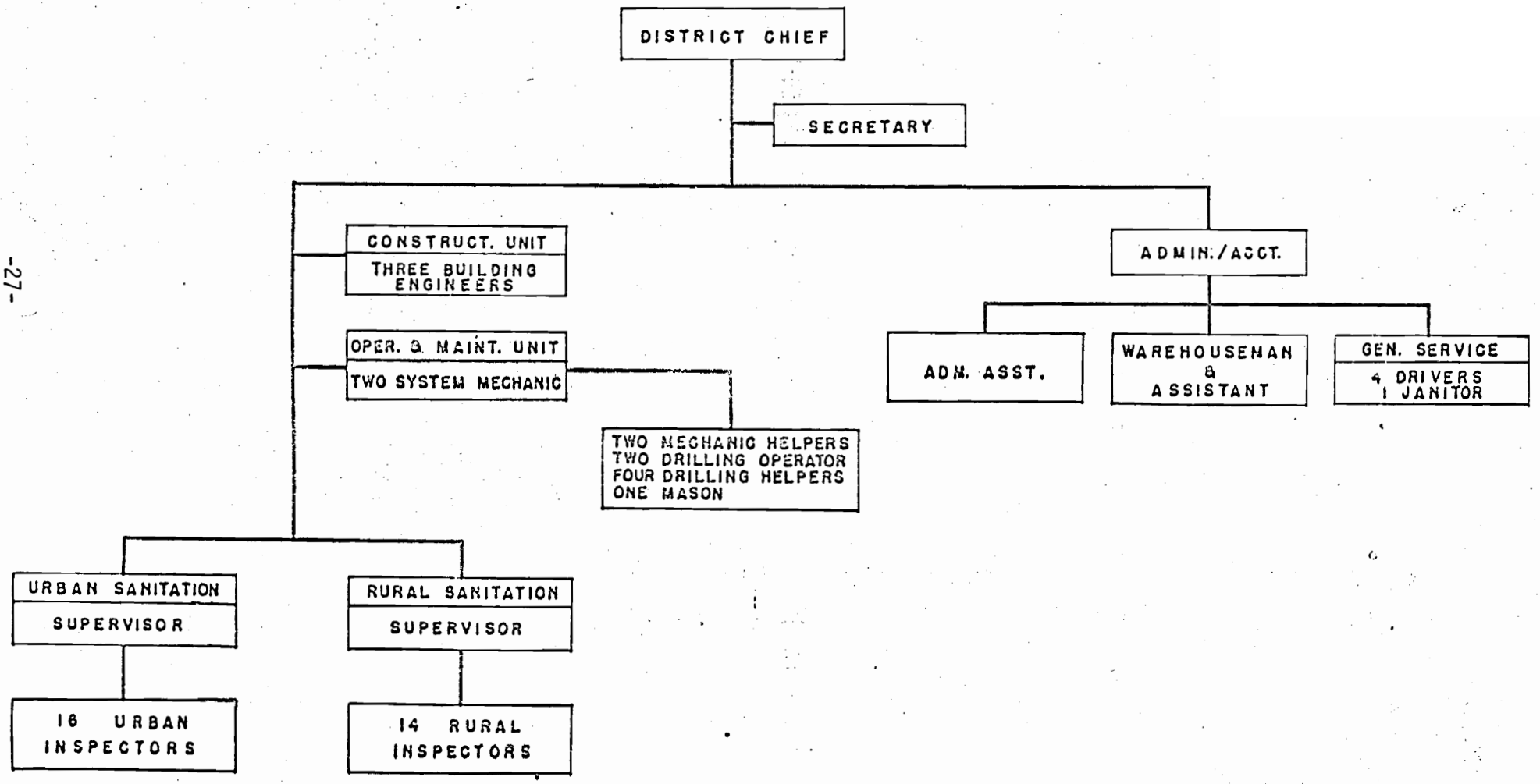

MINISTERIO DE PREVISION SOCIAL Y SALUD PUBLICA
DIVISION DE SANEAMIENTO AMBIENTAL
PROVINCIAS DELIMITADAS PROYECTO USAID
NORTE DE CHUQUISACA
DPTO. DE COCHABAMBA
A CBBA.
DPTO. DE SANTA CRUZ
N
OROPEZA
NUDAÑEZ
YAMPARAEZ
B. BOETO
VILLA SERRANO
SUCRE
V. OROPEZA
ZUDAÑEZ
TARABUCO
PADILLA
TOMINA
LUIS CALVO
REFERENCIAS:
PROV. DELIMITADA
CAPITAL DEL DPTO
CAMINO DOS O MAS VIAS
DPTO. DE POTOSI
NOR CINTI
AZURDUY
HERNANDO SILES
SUD CINTI
DPTO. DE TARIJA
CHUQUISACA — BOLIVIA
ESC. 1:1.500.000
R.D.L.L.

RURAL SANITATION PROJECT

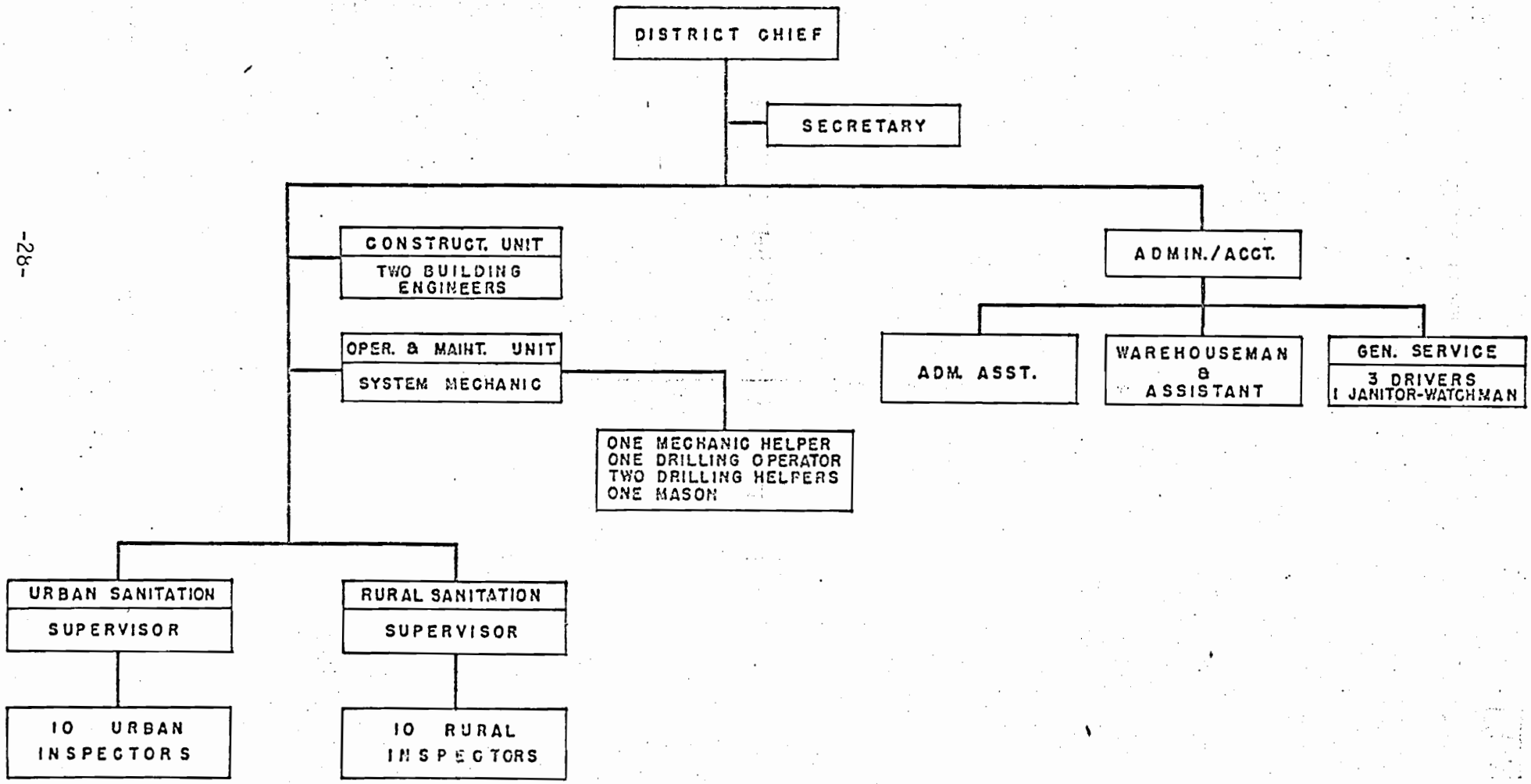
DSA ORGANIZATION CHART



RURAL SANITATION PROJECT
DSA - COCHABAMBA REGIONAL OFFICE



RURAL SANITATION PROJECT
DSA-CHUQUISACA REGIONAL OFFICE



APPENDIX F

RURAL SANITATION PROJECT (511-0458)

OPERATION AND MAINTENANCE STATUS OF WATER SYSTEM VISITED

Town/Date completed	Operation	Maintenance	Comments
1. Sauce Rancho-C July 34, 1981	Fair	Fair	Management was poor under commité who spent equivalent of US$ 1,000 without approval and fled to Argentina. Thieves stole motor-pump. Members paid equivalent of US$ 70 per family for loss of money & pump. Some families using water illegally for irrigation.
2. Banda Arriba Nov. 12, 1981	Fair	Good	Combined irrigation/water supply from drilled well.
3. Hansa Rancho	N/A	N/A	Drilled well system under construction
4. Pocoata Gaja 1980	N/A	N/A	Gravity system. Junta members attending funeral service. None interviewed
5. Chinguri Aug. 19, 1981	Fair	Fair	Gravity system. Pipe section washed out by flood. Pipe replaced. Spring water now turbid.
6. Alto Alianza	N/A	N/A	Project now in latrine installation phase.
7. Takgo Dec. 12, 1982	Fair	Fair	Combined irrigation/water supply from drilled well
8. Mallco Rancho July 18, 1981	Fair	Poor	Drilled well. Pump operating but need Repair.
9. Mallco Chapi	Fair	Fair	Combined irrigation/water supply. Old storage tank too small. New tank under construction.
10. Ancoraime 1979	Poor	Fair	Gravity system. Past & Present junta presidents at odds. Lacked water during drought. Pipe section washed out during flood. Now repaired.
11. Villa Asunción July 19, 1981	Poor	Poor	Shallow drilled well. Pump packing leaking. Cannot operate at full capacity, water becomes turbid.
12. Kasapata/Laimiña	N/A	N/A	Gravity system in testing phase.
13. Chaco 1982	(See comments)		System not operating. Pump house & spring box partially buried by rainstorm
14. La Palma	N/A	N/A	Project in latrine construction phase.
15. Tejahuasi	N/A	N/A	Project in latrine construction phase. Junta members working on riverbank levee.

APPENDIX G

AUDIO-VISUAL EQUIPMENT & MATERIALS

PROCUREMENT REQUEST

ITEM	QTY	EST. PRICE ($)	SUB - TOTAL ($)	(Imports)
1. Movie Projector	7	1,200	8,400	8,400 (s)
2. P.A. Systems	7	600	4,200	4,200 (s)
3. Portable Generators	7	400	2,800	2,800 (s)
4. Movie Films	42	100	4,200	-
5. 35mm Cameras	4	150	600	600
6. 35mm Film (36 frames)	40	10	400	-
7. Film Processing	40	15	600	-
8. Slide Duplicating	300	1	300	-
9. Slide Projectors	6	200	1,200	1,200 (s)
10. Rotafolios	50	20	1,000	-
11. Graphics & Printing	-	-	4,500	-
12. Sanitation Manuals	50	20	1,000	1,000
13. Reference Texts	6 sets	100	600	600
Spare parts (25% -S)			4,150 (S)	
Shipping, ins., etc. (30 %)			10,185	
T O T A L			44,135	

APPENDIX H

DRAFT

WASH FIELD REPORT NO.

HONDURAS

ACCEPTABILITY OF COLOMBIA - TYPE WATER-SEAL LATRINES IN HONDURAS

Prepared for USAID Mission to Honduras
under Order of Technical Direction No. 126

Prepared by:

Charles S. Pineo

December 1982

1. INTRODUCTION

The installation of 14,000 Colombian Type water-seal latrines has been included as part of Rural Water and Sanitation Systems, Honduras No. 522-0166 to test the acceptability of these latrines in the Project area. The latrines are being seen as a status symbol by the villagers and the acceptance is enthusiastic.

I was instructed in OTD No. to investigate the acceptance of the water-seal privy in the areas to be visited as part of my OTD No. 101 responsibility.

