

ISLAMIC REPUBLIC OF PAKISTAN

KINGDOM OF THE NETHERLANDS

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## QUETTA SEWERAGE AND SANITATION PROJECT

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### LOW - COST SANITATION REPORT

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**CONSULTING ENGINEERS  
BONGAERTS, KUYPER AND HUISWAARD**

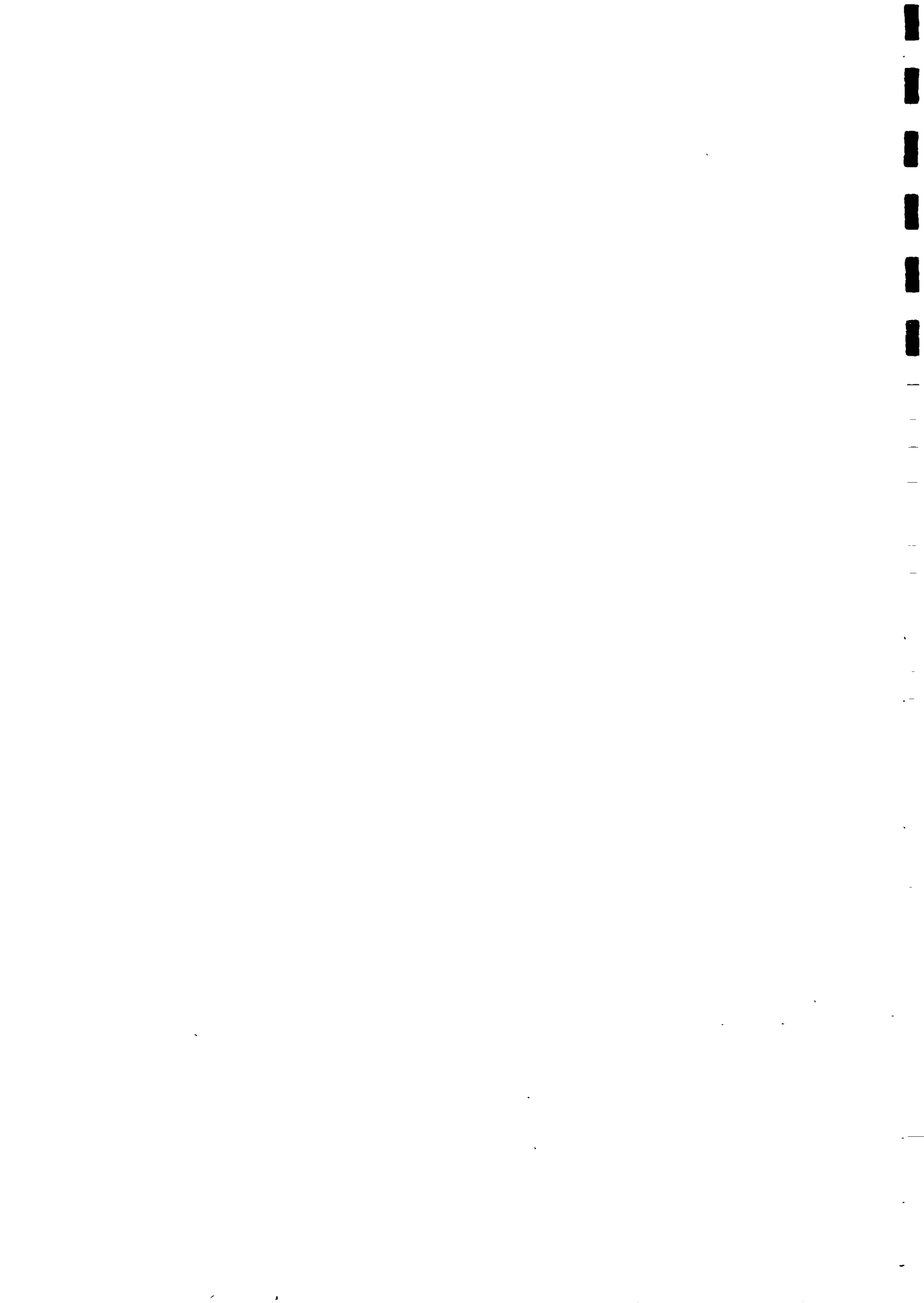
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LIMITED**