This was done during a trip to Santa Barbara, Santa Rosa de Copan, Ocotepeque and San Pedro Sula from November 18 through November 23, 1982. The results of my observations and some recommendations form the body of this report.

2. BACKGROUND

For many years a riser type privy installation has been used in Latin America, whereas in Asia a squat type plate has been used, often with a water-seal siphon. Both have been made of concrete, unattractive and difficult to keep clean.

Several years ago in Colombia, the riser and the water-seal siphon were combined in one stool made of porcelan similar to that used in making the standard toilet. The device is flushed by hand using a small amount of water. The stool is attractive, easy to keep clean and can be installed inside the house with a sloping pipe running from the siphon to a covered pit outside the house.

I first saw the Colombian water seal privy about 6 years ago and immediately started to promote its advantages including the fact that at that time it cost only US$ 3 in Colombia. A sample was brought to the World Bank and later to AID. When AID Project No. 522-0166 was developed for Rural Water and Sanitation Systems in Honduras, the purchase of 14,000 of the Colombia water-seal latrines was included. By September 20, 1982, 1974 of these latrines have been installed. In addition the Project provides for 18,000 of the old type concrete pit privies to be installed, particularly in areas where water is scarce. 1475 of these have been installed September 20, 1982.

In connection with my assignment under OTD No. 101 to analyze the Rural Water and Sanitation System Project No. 522-0166, I have been asked under OTD to study the acceptance of the water-seal latrine in the project area in Honduras and to investigate the need and possibility of its manufacture in Honduras.

3. ACCEPTANCE OF THE COLOMBIA-TYPE WATER-SEAL PRIVY

During the inspection trip made to Santa Barbara, Santa Rosa de Copan, Ocotepeque and San Pedro Sula as part of the diagnosis of Project No. 522-0166, I visited 11 towns and observed a number of installation of

the water-seal privy. Its acceptance, advantages, and disadvantages were discussed with the householders, with the promoters who had helped in the promotion and installation of the privies, with the managers of the project. In every case the response was enthusiastic.

The first observation was that, although the privy building had a door, it was invariably open exposing the shiny white porcelan stool so that everyone could see that the family had one of the modern privies - a status symbol. The privy was always clean. Some people had built a small concrete reservoir just outside the door to have water available for flushing the privy. In a few cases a hose had been run from the general use faucet to flush the privy.

A special case was found in a school where a goose-neck faucet had been installed with a valve so that the faucet could be swung out of the way to use the privy and then swung back to flush the privy.

Whereas formerly the privy had been installed at a considerable distance from the house, all of the water-seal privies were installed conveniently near the house. One was installed inside the house.

In a few cases it was noted that the old concrete privy riser had been damaged in order to get a modern water-seal privy.

Formerly the privy program using the unattractive concrete riser had been the most difficult part to implement of any water supply and sanitation project. Villagers had always been anxious to get their water system but could not see the advantage of a sanitary privy. Their grandfathers had always used the corn field--why change. In the 522-0166 project area villagers are asking for their water systems in order to be able to have their water-seal privies. People outside the project area are asking where they can buy the water-seal privies.

In one village where 175 water-seal latrines had been installed under the project, the Town Council organized a fiesta to inaugurate the installation of the latrines, similar to the inauguration which had been arranged for the water supply system. This is the first time to my knowledge, that the installation of latrines has been so important in the minds of the people that an inauguration was arranged by the villagers.

Similarly, in a second village where 200 water-seal latrines are being installed by the villagers, they are already making arrangements to celebrate the addition of these attractive latrine for their own convenience.

The acceptance of the water-seal privy has been so enthusiastic that the Ministry of Public Health has already asked that the project number of concrete privies be reduced by 8,000 to 10,000 and that the water-seal privies be increased by 8,000 to 22,000.

4. LOCAL MANUFACTURE OF COLOMBIA-TYPE WATER-SEAL PRIVY

The need for and possibility of local manufacture of the Colombia type water-seal privy was discussed with Mr. Peter Deinken, Office of Environment and Technology, USAID/Honduras on November 30, 1982. He was very much interested in the possibility of local manufacture of the water-seal privy but had not been able to evaluate the need nor the availability of facilities for its manufacture. He had a recollection of the existence of a firm in Nicaragua that used to make porcelan bathroom fixtures but felt that it was no longer in business. He also remembered that a similar outfit at one time worked in San Pedro Sula, Honduras but a check of the telephone directory failed to locate the company.

A check of the USAID files located correspondence dated october 2, 1980 (see attachment) investigating the possibility of local manufacture of a water-seal latrine. Two companies responded, namely:

1. Vitro Fibras
   Claudio Guell, General Manager
   San Pedro Sula 54-27-33
   Offered a fiber-glass water-seal latrine at $9.60 for 4000. In a telephone conversation on December 10, 1982, Mr. Guell said that the company was still interested in making a fiber-glass latrine but that the quotation would have to be reconsidered.

2. HONDULIT
   Also located in San Pedro Sula.
   In September 1980 this company quoted $19.50 for a water-seal latrine made of asbestos-cement. The company was not reached in December 1982.

Mr. Deinken said that he would welcome a feasibility analysis of the need and possibility of local manufacture of the Colombia type water-seal privy in Honduras and said he would be happy to collaborate in such an analysis.

Careful consideration should be given to the cost of manufacture in Honduras. Unless it is possible to make the privy as an addition to an ongoing plant making quantities of other types of porcelan fixtures it is doubted that the Colombian price of US$6.25 delivered in Honduras can be met or even approached. It is not known how long the Colombia manufacturer will maintain this price, nor whether he could fill the demand if Honduras should decide to order large quantities for installation in other areas of the country.

Regardless of these considerations, the acceptance of the Colombia type water-seal privy in Honduras is such a break through in meeting the sanitary needs for a privy which will be used that it is felt that everything possible should be done to make the privy easily available for sanitation programs throughout the world.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 The Water-seal Colombia type rpivy has proven such a success in Honduras as well as in other places, in fact is providing a unique breakthrough as a method for safe, sanitary convenient, acceptable excreta disposal, that it is recommended that its use be specified for other programs in Honduras as well as in other areas of the world, particularly in Latin America.

5.2 As Colombia appears to be the only source of supply at the present time, it is recommended that serious consideration be given to its manufacture in other countries.

5.3 To ascertain the feasibility of establishing other manufacturing facilities, it is recommended that studies be made (a) of the need for water-seal privies in the various Latin American countries, the availability of facilities to make the privies and to (b) stimulate the manufacture of the privies in individual countries or on a regional basis as appears most feasible. It is recommended that the investigation be carried out first in Honduras with the collaboration of Mr. Peter Deinken.

5.4 As the people in many Asiatic countries already have the custom of using a squat type water-seal privy, it is recommended that a study be made to ascertain the acceptability of the Colombia type water-seal privy as a means of facilitating the advance of privy programs in that area of the world. It found acceptable the manufacture and distribution of the privies should be stimulated.

5.5 It is recommended that similar investigations should be made in Africa.

ATTACHMENT A

ACTION MEMORANDUM

Date: October 7, 1980

TO : John R. Oleson, Director
Ray Baum
FROM : Ray Baum, PCR

SUBJECT: Purchase of Water Sealed Commodes
Justification for negotiated competitive procurement, rather than formally advertised procurement, for the Rural Water and Sanitation Project 522-U-0166

In early May of 1980, the Mission sent a cable (#3604) to AID/W requesting assistance in obtaining bids from potential manufactures of water sealed commodes. AID/W was advised that interested firms should submit to USAID/H a description of their product and a unit price based on 4,000 commodes. The cable to AID/W stated that any interested firm should submit a bid by July 18, 1980 and that contracts were expected to be awarded by August 8, 1980. In addition, the same cable requested AID/W to include the aforementioned notice in the Commerce Business Daily if potential supplies existed within the U.S.

In early July 1980, AID/W responded with cable #173507 stating that since U.S. competitive capability does exist an "All Posts" cable was not sent, and that SER/COM Washington did contact the three potential U.S. suppliers advising them to get in touch with the Mission if additional information was required. Of the three U.S. firms that were notified, only one contacted the Mission and Roger Russell provided the requested information on July 11, 1980.

While the Mission was waiting for AID/W response, we managed to stimulate interest with Hondurans firms to explore the possibility of locally manufacturing water sealed commodes. Two of the firms actually produced prototypes and submitted quotes either directly to the MOH or USAID.

Having identified a sufficient number of potential suppliers including the U.S. and Columbian manufactures, the Mission sent AID/W a follow-up cable #4521 on July 15, 1980 requesting that AA/LA waive referenced requirement for U.S. publication for procurement and authorize purchase based on direct quotes from all the identified manufactures. Although AID/W did not officially respond to this cable, Steve Jacobson mentioned to Peter Orr that due to the large amount, $140,000 which was the total estimated value of 14,000 units, that it probably would be

faster to follow normal advertising procedures rather than seek a waiver. Jacobson did not realize that we were only seeking to procure 4,000 units. After receiving this information, I proceeded to draft a notice for the AID Financed Export Opportunities Bulletin and the Commerce Business Daily. (See attached notice). However, Ramiro Lanza advised me that since all potential U.S. suppliers have been notified and the procurement is for 4,000 units instead of the 14,000 and the total estimated value is $25,000 rather than $140,000, direct quotes from the identified manufactures is sufficient. Sr. Lanza also felt that it would be advisable to individually recontact the three U.S. firms to give them another opportunity to submit bids.

On September 9th, I contacted the aforementioned firms, of which two expressed an interest to bid. The third firm was not interested. Both of the interested firms agreed to submit a bid by September 19, 1980. Both firms stressed that on such a short notice they would have trouble accurately estimating freight so we agreed to accept quotes FOB factory plus freight.

Following is a list of quotes based on 4,000 units:

FIRM	UNIT PRICE	FOB
*Belson MFG. Co.	$64.00	Factory (Aurora-Illinois)
Todd Enterprises	$20.00	New York
Mansfield Sanitary Inc.	---	(Did not present quote)
*Hondulit	$19.50	S.P.S.
Vitro Fibras de Sula	$ 9.50	S.P.S.
MANCESA of Columbia	$ 6.25	Tegucigalpa

Since all potential suppliers were informed that the bid would be awarded on appropriate product quality as well as price, representatives from the MOH, SANAA, and USAID analyzed the various prototypes and determined tha t he unit submitted by MANCESA was superior in quality as well as being the low bid.

* Quotes were received through telephone conversations from the owner of BELSON MFG. CO. and HONDULIT INC. by myself and Ing. Girón respectively.

RECOMMENDATION

On the bases of the aforementioned events, I recommend that you authorize the awarding of a contract to MANCESA for the direct procurement of the 4,000 water sealed commodes.

Approved John R. Olson

Disapproved _____

Date OCT 7 1980

Cleared by: PCR/POrr (in draft)
ENG/RRussell (in draft)
MGT/RLanza (in draft)
CONT/LEckersley (in draft)
DMD/LRuelas (in draft)
RHMO/HStutsman* (in draft)

* Method of receiving quotation is acceptable in this case.- 10/8/80

SISTEMA DE EVACUACION

Si la taza campesina se instala dentro de la vivienda, el pozo se excava fuera y toma la forma y la disposición de un pozo negro permeable. La distancia entre la taza campesina y el pozo negro debe ser corta, de lo contrario, la tubería de desague sería demasiado largo y se obstruría al poco tiempo, debido a la pequeña cantidad de agua que se utiliza para arrastrar las excretas desde la taza. La tubería de desague debe presentar una pendiente de 5% como mínimo.

En las regiones donde el nivel de las aguas subterráneas, es elevado e impide el buen funcionamiento de los pozos profundos, se puede sustituir el pozo por un foso séptico. Este sistema es por supuesto muy caro, para casi todas las zonas y colectividades rurales. Hay que advertir que con ese sistema se necesita además una zona de evacuación subterránea para el afluente del foso séptico.

Si se dispone de alcantarillado, se hace la instalación, como para un sanitario común y corriente. La taza campesina se conecta a la alcantarilla, mediante un semi codo de 3 pulgadas de diámetro.

EMPLAZAMIENTO

Cuando se utilizan correctamente, las letrinas de cierre hidráulico, reunen todas las condiciones sanitarias y pueden instalarse dentro de la propia vivienda. Ciertos factores técnicos relativos al emplazamiento del sistema de evacuación, impiden a veces esa disposición tan favorable. Sin embargo, incluso en ese caso, es posible situar dichas letrinas muy cerca de las casas a las que prestan servicio, circunstancia que permite su utilización regular, haga bueno o mal tiempo.

INSTRUCCIONES GENERALES PARA LA CONSTRUCCION DE POZOS DE ABSORCION

El zanjo debe excavarse a una distancia no menor de 15 mts., de cualquier fuente de agua y a unos 5 mts. de la vivienda. El tamaño del zanjo varía de acuerdo al grado de porosidad del terreno en que se vaya a construir, para lo cual nos podemos guiar por - pruebas de infiltración, o simplemente guiarnos en una forma más rudimentaria, calculando el tamaño del zanjo, por el color de la tierra. La mayor parte de las tierras, contienen compuestos de hierro, que al igual que el metal en herramientas y maquinarias, queda expuesto alternativamente al aire y al agua y se oxida para adquirir color café rojizo. Por lo tanto si una tierra muestra uniformemente un color café rojizo o amarillento, esto indica que hay movimientos alternados de aire y agua en ambos sentidos y que tales tierras poseen características recomendables de absorción. En el otro extremo se tienen los suelos grisáceos o moteados, que muestran que no tienen condiciones de oxidación o que sufren movimientos muy restringidos de aire y agua, poseyendo características deficientes de absorción.

PRUEBAS DE INFILTRACION

En el sitio propuesto para pozos de absorción, se deben verificar cuatro o más pruebas, en excavaciones separadas, uniformemente espaciadas. Las pruebas se hacen en las siguientes cuatro etapas:

1. Se excava un zanjo de 0.30 mts. por 0.30 mts. con paredes verticales, hasta alcanzar la profundidad proyectada para los pozos de absorción.

2. Se limpian con cuidado el fondo y las paredes del zanjo para eliminar superficies sucias o grasosas, que dificulten ó impidan la infiltración del agua. Se extrae todo el material suel-

to y se deposita arena suelta o gravilla fina hasta obtener un espesor de 5 cms. en el fondo, lo que servirá de filtro para el agua.

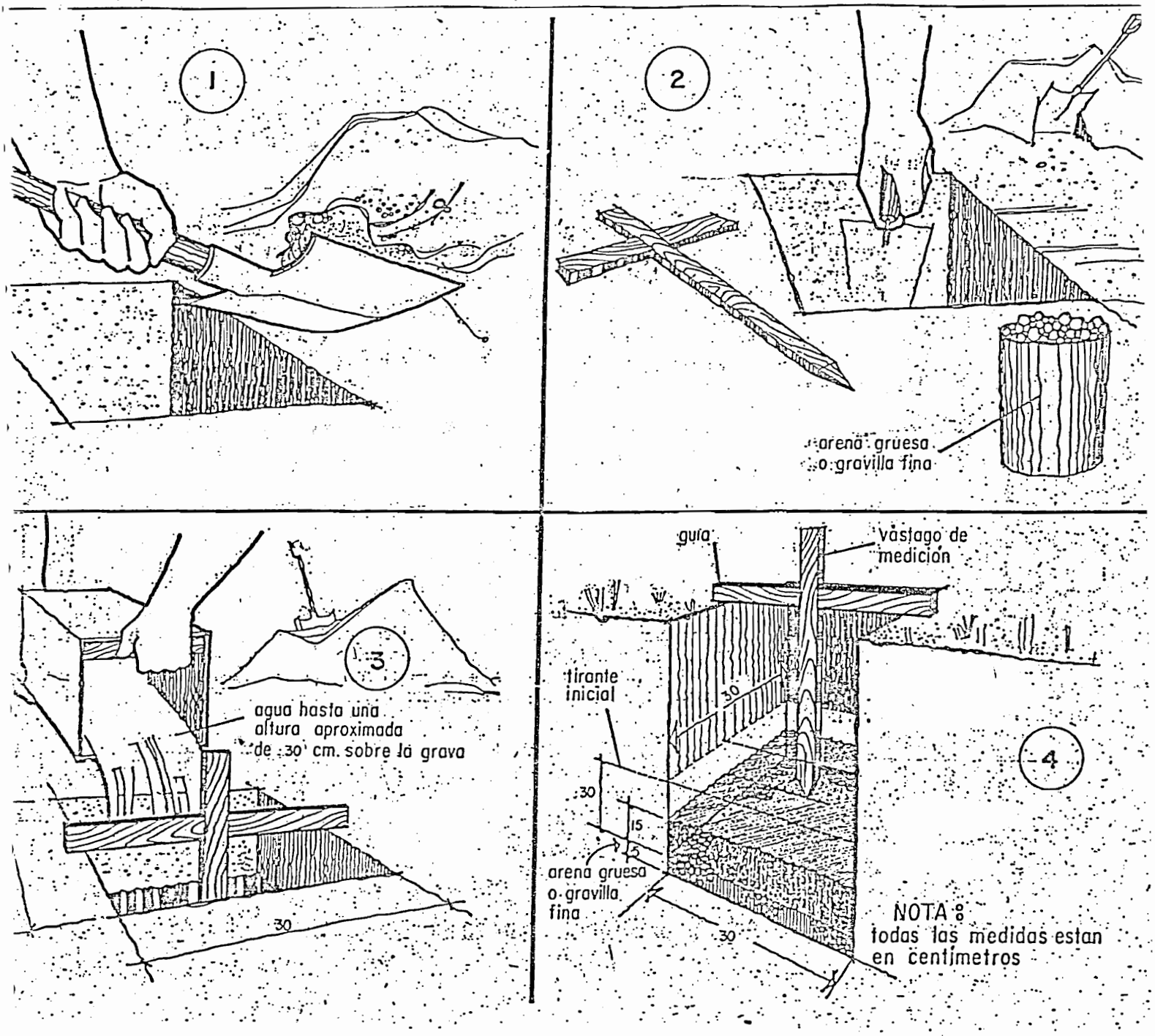
3. Se vierte agua en el fondo hasta una altura aproximada de 30 cms., sobre la grava, en la mayoría de los suelos es necesario agregar agua, a modo de mantenerla dentro del hoyo durante dos horas, cuando menos y de preferencia toda la noche. (en suelos arenosos, de gran capacidad absorbente, no es necesario esta etapa).

4. 24 horas después de haberse colocado el agua, se obsrvará si permanece en el zanjo. Si tiene un tirante mayor de 15 cms. la prueba indica terreno inapropiado. Si la cantidad es menor o el agua se resumió totalmente, agréguese la suficiente hasta obtener un tirante de 15 cms. sobre la grava.

Debe observarse enseguida el tiempo que tarda esta agua, para infiltrarse totalmente. La determinación del tiempo promedio que se requiere para que el agua baje 2.5 cms. se obtiene diviviendo el tiempo entre el número de pruebas.

Estas cuatro etapas, se repiten por separado, en cada una de las excavaciones hechas.

pruebas de infiltración



CONSTRUCCION DEL FOSO SIMPLE

A.- LOSA

MEDIDAS: 90X110X5

CONCRETO 1: 2: 3 agregados con impurezas

1: 2: 4 agregados limpios

HIERRO Ø 1/4"

ALAMBRE #16

B.- BROCAL

DE: LADRILLO O PIEDRA

MEDIDAS: ANCHO 15 cm.

ALTO 30 cm. (15 cm.dentro del Foso y 15 cm.fuera del Foso)

C.- FOSO

MEDIDAS: LARGO 90 cm.

ANCHO 70 cm.

PROFUNDO 250 cm. a 300 cm.