ISLAMIC REPUBLIC OF PAKISTAN

*Coraline Dijksterhuis*  
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KINGDOM OF THE NETHERLANDS

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## QUETTA SEWERAGE AND SANITATION PROJECT

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## LOW - COST SANITATION REPORT

March 1989

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**CONSULTING ENGINEERS  
BONGAERTS, KUYPER AND HUISWAARD**

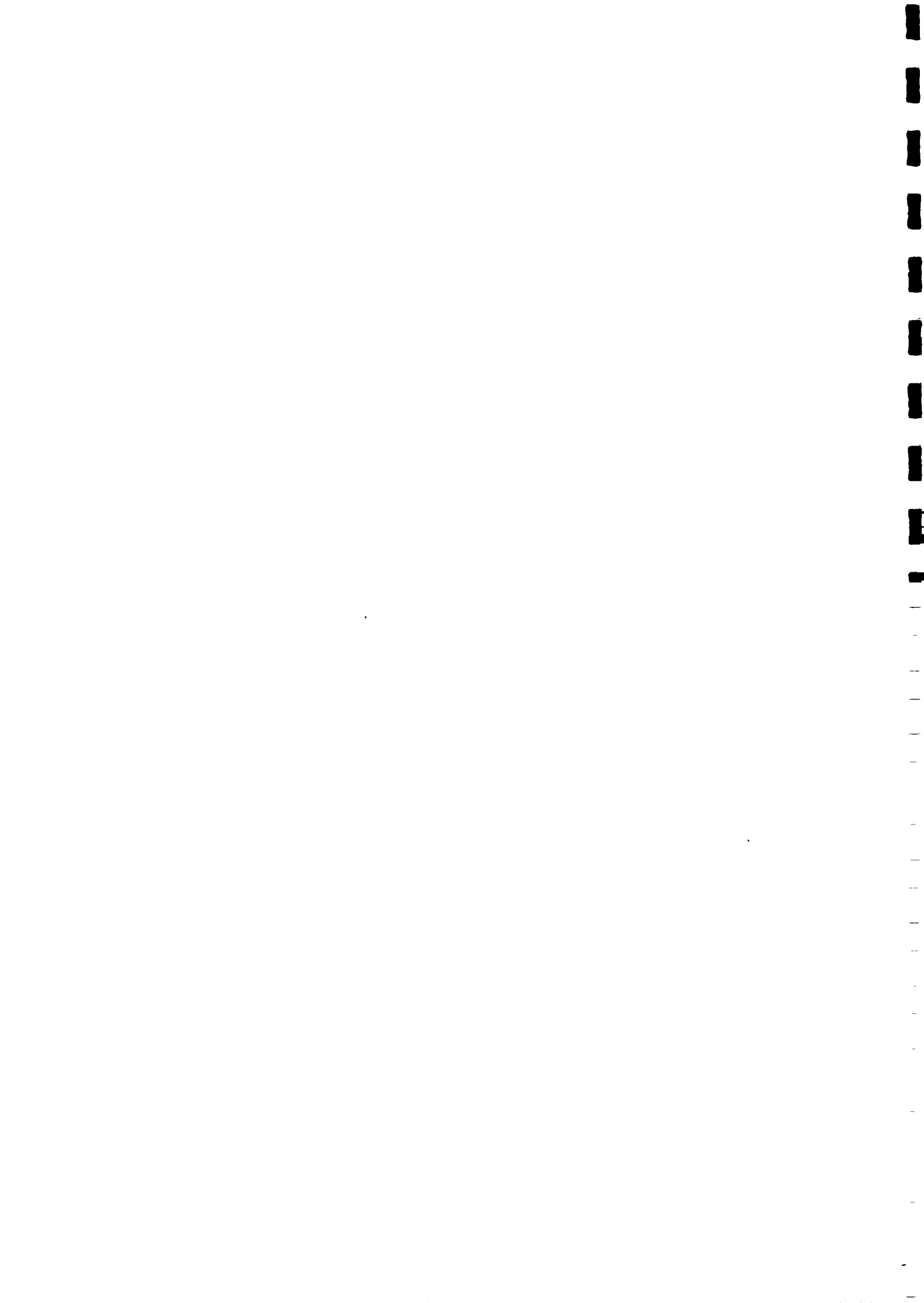
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- Digging of the soak pit
- Construction of the honeycomb brickwork lining
- Completed soak pit
- Twin soak pit
- Installation of squatting pan
- Completed latrine substructure with pan and footrests
- Junction Box
- Iron inspection lid in pit cover
- Twin pit pour-flush latrine
- Ventilated pit latrine