D.- CONEXION

2 METROS DE TUBERIA PVC Ø 3" ó 4"

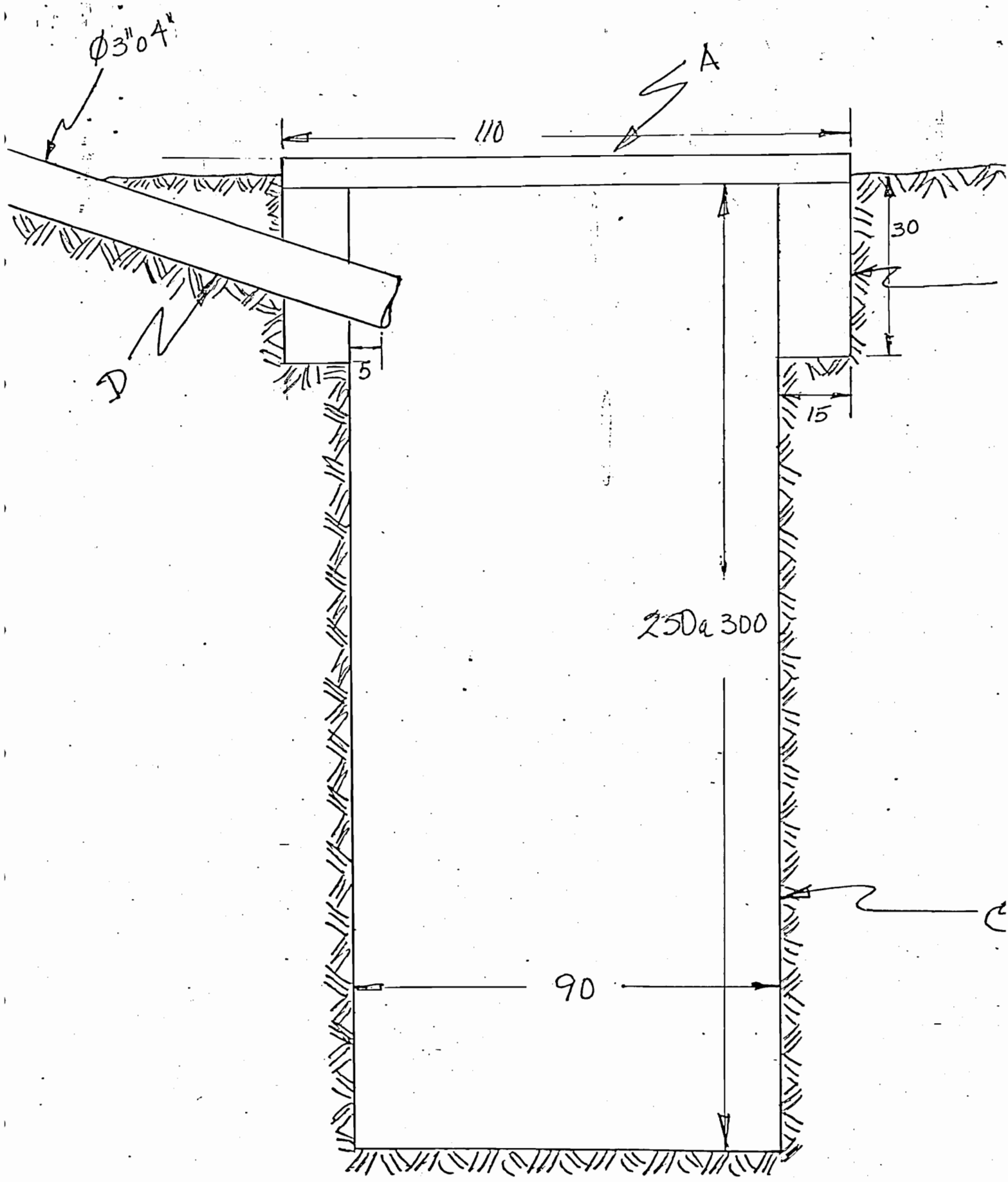


FIG # 4 FOSO SIMPLE

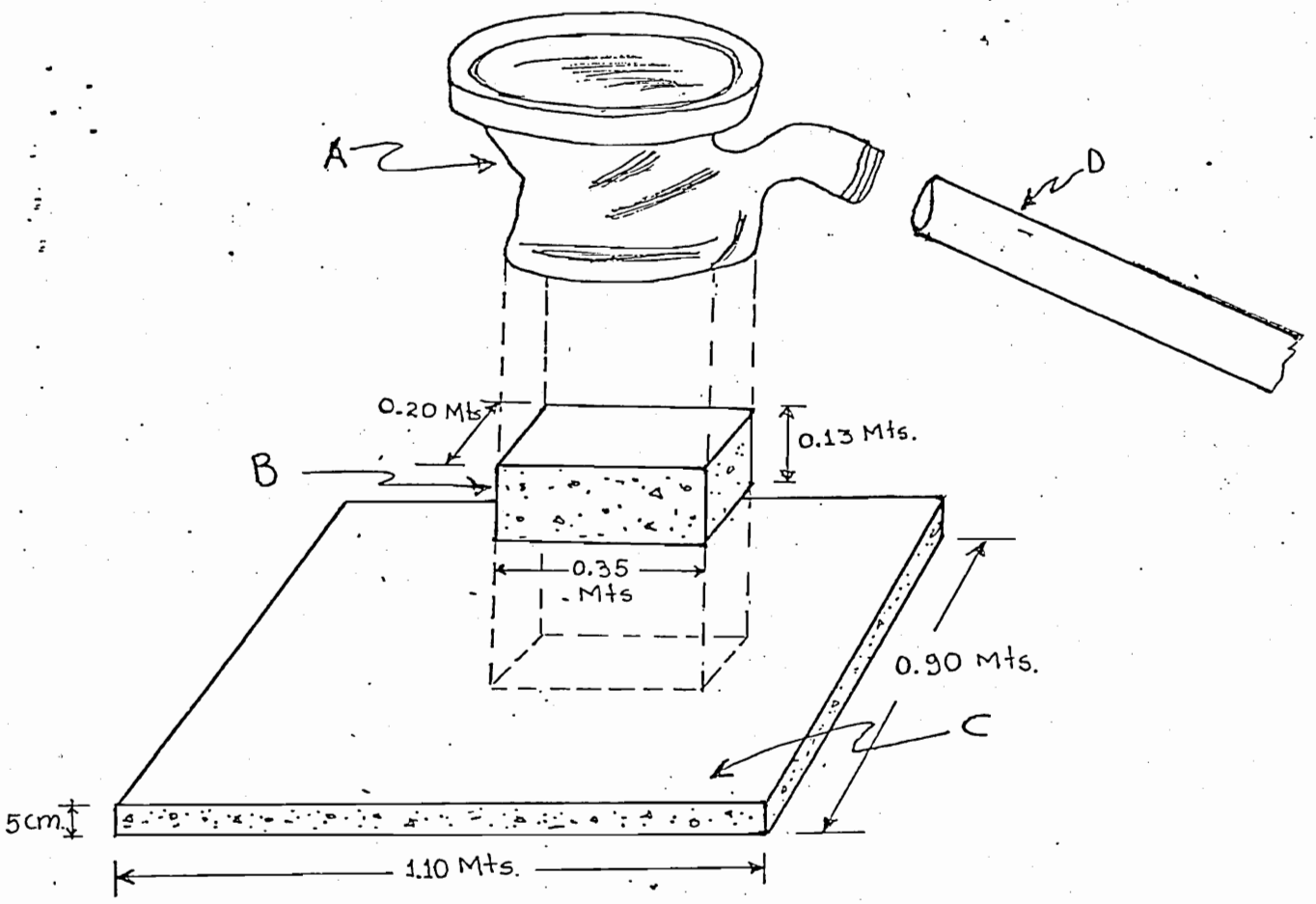


FIGURA No.3

PROCEDIMIENTO DE INSTALACION DE LA TAZA CAMPESINA

A.- TAZA CAMPESINA
B.- PEDESTAL — alto ancho largo 13 X 20 X 35 cm.
C.- PLATAFORMA 110 X 90 cm.
D.- CONEXION PVC Ø 3" ó 4"

OBSERVACIONES: No es indispensable usar pernos en la conexión de la taza sobre el pedestal.

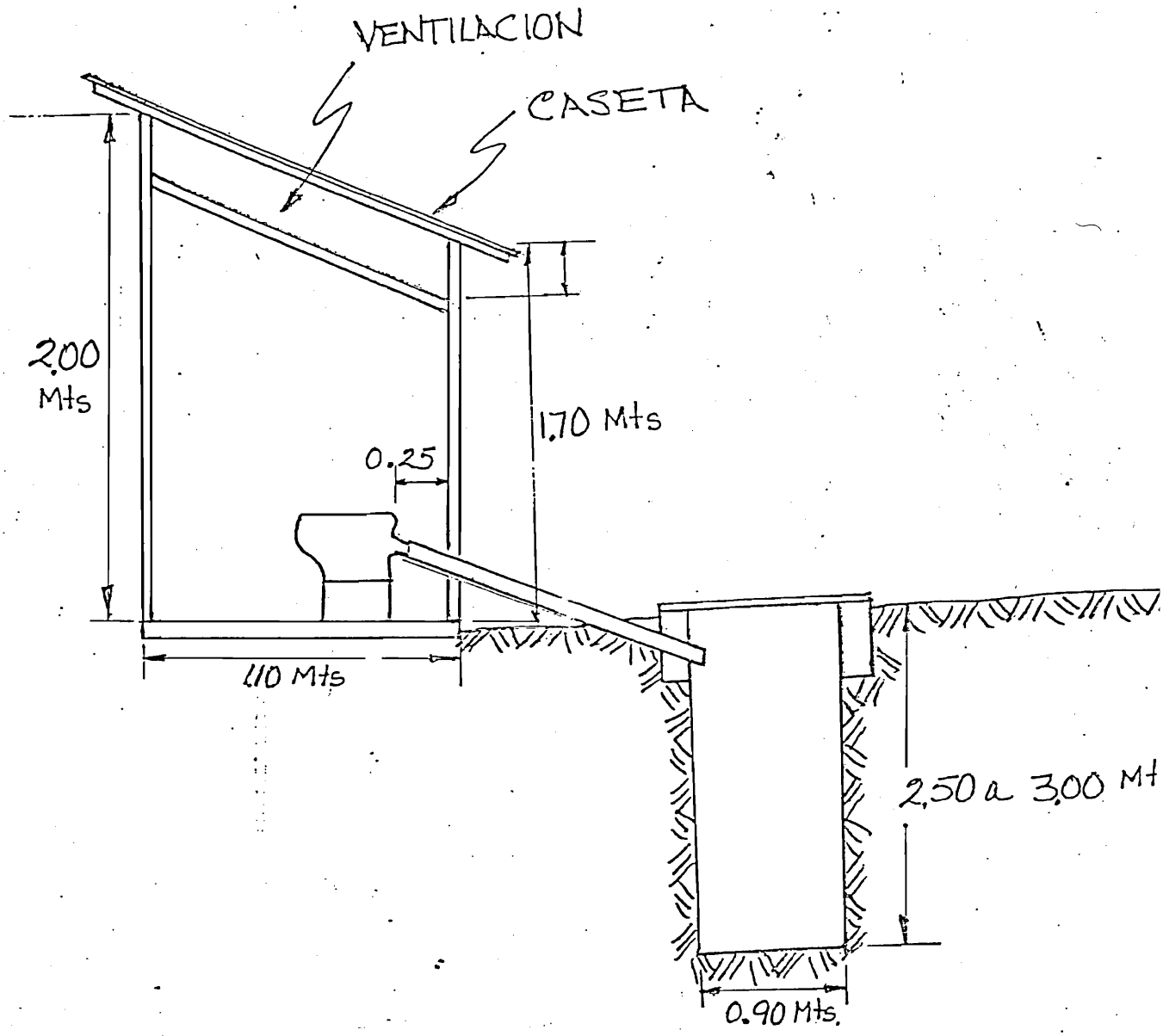


FIGURA No.2

INSTALACION FUERA DE LA VIVIENDA

En este caso es necesaria la construcción de la caseta, la cual deberá tener las dimensiones dadas en la Figura No.2

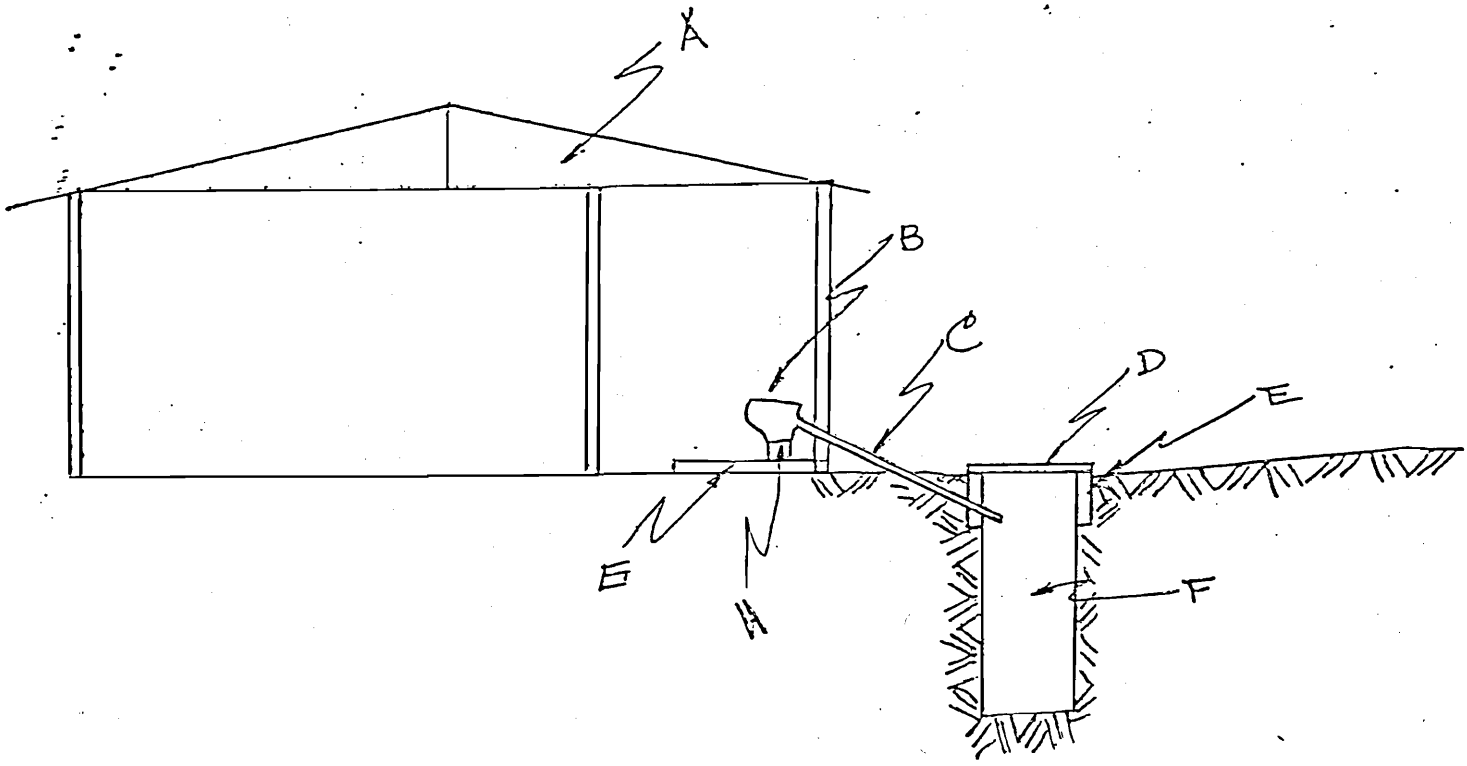


FIGURA No.1

INSTALACION DENTRO DE LA VIVIENDA

A.- VIVIENDA
B.- LETRINA DE CIERRE HIDRAULICO
C.- TUBO O CONEXION DE PVC Ø 4" O 3"
D.- LOSA DE HORMIGON REFORZADA
E.- BROCAL
F.- FOSA SIMPLE
G.- PLATAFORMA
H.- PEDESTAL

EJEMPLO: Se han hecho cuatro pruebas de infiltración, que han dado los siguientes tiempos promedio en cada una para bajar 2.5 cms: 45, 35, 28, y 16 minutos.
El tiempo promedio definitivo será: (45 + 35 + 28 + 16) $\frac{o}{o}$ 4 = 31 minutos. Con este tiempo se entra en la tabla que está a continuación, para determinar la superficie necesaria de infiltración del suelo de la sanja.

REQUISITOS DE LA ZONA DE ABSORCION

Indice de infiltración (tiempo requerido para que el agua descienda 2,5 cm, en minutos)	Zona de absorción necesaria (metros cuadrados del suelo de la zanja de absorción por persona servida)	
	viviendas	escuelas
2 o menos	2,30	0,84
3	2,80	0,93
4	3,25	1,12
5	3,50	1,21
10	4,65	1,67
15	5,35	1,86
30	7,00	2,70
45	8,45	3,10
60	9,30	3,50
Más de 60	No conveniente para los sistemas de absorción superficiales	

* Adaptado del cuadro publicado en *Studies on household sewage disposal systems.*[3]

VENTAJAS E INCONVENIENTES DE LAS LETRINAS CON CIERRE HIDRAULICO

Se puede resumir como sigue:

VENTAJAS

1. La letrina de cierre hidráulico, si se utiliza y se conserva convenientemente, cumple todos los requisitos sanitarios y estéticos.

2. Se puede instalar cerca o en el interior de la vivienda.

3. Las moscas y otras sabandijas entran raramente en contacto con las excretas.

4. Apenas se producen molestias debidas a los malos olores.

5. No presenta ningún peligro para los niños.

6. Su instalación es fácil y su funcionamiento económico en las zonas rurales.

INCONVENIENTES:

1. Sólo se puede utilizar en las zonas donde se dispone de agua durante todo el año (aunque basta con una pequeña cantidad).