## 1. INTRODUCTION

In 1984 a feasibility study was carried out to assess the current sanitary conditions in Quetta city, Pakistan, and to formulate project proposals for improvement of the situation. The study concluded, that low-cost on-site latrine facilities is an effective and feasible intermediate solution for improvement of the poor sanitary conditions in the residential peri-urban areas of Quetta. This conclusion was reached taking into account the level of water service, general infrastructure and socio-economic situation in these communities. As a result, a five-year Sanitation Programme was formulated to provide about 14,000 pour-flush (PF) double pit latrines. These latrines can be upgraded at a later stage to flush latrines when water-borne sewerage, to be installed in the city-centre areas under the present project, becomes feasible and affordable in these kilis and katchi abadies.

The preparation activities for the Quetta Sewerage and Sanitation Project commenced in early 1987. A pilot project for the low-cost sanitation component was formulated to test the approach to "large scale" provision of PF latrines, both in a technical and social sense. The physical implementation of the pilot project took place from November 1987 to February 1988. This construction phase was preceded and followed up by sociologists informing the authorities and public about the latrine programme, arousing interest in improved hygiene, selecting beneficiaries, instructing on latrine use and health education with respect to sanitation, and monitoring the use of the latrine for some period after installation. In Chapter 3 of this report the activities and experience of the pilot project are discussed in detail, as well as the findings and preliminary conclusions for the next stage of the programme.

In mid-1988, the results of the monitoring survey for the pilot project became available. The Consultants concluded that the applied approach to physical implementation and participation of the community needed revision in order to reach the objective of the formulated programme, both in quantitative and qualitative terms. A full evaluation of the pilot project took place between October and November 1988, for which additional international and Pakistani expert assistance was obtained. During the evaluation period the experience, constraints and strategies of the pilot project were reviewed (Chapter 4). Alternative strategies were identified and a revised delivery method formulated, based on the findings of the pilot project and similar programmes in Karachi (Chapter 5). Finally, the recommended delivery approach has been worked out in more detail regarding technology selection, costing and affordability, construction methodology and community involvement at all stages of project preparation, execution and post-installation monitoring (Chapter 6).

The preliminary findings of this evaluation were discussed extensively with the Netherlands Government Mission during their visit to Quetta in October 1988. The Mission agreed with the recommended revised approach. As a result a long-term expatriate Sanitation Co-ordinator has been appointed. This expert will be responsible for initiation, co-ordination and execution of all activities identified for the new programme. It is of the utmost importance that the lost momentum, which caused frustration with the communities, community-based organizations, and the project team, is regained as quickly as possible. Further steps are indicated in the concluding pages of the report.



## 2. EXECUTIVE SUMMARY

### 2.1 Pilot project

As part of the Quetta Sewerage and Sanitation Project, a pilot project for the sanitation component was formulated and executed in the period 1987-88. The objective was to identify the opportunities and constraints in delivering and constructing approximately 14,000 pour-flush latrines in the low-income areas of Quetta. In this report the preparatory activities, execution of the pilot project and evaluation of the experience and findings are discussed, and an approach for further implementation of the programme is formulated.