2. Exige un período de educación intensiva para que los usuarios aprendan a utilizar y limpiar debidamente la letrina, así como una vigilancia permanente por parte de las autoridades sanitarias.

3. Su costo es ligeramente mayor que el de las letrinas de pozo ordinarias.

4. No es fácil utilizar en las regiones con suelos impermeables.

La experiencia demuestra que la letrina de cierre hidráulico, sólo se puede utilizar en instalaciones familiares y que no es ádecuada para los retretes públicos.

RESUMEN DE INSTRUCCIONES PARA LA INSTALACION DE TAZAS CAMPESINAS

1. Con pozo negro y la taza fuera de la vivienda:
   - A unos 6 mts. de la casa se excava el hoyo.
   - La taza se conecta con un tubo PVC de tres pulgadas de diámetro.
   - Se instala la caseta.

2. Con el pozo negro y la taza dentro de la vivienda:
   - Dentro de la vivienda se construye el cuarto de baño.
   - Se conecta la taza al pozo mediante tubería PVC de 3"Ø de acuerdo con la distancia a éste.

3. Cuando se dispone de alcantarillado:
   - Se hace la instalación como para un servicio sanitario común.
   - Se conecta la taza a la alcantarilla mediante un codo PVC 3"Ø.

MANTENIMIENTO DE LETRINA SANITARIA

Con asiento sin cierre hidráulico.

Es necesario que la letrina permanezca constantemente aseada, para lo cual se necesita lavar el piso (plataforma o plancha), el asiento y tapadera con agua y jabón y usar cualquier desinfectante comercial de uso popular.

Los papeles o cualquier otro material usado para el aseo anal, se deposita en el interior del foso de la letrina, para evitar contaminación, por contacto con ellos.

Deberá tenerse siempre el cuidado de que el asiento permanezca tapado y la puerta cerrada (preferiblemente se aconseja usar cierre automático).

Una letrina sucia y en constante estado de deterioro, no tardará en ser abandonada y en dejar de utilizarse. Es pués, sumamente importante que la caseta, el asiento, la tapadera y el piso, estén limpios en todo mommento y que no entren en ella aves de corral ni otros animales.

Con asiento con cierre hidráulico:

Se le dá el mismo mantenimiento que a la letrina sanitaria, sin cierre hidráulico, con la única excepción de que los papeles ó cualquier otro material utilizado para el aseo anal se depositan en un recipiente aparte y nunca deberán depositarse dentro de la taza campesina.

PROMOCION COMUNAL Y EDUCACION PARA LA SALUD

Una de las funciones principales del proceso de promoción comunual será, llevar educación para la salud al grupo beneficiario.

El objeto de la educación para la salud, será cambiar las prácticas sanitarias y afines de manera que se logre el impacto deseado en la salud, a través de sistemas mejorados de saneamiento. Los técnicos

promotores y representantes de salud de las aldeas locales, enseñarán a los beneficiarios que el suministro de agua y el sistema de disposición de desechos humanos, disminuyen la tasa de enfermedades. Esto les ayudará a entender la relación que existe entre agua limpia, higiène y salud.

Los promotores trabajarán a través de representantes locales, para iniciar y llevar a cabo una campaña educativa, desde que la comunidad decide construir un sistema de abastecimiento de agua o de evacuación adecuada de desechos humanos hasta tiempo después que el sistema se haya construido. Los promotores proporcionarán a los representantes locales una combinación de materiales gráfico/audio educativo. Estos materiales preparados por la Oficina de Educación para la Salud (OES) con asistencia técnica financiada por el proyecto, serán diseñados para enseñar a los habitantes de la aldea y a individuos, la necesidad de cambios en los hábitos sanitarios.

INCLUIRAN:

1. Un componente relacionado con la construcción de sistemas de abastecimiento de agua limpia y sistemas adecuados de disposición de desechos humanos.

2. Un componente relacionado con mantenimiento del sistema.

3. Un componente relacionado con el uso adecuado de estos sistemas y la importancia que tiene para la salud, el uso contínuo de un sistema de disposición de desechos.

   Esto será acuerpado y coordinado con mensajes variados sobre educación, los que reforzarán el proceso educativo de la aldea.

APPENDIX I

REPUBLICA DE BOLIVIA

GRUPO NACIONAL DEL DECENIO DEL ABASTECIMIENTO DE AGUA POTABLE Y SANEAMIENTO.

Secretaría Ejecutiva

PROPUESTA PARA EL DESARROLLO DEL COMPONENTE DE PARTICIPACION COMUNITARIA EN EL SECTOR DE ABASTECIMIENTO DE AGUA POTABLE Y SANEAMIENTO RURAL

Preparado por:
LOURDES ELENA DE RUIZ
LILIANA OSSIO DE SANDI
ORLANDO LOPEZ OROZCO

La Paz, Bolivia

Marzo de 1981

Convenio de Cooperación Técnica OPS/OMS-GTZ-Bolivia

---------- o ----------

PREPARADO POR

LOURDES ELENA DE RUIZ, Sociólogo, adscrito al Equipo Técnico de la Secretaría Ejecutiva del Grupo Nacional del Decenio del Abastecimiento de Agua Potable y Saneamiento,
De la República de Bolivia,

LILIANA OSSIO DE SANDI. Sociólogo, Jefe de la Sección de Promoción Comunal de la División de Saneamiento Ambiental del Ministerio de Previsión Social y Salud Pública de la República de Bolivia.

ORLANDO LOPEZ OROZCO. Sociólogo, Jefe de la Sección de Promoción Comunitaria de la División de Saneamiento Básico Rural del Instituto Nacional de Salud de la República de Colombia, Consultor a corto plazo de la Organización Panamericana de la Salud Oficina Regional de la Organización Mundial de la Salud.

Bárbara Ojopi de Gonzalez y Nelly Mendieta Aguilera, Secretarias - PLANASBA 81-SC.

I N D I C E

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III OBJETIVOS

Los objetivos que se pretenden lograr con el desarrollo del componente de participación de la comunidad son los siguientes:

a) Conseguir la participación financiera de la población en la etapa - de construcción de los sistemas de agua potable y eliminación de - excretas, a través de un proceso de promoción y concientización.

b) Hacer que las comunidades beneficiadas asuman la responsabilidad en la operación, mantenimiento y administración de los sistemas construídos.

c) Lograr cambios en su comportamiento, que favorezcan las acciones de Saneamiento y el desarrollo socioeconómico del país;

d) Realizar con mayor eficiencia las acciones del programa orientado a la atención primaria de salud, extensión de cobertura y calidad en los servicios.

IV ESTRATEGIA DE LA PARTICIPACION COMUNITARIA

Para que el componente de participación comunitaria marche debidamente, es necesario que la comunidad sea motivada para asumir nuevas responsabilidades en su propio provecho; para lo cual hay que tener en cuenta - que la comunidad es la activa participante del proceso de desarrollo y no la ejecutora de modelos impuestos desde afuera.

En Bolivia, por experiencias pasadas, se sabe que la participación comunitaria se ha dado en diferentes trabajos; sin embargo,para la implementación de un programa es necesario formular una metodología de trabajo, basada en cinco grandes etapas, que no son necesariamente secuenciales pués se pueden sobreponer como parte que son de un mismo proceso. En cada una de estas etapas ó fases quedará claramente definida la participación comunitaria.

Primera Etapa: Estudio Exploratorio de la comunidad

Segunda Etapa: Preparación del proyecto

Tercera Etapa: Promoción y Organización

Cuarta Etapa: Construcción del sistema

Quinta Etapa: Administración y Supervisión

1.- PRIMERA ETAPA: ESTUDIO EXPLORATORIO DE LA COMUNIDAD

1.1. Características.- Durante esta primera etapa se realiza una investigación preliminar de la comunidad, que permitirá determinar cuales son sus potenciales y capacidades, como así también, sus necesidades y problemas, sean económicos, sociales sanitarios, educativos, etc. e indagar sobre las posibles soluciones planteadas por ellos mismos.

Los datos obtenidos en el estudio exploratorio permitirán - tener un diagnóstico de la comunidad estudiada, el que guiará la programación y posterior ejecución de tareas.

Además ayudará a seleccionar las comunidades con las que se va a trabajar, estableciendo un orden de prioridad en base a los siguientes criterios:

- Estado sanitario de la comunidad
- Necesidad sentida de parte de la comunidad
- Características técnicas de la fuente
- Vias de accesibilidad a la comunidad

1.2. Actividades.- Las actividades a desarrollarse dentro de esta primera etapa son las siguientes:

a) Estudio sobre aspectos generales:

Es muy necesario contar con datos generales, como ubicación geográfica, altitud sobre el nivel del mar, etc., para qué los planificadores, tanto del nivel regional -

como nacional tengan una idea de las características naturales de la comunidad.

b) Estudio demográfico:

A pesar de contar con datos del Instituto Nacional de Estadística, es necesario verificarlos y en muchos casos - ampliarlos, para fines de planificación.

c) Estudio socio-económico:

Con este estudio se consigue toda la información socio-económica de la comunidad, que permitirá tener una idea sobre sus recursos y necesidades, los grupos sociales - existentes, líderes, tanto manifiestos como latentes, - grado de instrucción, salud, centros de atención, servicios públicos etc.

d) Estudio habitacional:

Se pretende hacer un inventario relativo a la vivienda, sus características en cuanto a construcción, condiciones de salubridad, etc. Además incluye el levantamiento de un croquis donde aparecen ubicadas las viviendas que configuran la comunidad y los diversos servicios públicos o comunales (escuela, centro de salud, iglesia, etc.), así como las posibles áreas de expansión futura. Si existe o nó algún estudio de urbanización.

e) Estudio de fuentes de agua:

Aquí se anotan todas las posibles fuentes de agua existentes en el lugar, con sus respectivas características. Se obtiene datos sobre caudal, calidad del agua, distancias de la fuente a la comunidad propiedad de la fuente etc.

f) Estudio sobre materiales y mano de obra:

A través de este estudio se hace una indagación sobre qué materiales de construcción existen en el lugar, sus costos y facilidad de transporte. La disponibilidad de mano de obra calificada en la comunidad, como ser: plomeros albañiles, carpinteros, etc. a la vez que los costos de la mano de obra, en general y especialmente por jornales.

g) Estudio sobre la disposición de excretas:

En este acápite se averigua si la comunidad cuenta con - algún sistema sanitario de eliminación de excretas y las condiciones en que se encuentra.
La responsabilidad de realizar el estudio exploratorio - de la comunidad, recae en el técnico en saneamiento ambiental o el promotor de la comunidad.

1.3. Participación de la comunidad.- La Participación de la comunidad en las anteriores actividades, es de fundamental importancia ya que permite recolectar información sobre aspectos económicos, sociales, sanitarios y otros, además de orientar al técnico o promotor de la comunidad en la realización del estudio.
La comunidad proporciona sugerencias en base a sus experiencias en acción comunal, y facilita la integración entre las familias y los funcionarios encargados del estudio.

2.- SEGUNDA ETAPA: PREPARACION DEL PROYECTO

2.1. Características.- Esta segunda etapa comprende actividades de orden técnico dentro del campo específico de Ingeniería. Durante la misma se adelantan los estudios y planos topográficos correspondientes, los cuales a su vez permiten a los ingenieros preparar el diseño y presupuesto de la obra.

2.2. Actividades.- Con el fín de verificar los datos proprociona dos en el estudio exploratorio, y luego de seleccionar a la comunidad en esta segunda etapa, una comisión técnica encabezada por un ingeniero, se encargará de realizar las siguientes actividades:

a) Elección de la fuente:

Previa verificación de las características de la o las fuentes propuestas, el Ingeniero decidirá en el terreno su elección en la cual debe tener sumo cuidado, ya que de su elección dependerá fundamentalmente el costo y la ejecución de la obra.

b) Levantamiento topográfico:

Esta actividad hace referencia al trabajo de campo que realiza el topógrafo en el levantamiento topográfico de la zona tomando en cuenta las diferentes alternativas que servirán de base para la elaboración del proyecto definitivo.
El topógrafo es el responsable, con el asesoramiento del ingeniero, de la ejecución de esta actividad, para lo que contará con la ayuda del Técnico en Saneamiento o del promotor así como de miembros de la comunidad.

c) Diseño y Memorias de la Obra:

Esta actividad por cierto muy importante, se refiere al trabajo de gabinete que realizan el topógrafo y el Ingeniero, el primero en el dibujo de los planos topográficos, el segundo en el diseño y elaboración de las memorias de la obra de acuerdo a "Normas de Diseño" establecidas para el efecto.
Esta actividad concluye con la revisión y aprobación del proyecto por parte de la Dirección Técnica del Programa.

2.3. Participación de la comunidad.- Suministra auxiliares para la realización de los estudios topográficos.
Proporciona datos locales para la elaboración del diseño y el presupuesto.

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Contribuye con materiales y mano de obra durante el levantamiento topográfico.
Dona terrenos para la ubicación de las diferentes estructuras de la obra.
Dá su consentimiento para la utilización de la fuente de agua.
Permite el paso de las tuberias por sus terrenos.

3.- TERCERA ETAPA: PROMOCION Y ORGANIZACION DE LA COMUNIDAD

3.1 Características.- En esta etapa se pretende sensibilizar y despertar el interés de la comunidad, motivándola para lograr su participación en las actividades a desarrollar durante la ejecución y administración de la obra. Para esto será necesario transmitir a la gente conocimientos que le permita actuar por convencimiento, antes que por coacción. En resumen se quiere conseguir un cambio de actitudes por parte de los comunarios, con respecto a aspectos sanitarios. Que conozcan por si mismos los beneficios que trae, para su familia y su comunidad, la construcción de un sistema sanitario.
Esta etapa se la ha señalado específicamente como tercera, por fines simplemente didácticos ya que en la práctica la promoción y la organización se ejecuta a través de todo el proceso.

3.2 Actividades.- En esta etapa se desarrollan las siguientes actitudes.

a) Contacto con autoridades locales:

Se llevan a cabo visitas a las principales autoridades de la localidad con el fin de establecer relaciones personales y de trabajo, así como para darles a conocer el programa.

b) Entrevistas con directivos de grupos organizados:

Las visitas se hacen extensivas a los miembros de las directivas de los distintos grupos formales organizados de cuya existencia se sabe a través del estudio exploratorio de la comunidad. Como en el caso anterior estas entrevistas sirven para establecer relaciones, conocer los objetivos y proyectos de esos grupos y proponer la forma de coordinarlos con los del programa.

c) Visitas domiciliarias a los líderes:

El lider juega un papel de primer orden en la organización y conducción de la población por cuanto es el elemento de enlace entre la comunidad y el promotor, dependiendo de él la colaboración o resistencia a la ejecución del proyecto.
Las visitas a los líderes se realizan para conocer su interés individual y de grupo, como sus actitudes o influencias sobre sectores de la población.

d) Reuniones con autoridades, miembros de agrupaciones y líderes:

Una vez que se han hecho algunos contactos individuales - se convoca a reuniones de pequeños grupos con el fin de dar mayor difusión al programa, absolver algunas preguntas y vencer alguna resistencia, si la hubiera. Se les explica sobre los objetivos y metas que se quiere alcanzar, para que sean ellos mismos los que detecten los beneficios que traería a la comunidad la construcción del sistema.

e) Reunión con los maestros de la escuela:

Especial importancia reviste la participación de los maestros en el programa, y por este motivo desde las primeras acciones debe tenérseles en cuenta. Durante esta fase se convoca a una reunión para dialogar con ellos e informarles detalladamente sobre el Programa, para de esta manera contar con su apoyo en las futuras actividades.

f) Asamblea general de vecinos:

Las anteriores reuniones y visitas han permitido tomar conocimiento de las aspiraciones de la comunidad, como también la opinión de las autoridades y líderes sobre el programa de abastecimiento de agua y disposición sanitaria - de excretas, facilitando su coordinación y la delegación de responsabilidades.
Luego será necesario informar a la comunidad en pleno, para lo cuál se convoca a reuniones o asambleas generales - por medio de citaciones que se realizan generalmente a través de las autoridades o líderes.

g) Formación del Comité Pro-Agua:

Una vez que la comunidad ha decidido trabajar en la realización del proyecto, el técnico o promotor de la comunidad comunicará a su Jefatura, y en el interior se procederá a la organización del "Comité Pro-Agua", siempre y cuando - no exista en la comunidad otra estructura de organización a nivel de base, como por ejemplo, los sindicatos agrarios, juntas comunales, o algún otro tipo de organización que permita llevar adelante el Programa en forma satisfactoria. Con esta organización se pretende lograr la plena movilización de los recursos humanos existentes en la comunidad. El Comité Pro-Agua Potable, o el organismo que se hará - co-responsable de la ejecución del proyecto deberá recibir una explicación en detalle acerca de la modalidad de trabajo, el financiamiento, obligaciones y derechos de la comunidad.

h) Firma del Convenio:

La comunidad con el conocimiento claro del programa y formado su Comité Pro-Agua deberá formalizar su compromiso - para darle base legal, y definir obligaciones y derechos para lo cual firmará un "Convenio" en el que se especifica claramente: características de la obra, costo, financia-

miento por ambas partes, fecha de iniciación de trabajos, fecha de conclusión, responsabilidad de la administración una vez concluída la obra; etc. El Convenio se suscribirá entre el Comité Pro-Agua o Junta Comunal en representación de la comunidad y el Ingeniero, Jefe de Programa. A tiempo de firmar este Convenio la Comunidad hará entrega de un primer aporte en efectivo más un aporte en material el que generalmente representa el 10% del costo total del proyecto, dejando claramente establecido su participación con mano de obra no calificada materiales del lugar, y el plazo en que deberá completar su aporte de dinero en efectivo.

La firma del Convenio es la culminación de todo un proceso de motivación durante el cual se ha concientizado a la comunidad sobre las ventajas y beneficios que le reportará la construcción del sistema. Se debe tener especial cuidado de que toda la comunidad esté enterada de los compromisos que adquiere al suscribir el Convenio.

3.3. Participación de la Comunidad:

Pone a disposición del programa su experiencia y organización comunal.
Participa de las reuniones de grupo y asambleas generales -
Participa en las actividades programadas y cumple las responsabilidades asignadas,
Divulga el Programa, sus beneficios, su metodología y su desarrollo.
Busca la vinculación de recursos institucionales al programa.
Autoriza al Comité Pro-Agua para firmar el Convenio.
Fiscaliza el desempeño de los dirigentes y funcionarios del programa.
Divulga el programa a comunidades vecinas y a otros sectores de la población.

4.- CUARTA ETAPA: CONSTRUCCION DE LAS OBRAS

4.1. Características.- Una vez firmado el Convenio se dará inicio a la construcción de la obra, de acuerdo a los términos de éste y con la participación activa de la comunidad.

4.2. Actividades.- Las actividades realizadas en esta cuarta - etapa son las siguientes:

a) Programación de tareas:

Antes de la iniciación de la obra, el técnico en saneamiento o promotor conjuntamente con el Comité Pro-Agua, elaborarán un cronograma de actividades, en el que se consignarán las diferentes etapas que abarca la construcción del sistema. Para la construcción de todas las partes del sistema, el técnico o promotor de acuerdo con el Comité Pro-Agua, determinarán el mínimo de jornales que deberá trabajar cada comunario jefe de familia, cuantos deben presentarse por día y que tipo de herramientas de-

ben de traer consigo.

b) Control de materiales:

Corresponde al técnico encargado de la construcción de la obra, llevar un control de los materiales llegados a la comunidad, asumir la responsabilidad de su almacenamiento y distribución conjuntamente con la dirección del Comité Pro-Agua.
El programa deberá contar con los respectivos formularios para llevar el control de materiales, e informar periódicamente a su jefatura.

c) Control de aportes de la comunidad:

También es responsabilidad del técnico o promotor, siempre en forma conjunta con el Comité, llevar el correspondiente control de los aportes en dinero, mano de obra, herramientas, transporte, alimentos y otros aportes que puedan dar los comunarios durante la construcción del sistema.

d) Formación de la Junta Administradora:

Cuando el sistema de abastecimiento de agua esté a punto de ser concluído, el técnico o promotor motivará a la comunidad para que ésta, en Asamblea General, elija a los miembros de la Junta Administradora, que tal como especifica el Convenio, será la encargada de la administración del sistema.
Esta Junta Administradora estará integrada por tres miembros: Presidente, Tesorero y Secretario. Sus principales funciones serán:

Velar por una buena administración, operación y mantenimiento del sistema.
Vigilar el correcto uso del agua.
Organizar el sistema contable y controlar y hacer cumplir el pago de tarifas.
Nombrar al operador del sistema, si fuera necesario este personal.
En general, el funcionamiento de la Junta deberá estar regido por un "Reglamento", elaborado expresamente para este efecto por el programa.
Las juntas administradoras en lo posible deben actuar independientemente de las Municipalidades. Su organización, supervisión y asesoramiento estarán a cargo de la Dirección del Programa a través de la Unidad de Promoción Comunal, que tendrá la responsabilidad de normar y supervisar la labor de dichas Juntas en todo el país.
La realización de esta etapa está a cargo del técnico o promotor, el comité y la comunidad, con la supervisión periódica por parte del personal de la Unidad de Promoción Comunal.

4.3. Participación de la comunidad.- Aporta un porcentaje del costo total del proyecto en dinero, materiales, mano de obra, -

medios de transporte, tal como se establecio en el convenio..
Programa a través del comité y conjuntamente con el técnico los diferentes trabajos durante la construcción del sistema.
Proporciona algunas de sus herramientas para los diferentes trabajos.
Proporciona un depósito y cuida los materiales llegados a la comunidad.
Realiza actividades sociales para recaudar fondos.

Se sugiere el 30% como aporte comunitario basado en la experiencia lograda en Bolivia. Cuando este aporte represente el valor de la mano de obra no especializada, acarreos y materiales locales estimados en el proyecto, no sera necesario ningún aporte adicional en dinero para cubrir el 30%, caso contrario este aporte será mínimo.
Por otra parte, si de acuerdo con el estudio exploratorio realizado, existen comunidades en imposibilidad absoluta de suministrar el aporte económico éste podrá ser reducido hasta el nivel del aporte en mano de obra no especializada y materiales locales disponibles en la comunidad.
En todo caso, de alguna manera toda comunidad debe brindar su aporte para la ejecución del proyecto.

5.- QUINTA ETAPA: ADMINISTRACION:

5.1. Características.- Aún dentro de la consideración del aspecto económico de la participación, no necesariamente la comunidad ha de desarrollar sólo esfuerzo físico para manifestar su intervención, sino que su intervención será aún más importante durante la etapa de la administración de la obra, ya que la misma ha sido construída por ellos y para ellos.
La administración del sistema de abastecimiento de agua comprende tanto el manejo contable, como la operación y mantenimiento, cuya responsabilidad está en manos de la "Junta Administradora" como representante de la Comunidad.
El límite de esta quinta etapa no puede demarcarse, pues se continuará brindándo orientación y asesoramiento en la organización social, manejo contable, operación y mantenimiento del sistema.

5.2. Actividades.- Las actividades a desarrollarse en esta quinta etapa son las siguientes:

a) Entrega del sistema:

Una vez que el sistema de abastecimiento de agua potable y paralelamente el de eliminación de excretas estén concluídos se procederá a la entrega de la obra a la Junta Administradora, la que previamente debe ser capacitada por el Técnico o promotor de la comunidad.

La entrega del sistema se realizará en acto público con la asistencia de autoridades y la comunidad en pleno, se levantará un acta en la que quedará bien establecido que

la obra es entregada y recibida a entera satisfacción de ambas partes.

b) Manejo Contable:

Se fijara una tarifa la que será aprobada por la comunidad y la Junta realizará una serie de controles contables, para poder asegurar el buen funcionamiento del sistema.

Estos controles deben ser sencillos y de muy fácil manejo.

Contemplan los diguientes aspectos:

Solicitud de conexión

Registro de usuarios y control de pago de tarifas.

Recibos de pago

Comprobantes de pago

Libro diario de ingresos y egresos

Aviso de corte de servicio y solicitud de reconexión

Control de materialos

c) Operación:

Es el conjunto de acciones externas que se ejecutan en forma permanente y sistemática en las instalaciones y equipos, para lograr el adecuado funcionamiento del sistema.
Esta actividad es realizada por el operador contratado por la Junta Administradora, si élla considera necesario este personal, y sinó, será el secretario de la junta el encargado de realizarla.

d) Mantenimiento:

Se distinguen dos tipos de mantenimiento: El preventivo que se refiere al conjunto de acciones internas que se ejecutan en las instalaciones y equipos para prevenir daños, como por ejemplo limpiado de tanques, reajuste de válvulas etc. y el mantenimiento de reparación o reparativo que, consiste como su nombre lo indica en la reparación de cualquier daño que se produzca en las instalaciones o equipos, y que debe realizarse inmediata y oportunamente para evitar mayores consecuencias.