The pilot project aimed to install 100 low-cost latrines in the different ethnic communities distributed over the various project areas. The technology selected was tested and the project monitored with regard to organizational requirements, implementation arrangements, financial aspects and socio-cultural acceptance of the sanitation programme. The project team consisted of the project manager, short-term sanitation experts, a communication specialist, two senior Pakistani sociologists, two local female social workers and three WASA Assistant Engineers.

A major objective of the programme is to change the unhygienic sanitation habits of many of the "rural migrants" in some of the project areas, and to promote latrine use and personal hygiene, especially by children. In order to obtain acceptance from people many of whom are illiterate and get the message across much attention was paid to communication.

The preparatory activities consisted of informing local authorities and community/religious leaders about the project, finalizing the designs and preparing contract documents, and selecting and negotiating with contractors. In consultation with the Zakat committees in each community, a number of families were selected for inclusion in the pilot project. Subsequently these families were surveyed to determine the social background, family composition, economic situation and to identify a suitable site for the household latrine.

During the winter of 1987-88 the latrines were constructed by three contractors over a period of four months. During and after construction the sites were visited regularly to monitor progress and quality of work, the functioning of the latrines and use by family members. By mid-1988 the findings of the project were evaluated and may be summarized as follows:

- The PF latrine concept was received favourably and most beneficiaries were using their latrines properly. For some households the latrine was somewhat of a status symbol and was located in the guest area, thus rarely used by family members. However, the most important impact of the project is probably the lifting of the taboos to such an extent that sanitation could be discussed publically.

- Considering the large response to use water for cleansing, hygiene education was a success, also in areas of limited water availability. However, in some areas the old "rural" habits of using stones and mud balls continued and male family members still went outside the compound instead of using the latrine.
- Technical problems and constraints were identified with respect to the limited inner size of the latrine and location and orientation within the compound, slow pace of construction due to inefficient organization by the contractors and reluctance of the households to place the latrine inside the house.
- Although promotion and publicity for the programme was limited to a short television film and a few radio interviews the response from the communities was overwhelming. Over 1,000 applications were received for latrines. The size of this response is also attributed to the involvement of community based organizations (CBOs) in the final stages of the pilot project.

Thus it was concluded that the involvement of regular contractors was not very successful, especially in terms of implementation rate and cost of construction. The inclusion of a brickwork superstructure raised the cost far above the amount beneficiaries could afford and beyond the finance reserved for the LCS programme. Logistical problems and staffing difficulties were encountered with project promotion, hygiene education, construction supervision, and end-use monitoring.

## 2.2 Evaluation

It was realised that the adopted approach had to be evaluated in more detail to revise the strategies with respect to delivery method and enhancing community participation. For this purpose assistance was obtained from Dr McGarry and Dr Bakhteari who carried out an evaluation mission in October 1988. During the subsequent months, a new approach and strategy was formulated in consultation with the project team. The following two major recommendations emerged.

- The inexperience of government organizations such as WASA with socially oriented activities, and the absence of suitable personnel, make the various community based organizations (CBOs) better suited for approaching and convincing the local communities. Therefore basic activities within the community to promote latrines, to implement hygiene education, and to monitor latrine use should be carried out by full-time (WASA paid) CBO members, trained by the project team.
- Contractors did not come up to expectations and sometimes did not gain the confidence of some groups to permit latrine construction in the restricted family area. Construction work would be done more effectively by local mystries (masons), who are allowed to enter the family (purdah) area where the latrine should be installed. The project team will train the mystries in latrine construction, giving special attention to quality aspects.