5.3. Participación de la comunidad.- Paga una tarifa mensual para el sostenimiento del servicio.

Desempeña cargos en la Junta Administradora, sin ninguna retribución económica.

Se encarga de la administración, operación y mantenimiento de la obra.

Suministra el operador encargado de cuidar el sistema.

Informa sobre la marcha administrativa y técnica de la obra.

Recibe, contabiliza y administra los fondos provenientes del cobro de tarifas.

Facilita el local para el trabajo de la Junta Administradora.

Capacita personal para las tareas administrativas del sistema.

Sugiere programas de ampliaciones y mejoras del sistema.

Un aspecto que requiere mucho énfasis durante este etapa es el relativo al pago de tarifas. Este es uno de los aspectos más importantes de la participación de la comunidad. Por ello debe llevársele a conocer el por qué el pago oportuno permite operar el servicio, mantener recursos para ampliaciones futuras o cubrir posibles daños y en general brindar un servicio permanente y eficiente. Debe saber que la tarifa no es establecida arbitrariamente, son calculadas por el Ingeniero encargado de la obra conjuntamente los miembros de la Junta Administradora en base a los siguientes criterios:

Costo que demanda la Administración propiamente dicha

Costo que demanda la operación (pago al operados, insumos, etc.)

Costo que demanda el mantenimiento (preventido y de reparación).

V. CONDICIONES REQUERIDAS PARA IMPLEMENTAR LA ESTRATEGIA DE PARTICIPACION COMUNAL

El logro de una participación integral como la señalada, exige que se den unas condiciones previas tales como la organización institucional; recursos humanos, físicos y financieros, marco legal y manuales técnicos.

1.- ORGANIZACION INSTITUCIONAL

Es necesario disponer de un equipo técnico especializado que se responsabilice de normatizar y ejecutar las acciones que instrumentalicen la estrategia de participación comunitaria. Este equipo denominado Unidad de Promoción Comunal (UPC), debe estar ubicado en un nivel tal que se le facilite la comunicación directa con el Director del Programa en igualdad de condiciones con las dependencias técnicas del área de Ingeniería. Esto le permitirá compenetrarse y participar en la toma de decisiones de políticas, de normas y de operación del programa, ya que la participación de la comunidad constituye uno de los pilares fundamentales del Programa.

En el organigrama de la página siguiente se coloca a modo de ilustración la ubicación propuesta en una entidad del sector.

1.1. Campo de acción de la Unidad de Promoción Comunal.- La acción técnica de la UPC cubrirá tres grandes frentes de trabajo:

a) Organización comunitaria:

Desarrolla las acciones encaminadas a lograr que la población en forma conciente actúe y participe en la construcción de las obras sanitarias y en su administración y mantenimiento.

b) Educación sanitaria:

Determina y orienta las acciones tendientes a lograr un uso adecuado de las instalaciones por la comunidad y a crear en ella actitudes, hábitos y comportamientos que permitan su recuperación, mantenimiento y protección de la salud individual, familiar y colectiva.

c) Divulgación:

Apoya las acciones de organización de la comunidad y de educación sanitaria y difunde las realizaciones del Programa, a la comunidad y a la opinión pública en general a través de los medios masivos de comunicación.

1.2. Funciones de la Unidad de Promoción Comunal.- Los tres grandes frentes de trabajo señalados, permiten precisar las siguientes funciones:

a) Proponer y ejecutar la política, metas, normas y procedimientos del componente de participación comunitaria, en concordancia con los objetivos y metas del Plan Nacional de Abastecimiento de Agua Potable y Saneamiento Básico.

b) Prestar la asistencia técnica especializada que requieran las unidades operativas durante la programación y ejecución de las acciones locales:

c) Proponer y ejecutar las actividades educativas y de organización de la comunidad necesarias para lograr la participación activa y conciente de la población en los proyectos sanitarios del Plan y en el adecuado uso, administración, operación, mantenimiento de las obras:

d) Proponer y realizar las investigaciones opetativas que permitan conocer el nivel social, económico y sanitario de las comunidades comprendidas en el Plan, para que sirvan de base para programar y evaluar el trabajo futuro:

e) Establecer coordinación con otros planes y programas sectoriales de tal forma que las acciones de salud del Plan se incorporen a procesos integrales de desarrollo económico y social,

f) Proponer y ejecutar actividades de comunicación social y ayudas audiovisuales que sirvan de apoyo a las acciones que se ejecutan en el nivel local;

g) Determinar y ejecutar los programas de educación sanitaria tendientes a modificar el comportamiento de la comunidad, de acuerdo a los objetivos y metas de los Planes de Salud y estructurar las normas y procedimientos requeridos para su implementación.

h) Divulgar a nivel nacional las realizaciones, proyecciones, innovaciones, etc., alcanzadas por el programa a fin de acrecentar su imagen ante la opinión pública y especialmente ante las autoridades y entidades de gobierno.

i) Diseñar y realizar las evaluaciones del impacto del componente de participación de la comunidad en las realizaciones globales del Plan y en el desarrollo local.

2.- RECURSOS HUMANOS REQUERIDOS

Para el cumplimiento de las funciones señaladas es necesario contar con el siguiente personal mínimo necesario:

a) Un sociólogo o profesional en ciencias sociales con experiencia en programas de salud pública, desarrollo de la comunidad o desarrollo rural, responsable de la dirección de la Unidad y de la ejecución del área de organización comunitaria, su nivel profesional le facilitará la comunicación e interacción con el grupo profesional de Ingeniería.

b) Un educador ó un comunicador social, de ser posible con formación universitaria, quien será el responsable de ejecutar programas de educación en salud y su divulgación. Deberá conocer el manejo de equipos audiovisuales y las técnicas de comunica-

ción social. De ser posible se contará los dos funcionarios.

c) Un dibujante artístico o publicitario, quien será el responsable de elaborar el material educativo (cartillas, folletos, afiches, dibujos, audiovisuales, etc.) que se requiere para las campañas educativas según los contenidos definidos por el equipo técnico de la UPC.

d) Técnicos de Saneamiento. Su número estará determinado por el Plan de obras a ejecutar y por ende del número de comunidades a cubrir. Se estima que un Técnico con dedicación exclusiva al Programa puede cubrir hasta cinco (5) comunidades-proyectos simultáneamente.

El técnico debe estar preparado para desempeñarse en dos áreas:

a) Area social; sensibilización, motivación, educación y organización de la población para su participación en la construcción, y en el posterior uso adecuado, operación, mantenimiento y administración de los sistemas.

b) Area de Ingeniería; colaboración en ciertos aspectos de construcción y dirección técnica del proyecto.

El técnico sera un funcionario eminentemente operativo y como tal constituye la espina dorsal para enfrentar el componente de participación comunitaria. Su acción se desenvuelve directamente a nivel de la comunidad y paralela con la construcción del sistema por lo cual estarán adscritos a la unidad de ingeniería responsable de la ejecución, pero recibirán todo el apoyo, asesoría y supervisión del equipo técnico de la UPC en el desempeño de su actividad social. Es el nexo entre el nivel central y el nivel operativo.

Las razones que mueven a efectuar estas recomendaciones se basan en que la construcción de proyectos de agua potable y saneamiento con participación de la comunidad, las acciones de promoción y las técnicas de ingeniería, están interrelacionadas y no pueden darse la una sin la otra. Por otra parte, la cobertura de población de los proyectos no justifica la presencia de dos funcionarios que ejecuten dirección técnica de las obras y promoción comunal respectivamente. Cualquier sectorización que de see hacerse para asignar responsabilidades a distintos funcionarios, no solo no es conveniente, sino que es perjudicial para el resultado final de la participación de la comunidad pués se diluye la responsabilidad y se duplica el esfuerzo.

En el anexo Nº 1 se relacionan las funciones del Técnico en el campo de promoción comunal.

Es necesario señalar que el país no cuenta con suficiente número de técnicos debidamente entrenados. La Escuela de Salud Pública, dependiente del Ministerio de Previsión Social y Salud Pública, por carencia de recursos, no progra

ma regularmente cursos para la formación de técnicos. Estos cursos son programados de acuerdo con el interés de las instituciones y la obtención de créditos externos para el financiamiento de proyectos de abastecimiento de agua potable.

Para el desarrollo de la propuesta, es necesario impulsar la formación de Técnicos a través de la Escuela de Salud Pública pués la vinculación de personal entrenado es una condición básica para el logro de los objetivos planteados al componente de participación comunitaria. Se considera que el reforzamiento de esta Escuela es una necesidad apremiante para el país y el sector, que requiere la formación de este personal y el de otros niveles.

Mientras no se puede dotar de recursos propios a la Escuela para que ofrezca cursos regulares de formación de Técnicos, se propone capacitar al personal de técnicos que actualmente carecen de adiestramiento. La D.S.A. tiene aproximadamente 80 técnicos en estas condiciones y 5 la Corporación de Desarrollo Departamento de La Paz. Se calcula que pueden existir 15 más en otras entidades del Sector. Para ello las instituciones facilitarian los medios a su personal para que asistan a esta Escuela a capacitarse, declarandoles en comisión con el goce del 100% de sus haberes y aproximadamente $b. 3.500 mensuales por concepto de beca. Esta suma es la última que cubrió la D.S.A. por los mismos conceptos y actualmente se considera la más apropiada. Por otro lado debe tratar de obtenerse financiamiento a través de los convenios que permitan cubrir el costo de estos cursos.

Con el recurso nuevo de Técnicos, es necesario vincular al Sector, se puede pensar en el siguiente mecanismo para su capacitación: la entidad deberá hacer selección del personal y le asignará una beca, para que realice el curso en la escuela, con el compromiso de que si aprueba el curso, se le vincule con todas las caracteristicas de funcionario de planta.
De igual manera al estructurar el plan global para el Decenio y precisado el número de Técnicos requeridos, se buscaría el financiamiento a través de convenios internacionales para un plan de becas a que permita formar este recurso humano basado en las experiencias de la D.S.A.

3.- RECURSOS FISICOS Y FINANCIEROS

Como se ha señalado, el motor que mueve la participación comunitaria es la educación. El complejo de acciones de este tipo que se requiere realizar para promover, organizar y obtener la participación comunitaria, exige disponer de recursos físicos y financieros para proveer de elementos necesarios a los funcionarios del área, que les permita emplear parte de la tecnología educativa disponible en el mercado. Existen desde hace mucho tiempo excelentes equipos, instrumentos y materiales destinados a apoyar los procesos de educación. Se los reconoce como ayudas audiovisuales porque refuerzan la comunicación verbal, generando un mayor impacto

en el aprendizaje dado que impresionan uno o más de los sentidos. Según investigaciones, en el proceso del aprendizaje, la vista es el sentido que mayor aporte hace con un 87%, quedando sólo un 13% para el oido y los demás sentidos. Se deduce lo ineficaz de una acción educativa puramente verbal.

En la parte final de esta propuesta se incluye una relación y costos de los materiales y equipos audiovisuales que son necesarios de adquirir.

4.- MARCO LEGAL

A fin de dar uniformidad al Sector en el desarrollo del componente da participación comunitaria y precisar una política estable en este campo, será necesario obtener del Gobierno Nacional un Decreto Supremo que institucionalice la participación.

Esta disposición hará referencia entre otros a los siguientes aspectos:

a) beneficios que reportará al Sector y al desarrollo del país la participación directa de la población;

b) constitución de los comités locales pro-agua potable y de las juntas locales administradoras de sistemas;

c) aporte de la comunidad y de la entidad en la construcción de los sistemas;

d) responsabilidad comunitaria en la operación, mantenimiento y administración de los sistemas;

e) facultad para expedir los manuales y reglamentos que instrumentalicen la participación.

5.- MANUALES Y REGLAMENTOS

Con la misma finalidad de establecer normas estables que rijan al sector en materia de PC, se elaborarán paulatinamente los manuales de procedimientos en promoción comunitaria, educación en Salud y el reglamento de juntas administradoras.

El manual de procedimientos en promoción comunitaria tiene como finalidad precisar al personal del programa las acciones específicas, el cómo realizarlas y la responsabilidad que cada uno de los funcionarios corresponde en la implementación del componente de PC. Tratará entre otros los siguientes aspectos:

Objetivos y metas del programa

Etapas metodológicas

Materiales de promoción y educación y cuando usarlos

Instructivos y modelos (estudio exploratorio, convenio con la comunidad, acta de entrega de la obra, etc.).