Various alternative delivery methods have been examined ranging from completely self-help by the households to exclusively WASA-driven. The degree of CBO involvement was considered. It was concluded that the best approach is that in each of the project areas a local reference centre (LRC) will be established, to be run by a female and male social worker and a technologist. The LRC will be the focus point for the community and the CBOs working in the area. A total of six LRCs will be set up, fully staffed and equipped to run the programme logistically and administratively in their respective areas. The CBOs will carry out all direct community activities and the latrines will be constructed by local mistryies under supervision of the WASA technologist and CBOs. The programme will be coordinated from the project office by the expatriate sanitation expert, assisted by a male and female senior sociologist.

Over 20 CBOs have been identified in the project areas of which eight have been assessed in more detail. All CBOs have indicated their interest participating in the programme and are willing to allocate community members as full-time sanitation promoters (sanpros) and educators (saneds). An agreement setting out the obligations and responsibilities of each party is necessary to define operational activities. The CBOs will select suitable local mistryies for training in latrine construction, work organization and quality management.

### 2.3 Technology aspects

In the feasibility stage the twin pit pour-flush latrine (PF) was selected. This was based on the excellent experience with this technology in the South-Asia region and the potential for upgrading to flush toilets that can be connected to a sewer system in the future. The ventilated improved "dry" pit latrine (VIP) was included for those areas where the availability of water is not sufficient to support the pour-flush concept.

The latrine programme will not include the superstructure. This will be left the householder to construct in either mud (traditional) or more sophisticated and costly brickwork. Also, pit digging may be considered to be a self-help activity, if it can be incorporated in the work programme and does not delay implementation.

The use of deep dry pits in the Pashtunabad and Baluch Colony areas is quite common and has a long tradition. The soil conditions in these areas may permit use of these pits for the pour flush latrine or eliminate the need for the costly lining in new soakpits. Further investigation is required to determine whether unlined pit walls will be stable under wet conditions. If this were the case, then considerable cost saving could be made. However, the soil conditions and high groundwater table in the western part of the city (Hudda, Deba and Shaikhan) will still necessitate lining of soakpits.

## 2.4 Proposed programme and costs

The proposed implementation programme requires considerable preparatory work in 1989 to establish the reference centres, and to organize and train CBO staff and local mystries. Furthermore, the sociologists and social workers on the project need more practical training from UNICEF rural programme and ongoing latrine projects in Karachi. Therefore, only a limited number of about 350 latrines can be constructed this year. The programme will start in Baluch Colony where CBOs are well organized and highly motivated. Project activities will then be gradually extended to the other project areas. When the programme is in full swing in all communities, an average of 3400 latrines will be constructed annually.

Table 2.1 - Projected number of latrines to be constructed in 1989-1993

A R E A	1989	1990	1991	1992	1993	Total
City Center	-	500	750	850	885	2,985
Marriabad	-	150	300	500	585	1,535
Pashtunabad	50	500	650	650	645	2,495
Baluch Colony	100	350	350	350	380	1,530
Kili Shaikhan	50	200	200	200	210	860
Hudda	50	200	200	200	260	910
Deba	100	400	600	640	640	2,380
Kili Almo/Ismail	-	-	355	400	400	1,155
Total	350	2,300	3,405	3,790	4,005	13,850

PF and VIP latrines, with and without pits, lined and unlined, will be constructed. Based on the latest cost estimates, the total investment costs amount to Rs 28.3 million.

The proposed organization implies a staff of 5 professionals in the project office, 24 social workers and technologists in the six reference centres and 49 CBO community workers. Both project office and LRCs will be assisted with drivers and office assistants. In addition, funds are required for one more vehicle, motorcycles and furnishing of the LRCs. All project costs together with funding source are presented in Table 2.2.

Table 2.2 Estimated programme costs (Rs x million)

	Project (consultant)	WASA	Total
Project office staff	3.18	0.39	3.57
LRC staff	-	9.72	9.72
CBO staff	7.54	-	7.54
Overhead WASA	-	5.50	5.50
Construction costs	28.28	-	28.28
Info material/audio visuals	0.65	-	0.65
Rent LRCs + utilities	-	1.50	1.50
Vehicles/motorcycles - investment	1.21	-	1.21
- O&M	-	1.00	1.00
Total	40.86	18.11	58.97

## 2.5 Cost recovery aspects

Cost recovery is an important although delicate aspect of the programme which could not be tested in the pilot phase because the latrines were provided free of cost. In discussions with the CBOs, a maximum repayment of about Rs 2400 appeared to be acceptable to the community (the up-front charge of Rs 300 per latrine and monthly instalments of Rs 35). These figures fit in very well with the cost estimates for the latrines foreseen in signing agreements with householders (Recovery of the delivery etc.), which is a similar figure of that for the latrine, is not considered should be regarded as subsidy. However, these costs will decrease when run by the CBOs with limited assistance from WASA.

Collection is proposed via banks as is the case with electricity and gas charges. The cost of these services is reported to be 14%, which is high, but means that collection is contracted out effectively without increasing WASA staff. Defaulting is a thorny issue whereby legislation and enforcement methods are often not very successful. However, the involvement of the CBOs will provide some pressure within the community. WASA can consider halting the programme in communities where defaulting becomes a serious problem.

## 2.6 Next steps

The next step in starting up the programme is to survey in more detail the potential of CBOs already identified and possibly also other CBOs. The results to be discussed and CBOs will be given every opportunity to contribute their methodology for each area and subsequent planning process. Their interest in participating fully in project development is crucial to its success.

Audio-visual materials, such as slide sound shows covering technology, delivery, and cost recovery systems need to be prepared urgently. They will be made in the different local languages. Also promotion and education materials in the form of leaflets and charts will be developed for the sanpros and saneds to inform largely illiterate audiences about application and installation procedures as well as for hygiene education. These guidelines should be very clear and consistent for all project areas.

Recruitment and training of LRCs staff and CBO members will begin shortly after the arrival of the sanitation coordinator. Existing project staff will assist and participate in the training which will be directed firstly to the LRC and CBOs of Baluch Colony. Subsequently, selected mystries will be trained in latrine construction, latrine applications will be sorted at the LRCs, and house visits made by the sanpros and saneds. Gradually the programme will be extended to other areas so that by the end of 1989 all LRCs are established and CBOs are in the field.

Several components of the methodology, such as technical standards and latrine costs, draft agreement and warrantee certificate with the householder and administrative arrangements with the banks need to be worked out in more detail. Also, procurement and delivery of materials and payment to mystries need detailing and field testing. Furthermore, aerial survey is required for quick and inexpensive detailed mapping of the areas. This will improve site selection for the latrine within the compound and contribute to better administration.

From the experience with the pilot project and the findings of the evaluation mission, it can be concluded that involving CBOs and use of local mystries will lead to greater community participation and contribution. This is considered essential for the success of the programme in both physical and social terms. However, the viability of this approach needs to be tested with respect to CBO and mystry capabilities and willingness. The approach will require much effort and understanding from the project team. Strengthening of the project team with a full-time expatriate coordinator and short-term inputs from the sanitation experts will enable continued professional attention to the programme and is therefore a promising start towards project success.

### 3. THE PILOT PROJECT

#### 3.1 Objectives and Approach

The outlined Latrine Programme aimed to provide about 14,000 low-cost pour-flush (PF) latrines within a period of five years. This meant installation of about 3,000 latrines per year, which is quite ambitious considering the substantial efforts required for non-technical activities such as promotion of the latrine concept, user instruction, hygiene education and post-construction monitoring.

##### 3.1.1 Objectives

The pilot project aimed to install 100 PF latrines within the different ethnic groups distributed over the various project areas between November 1987 and February 1988. The main objective was to test the various technical and non-technical aspects of the outlined latrine programme including the following aspects:

###### a) *Technical:*

- technology selection, construction design, location of the latrine
- lined soak pit versus unlined deep pit;
- implementation aspects such as quality of construction and implementation rate;
- suitability of the ventilated improved (dry) pit latrine (VIP).