Formación de grupos

El manual de educación en salud, tiene como finalidad presentar un conjunto organizado de contenidos básicos en salud, alrededor de abastecimiento de agua y saneamiento, que debe llevársele a la comunidad por parte del grupo de Técnicos. Tratará entre los si-

guientes aspectos:

Importancia del agua en la vida

Ciclo del agua en la naturaleza

Distintos usos del agua

Concepto de agua potable

Cómo se contamina el agua: eliminación de excretas

Agua sana y salud

Morbi-mortalidad de origen hídrico

Programas de abastecimiento de agua

Principales enfermedades de origen hídrico

Programas de disposición de excretas y aguas residuales

Prácticas higiénicas que mejoran la salud; lavado de manos y ropas limpieza de la vivienda, eliminación de basuras, etc.

Como se contaminan los alimentos por la acción de los vectores,

Servicios de agua dentro de la vivienda

Uso y mantenimiento de las instalaciones

Finalidad de las tarifas

Técnicas y métodos recomendados para la transmisión de los contenidos.

El reglamento de Juntas administradoras tiene como objetivo dotar a las comunidades de las normas y disposiciones que orientan la administración del sistema. Incluirá entre otros los siguientes aspectos:

Constitución de la junta administradora

Funciones de los miembros

Disposiciones sobre uso del servicio

Prohibiciones y sanciones

Sistema contable

Cobros y recaudaciones

Pago de tarifas

ANEXO Nº 1

FUNCIONES DEL TECNICO DE SANEAMIENTO EN EL CAMPO DE PROMOCION COMUNAL

a) Conocer los comportamientos de la población que inciden en la aceptación de los proyectos del plan y determinar y aplicar las estrategias educativas a seguir para modificarlos;

b) Ejecutar las actividades de capacitación de la población que programe la UPC y las que crea necesarias adelantar para el logro de los objetivos del Plan y del componente de participación comunitaria;

c) Realizar las actividades de sensibilización, motivación educación y organización de la comunidad propias del Plan, en las comunidades de su ámbito de trabajo;

d) Realizar el estudio social, económico y sanitario de las comunidades de su área de trabajo;

e) Formar, asesorar y supervisar el Comité Local Pro Agua Potable a fin de que cumpla las funciones que le han sido señaladas por el Plan en los procesos de construcción de los sistemas;

f) Formar, asesorar y supervisar la Junta Local Administradora del sistema dentro de las normas trazadas por el Plan, a fin de que cumpla las funciones que le han sido señaladas;

g) Promover la obtención de trabajo voluntario de los comunarios de acuerdo con las exigencias de los proyectos sanitarios del Plan;

h) Promover y desarrollar reuniones periódicas de la comunidad con fines educativos, de información y programación de actividades relativos a las acciones del Plan;

i) Coordinar en su ámbito de trabajo las acciones del Plan, con las autoridades y con programas que ejecutan otras agencias en su área de trabajo;

j) Colaborar con la UPC en la determinación del material educativo que se requiera para adelantar las actividades de promoción, educación y divulgación.

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APPENDIX J

EVALUATION PLAN

1. Background

Public health workers have spent an enormous amount of time, energy, and money attempting to resolve the perennial problem of measuring the impact of potable water use upon the health of the consumer. One of the more recent and controversial studies was that conducted in Guatemala during 1973-1976.

The Guatemala study met all the criteria considered necessary to determine the effect of water on health by a World Bank expert panel. Two comparable villages, one to be provided with a piped water system and the other to remain without a system, were selected for the study. Detailed health data were collected before, during, and after the installation of the system including, specifically, data on the incidence of diarrhea. At the end of the study the data from the two villages were analyzed and compared. The study team concluded that there was no significant reduction in diarrhea associated with the new water supply. The study was carried out over a period of 40 months and cost about $2 million. (Years later a review of the data was made by other experts who came to the opposite conclusion. That is, that there had been a reduction in diarrhea.)

The DSA/USAID rural sanitation project has a budget balance of $3,798,799 to be disbursed. Of this total, $25,000 has been earmarked for evaluation. Therefore, it cannot be elaborate. Nor is a sophisticated and costly study recommended in view of the ambiguous results of past efforts. Instead, a simplified, low-cost evaluation design has been developed based on the obvious and widely accepted premise that clean water is good for your health and, vice versa--that polluted water is bad for your health.

2. Evaluation Design

Rather than attempt to measure the health impact of potable water use by collecting and comparing morbidity and mortality data on waterborne and water-related disease, this evaluation is designed to collect and compare water utilization data. The main factors to be measured are the accessiblity, quantity, and quality of water.

Accessibility will be measured in two dimensions--time and distance required to obtain water. Quantity will be measured according to source and use of water. Quality will also be measured according to sources and uses. Four basic water uses (drinking and cooking, food and utensil washing, bathing, and laundering) will be analyzed.

3. Evaluation Methodology

Once the decision to install a water supply system has been made for a specific community, the sanitation technician will survey a statistically valid sample of households in the project areas using household questionnaire

"A" to establish a baseline (see attached questionnaire A). This process will be repeated six months after the system is installed and operating using questionnaire "B" and, if practical, again after two years of operation (see attached questionnaire B). The collected data will then be analyzed and compared for water utilization changes.

RURAL SANITATION PROJECT (511-0458)

HOUSEHOLD SURVEY QUESTIONNAIRE "A"

Department: _____ Date: _____

Province: _____ Interviewer: _____

Village: _____

Address or Location of Home _____

1. Name of Family: _____

2. Number of household members

	ADULTS		CHILDREN < 5 years		
	M	F	M	F	
Total					

3. Socio-economic status _____

(Use plot size, house size, number of livestock, education level or other locally relevant indicators of wealth and/or income.)

4. What water source do you use for the following activities?

A. DRY SEASON

Activity	Water source	Distance (estimate meters)	Travel time (estimate minutes)
Drinking and cooking			
Washing food and utensils			
Personal washing			
Washing of clothes			
Other			

B. WET SEASON

Drinking and cooking			
Washing food and utensils			
Personal washing			
Washing of clothes			
Other			

5. Who collects the water?

	Usually	Sometimes
Children		
Women		
Men		

6. How much water is collected each time? _____ liters (estimate)

7. How many times a day is water collected? _____

8. Have you built a latrine?

   Yes ☐ , which type: _____
   (slab, riser, other)

   No ☐ , continue to Question 13.

9. When was it completed? _____(month/year)

10. How many of the household use the latrine regularly?

Adults		Children 5 years		
M	F	M	F	

11. Are there any problems with the latrine?
    e.g. Flies and/mosquitoes ☐

    Smell ☐

    Flooding in rainy season ☐

    Difficulties for the younger children to use it ☐

    Emptying (if applicable) ☐

    Other ☐

Some probable categories actual categories to be established through pilot interviews.

12. How do you think the latrine could be improved?

13. Have you been informed about the support the Government is providing for latrine construction? (Applies to those without a latrine)

Yes ☐ No ☐

14. If yes, have you considered participating in the program?

Yes ☐ No ☐

15. What is the reason(s) why you have not yet joined or why you do not wish to join?

The latrine is not needed ☐
The latrine is too expensive ☐
No time to build ☐
Do not know how to build ☐
Have tried but have been told it is not yet my turn ☐
There is no squatting slabs left ☐
Other reason ☐

Some probable categories actual categories to be established through pilot interviews.

16. Have you or any number of your family had diarrhea, eye or skin infections recently?

Type of sickness	Name	Age	Date (est.)	Duration (est.)	How treated

17. Observations by interviewer regarding:

a) Cleanliness of family members (clean face and hands, hair clean and neat, clothes clean, etc.) _____

b) Status of home (furnishings in order, floors swept, kitchen orderly and clean, no animals indoors, latrine clean, etc.)

c) Food preparation (uses water to wash foods, boils water for drinking tea or coffee, uses soap for utensil washing, etc.)

_____

_____

d) Water quality (color, turbidity, suspended solids, odor, etc.)

_____

_____

18. Miscellaneous observations and comments by interviewer regarding health, water supply sanitation, life-style, etc. _____

_____

_____

RURAL SANITATION PROJECT (511-0456)

HOUSEHOLD SURVEY QUESTIONNAIRE "B"

Department: _____ Date: _____

Province: _____ Interviewer: _____

Village: _____

Address or Location of Home _____

1. Name of Family: _____

2. Number of household members

	ADULTS		CHILDREN < 5 years		
	M	F	M	F	
Total					

3. Socio-economic status _____

(Use plot size, house size, number of livestock, education level or other locally relevant indicators of wealth and/or income.)

4. Are you using water from the community water supply?

Yes ☐ No ☐ , if no continue to Question 16.

5. What type of service do you have?

House connection ☐ , continue to Question 9

Plot connection ☐ , continue to Question 9

Communal water point ☐

Well with handpump ☐

Well without handpump ☐

Other ☐

6. How far away is the water point? _____ meters (estimated)

7. How long does it take to go there, fetch water and come back? _____ minutes (estimated)

8. Who collects the water?

	Usually	Sometimes
Children		
Women		
Men		

9. How much water is collected each time? _____ liters (estimate)

10. How many times a day is water collected? _____

11. When was the supply last not functioning? _____

12. How frequently do breakdowns occur?

Never ☐ Dry Season ☐ Monthly ☐ Weekly ☐

Other ☐ , specify _____

13. For how long do breakdowns last? _____

14. How much do you pay for the water service? _____

15. For what purposes is the water collected being used?

Activity	Approximate estimate of percent ~~or proportion~~
Drinking and cooking	
Washing of food and utensils	
Personal washing	
Washings of clothes	
Watering of animals	
Watering of garden	
Other, specify	
~~Other, Specify~~	100%

16. Do you use water from other sources?

Yes ☐ No ☐ if no, continue to question 21.

17. ~~16.~~ What other water source do you use for the following activities?

A. DRY SEASON

Activity	Water source	Distance (estimate meters)	Travel time (estimate minutes)
Drinking and cooking			
Washing food and utensils			
Personal washing			
Washing of clothes			
Other			

B. WET SEASON

Drinking and cooking			
Washing food and utensils			
Personal washing			
Washing of clothes			
Other			

18. ~~17.~~ For what reason(s) are you not using the water supply?

Traditional source more convenient ☐

Water supply too expensive ☐

Water from the supply does not taste good ☐

Considers water from the supply unhealthy ☐

Conditions of water point unsanitary ☐

Children cannot reach or turn the tab ☐

Children cannot operate the handpump ☐

The supply is unreliable ☐

Some probable categories actual categories to be established through pilot interviews.

Would you like to participate but cannot because:

- not a member of the water group ☐
- have not paid the fees ☐
- other reason(s) specify ☐

Excluded by others because:

- social, cultural or religious reasons ☐

19. ~~18~~. What changes would be needed for you to use the supply? (This question applies to those not using the supply)

_____

_____

20. ~~19~~. In what way would you suggest the water supply services could be improved?

(More information to and involvement of consumers, improvements in the system for revenue collection, improvements in maintenance, training to operators, removal of social barriers).

21. ~~20~~. Have you built a latrine?

Yes ☐ , which type: _____
(squat, riser, other)

No ☐ , continue to Question 25.

22. ~~21~~. When was it completed? _____(month/year)

23. ~~22~~. How many of the household use the latrine regularly'

Adults		Children 5 years		
M	F	M	F	

24. ~~23~~. Are there any problems with the latrine?

e.g. Flies and/mosquitoes ☐

Smell ☐

Flooding in rainy season ☐

Difficulties for the younger children to use it ☐

Emptying (if applicable) ☐

Other ☐

Some probable categories actual categories to be established through pilot interviews.

25.24. How do you think the latrine could be improved?

26.25. Have you been informed about the support the Government is providing for latrine construction? (Applies to those without a latrine)

Yes ☐ No ☐

27.26. If yes, have you considered participating in the program?

Yes ☐ No ☐

28.27. What is the reason(s) why you have not yet joined or why you do not wish to join?

The latrine is not needed ☐
The latrine is too expensive ☐
No time to build ☐
Do not know how to build ☐
Have tried but have been told it is not yet my turn ☐
There is no squatting slabs left ☐
Other reason ☐

Some probable categories actual categories to be established through pilot interviews.

29.28. Have you or any member of your family had diarrhea, eye or skin infections recently?

Type of sickness	Name	Age	Date (est.)	Duration (est.)	How treated

30.29. Observations by interviewer regarding:

a) Cleanliness of family members (clean face and hands, hair clean and neat, clothes clean, etc.) _____

b) Status of home (furnishings in order, floors swept, kitchen orderly and clean, no animals indoors, etc.)

c) Food preparation (uses water to wash foods, boils water for drinking tea or coffee, uses soap for utensil washing, etc.)

_____

_____

31. ~~16.~~ Miscellaneous observations and comments by interviewer regarding health, sanitation, life-style, etc. _____

_____

_____

d. Water quality (color, turbidity, suspended solids, odor, etc.

_____

_____


WASH