###### b) *Organization:*

- project promotion, user instruction and post-construction monitoring
- operation and maintenance;
- coordination of Project (WASA) office and Local Reference Centres;
- contract awarding/administration and contractor performance monitoring

###### c) *Financial:*

- cost-effectiveness of latrine alternatives;
- affordability of beneficiaries;
- opportunities and constraints to cost recovery;
- collection method of the user charges;
- defaulter issues.

###### d) *Socio-cultural:*

- allotment latrine applications;
- distribution by area/ethnic group;
- superstructure and self-help;
- extent of hygiene education;
- NGO involvement in programme.

##### 3.1.2 Project approach

The approach for the provision of appropriate on-site sanitation in the urban areas of Quetta has been based on the extensive experience gained during the feasibility stage in 1984 and subsequent project preparation activities. Current sanitation habits require drastic changes concerning hygiene understanding and customs practiced for many centuries in the arid rural areas, from where many of the Quetta residents have migrated.

It was acknowledged to follow on directly from last paragraph on previous page that these changes in behaviour could only be realized through continuous information and education, for which full community participation is required.

*Technology selection:* The type of latrines suitable for the Quetta situation had been discussed extensively during the project preparation phase. In the 1984 Reformulation Mission Report (RMR) the PF latrine with twin soak pits was selected. This recommendation was based on:

- low water requirements of this latrine;
- elimination of smells;
- safe containment of the excreta;
- possibility to locate the latrine inside the house;
- general acceptability to the people;
- possibility of upgrading latrine to full flush system so that it can ultimately be connected to the sewerage system.

During the Appraisal Mission of the Netherland's Government in August 1986, the Mission suggested that some ventilated improved pit (VIP) latrines should be constructed as part of the pilot phase in those areas where inadequate water supply is expected for the next 4-5 years. This is mainly the case in Braich and Muslim Colony on the south side of Baluch Colony, where there is no piped water supply and a general scarcity of water. Only recently migrated from the arid rural areas, people are used to cleansing after defaecation with materials such as stones and earth lumps.

*Latrine superstructure:* During the feasibility study, the issue of providing a superstructure with the latrine was considered but rejected on the basis of cost aspects. During the preparation of the pilot project, however, the team felt that a superstructure should be included for the following reasons:

- for the householder, the PF latrine without superstructure offers few tangible benefits over present dry pit facilities so there is little incentive to convert to and pay for the PF latrine;
- low-income families are disadvantaged as they generally cannot afford the lump sum cost of constructing a superstructure;
- the VIP latrine requires a superstructure to function properly and an inequitable situation arises when a superstructure is not provided for the PF latrine;
- latrine facilities in Quetta are generally constructed outside the house and therefore require a superstructure to provide the necessary privacy.

The Consultants, therefore, decided to incorporate the superstructure in the pilot project and consider whether it should be included in the main programme on the basis of cost and benefit analysis.

*Delivery method:* From the start, with the identification of a low-cost programme in the feasibility study, the method of implementation was subject to discussion. The advantages and disadvantages of both a self-help approach and contractor involvement were extensively considered. Experience with self-help programmes in katchi abadies of Karachi was evaluated, as well as the more commercial approach practiced on a large scale in India. In the selection process the following specific circumstances were considered:

- the proposed programme aimed at large scale provision of latrines in order to reduce the lack of appropriate sanitation within a reasonable time span;
- the complicated ethnic situation in Quetta, where a substantial part of the population recently migrated from the arid rural areas, and unhygienic defaecation habits are practiced;
- the absence of experience at government organizations (including WASA) of community development activities, as well as the lack of sufficiently trained staff, both technical and social;
- staffing limitations of the project team.

Although the self-help approach would probably yield more community participation in the actual construction, it was not considered appropriate for the programme because of the extremely long lead-time this approach has taken in Karachi (five years) and the poor quantitative results achieved initially.

It was therefore decided to select the contractor approach for construction activities, supervised by WASA engineers. The social/health component would be dealt with by a small team of sociologists and social workers from WASA/Consultants. This approach would be tested in the pilot phase and adjusted where necessary for the main programme.

The pilot project is the first step in making the people of Quetta familiar with improved sanitation, and an important communication element is personal contacts. These contacts can be directly with the project team members, or indirectly with the local council representatives and Social Welfare Organization.

In order to facilitate these contacts and to make WASA more visible among the community it was proposed that Local Reference Centres (LRCs) should be established in the six regions where the latrine programme is being implemented.

The following functions will be carried out from these centres:

- maintaining contacts with local welfare organizations;
- providing information on the latrine programme;
- providing hygiene education information;
- receiving applications for a latrine installation;
- carrying out site inspections;

- running hygiene education sessions;
- promoting environmental awareness;
- conducting latrine construction operations;
- monitoring use of latrine.

During the pilot phase the preparation of information material will be taken in hand, suitable locations for LRCs identified, organization and staffing requirements determined, and contacts with the local welfare organizations initiated. The precise nature of some of these LRC functions will be worked out further during the main implementation phase.

*Social and health aspects:* Social acceptance of the latrine concept required a clear understanding of the benefits which would result from the use of the PF latrine. The relationship between appropriate sanitation and health is difficult to grasp for poorly educated people. The more tangible benefits of the PF latrine were expressed in terms of:

- elimination of smells and direct contact with excreta;
- no need for services by sweeper;
- providing privacy (only with superstructure);
- improving personal cleanliness through the use of water;
- improving the general cleanliness of the yard and the environment.

Health education, which is limited to personal hygiene aspects relating to contact with excreta in this context, is the realm of the Health Department.

The approach of informing households about the influence of excreta on health had to be tested. The main emphasis of the message was on:

- the need to maintain personal hygiene, particularly the use of soap for washing hands after defaecation;
- the need to instruct children accordingly;
- the need to maintain the latrine and yard free from excreta.

The message was conveyed by team member visits to individual households, and the use of group meetings, schools and educational instruction.

*Financing arrangements and cost recovery:* Financing of the project is being undertaken with grant funds from The Netherlands and loan funds from the Government of Pakistan. In the approved PC-1 based on 1984 prices the total expenditure for the low-cost sanitation programme was Rs 25.9 million (see Table 3.1). This represents a contribution of Dfl 2.34 million and Rs 8.65 million respectively, based on a sharing of cost between The Netherlands and Pakistan of 2/3 and 1/3, and an exchange rate of 1 Dfl = Rs 7.4.



The Netherlands' contribution now represents a current value of some Rs 29.2 million. Extrapolating the Pakistan contribution to 1989 levels at the approved rate of 6.5% the current value is Rs 11.8 million. The total value of the original allocation is Rs. 41.0 million at current prices.

Table 3.1 Project financing arrangements

Contributor	1984 Share	Approved PC-1		Escalation 5 years @ 6.5 %	Dfl=Rs (1989)	1989 Prices Rs(m)
		Constant Rs(m)	1984 Prices Dfl=Rs Dfl(m)			
Netherlands	0.66	17.3	7.4	2.34	9.1	29.2
Pakistan	0.33	8.6				11.8
Total		25.9				41.0

The investment of this capital sum in a public sector utility will require a policy decision about the contribution that the recipients will have to pay. The method of payment can take many forms but generally will involve repayment in instalments of the whole or a portion of the capital investment. Willingness to pay for the latrine installation was investigated but could not be tested as the revenue collection system for WASA has not yet been established.

The method of recovery will require detailed consideration. Both the receiving of monies and the administration of receipts will have to follow carefully set procedures. The method of dealing with defaulters also has to be finalized.

### 3.2 Preliminary Activities

#### 3.2.1 Selection of beneficiaries

*Identification of sanitation areas:* During the feasibility study a great deal of attention was paid to the selection of areas which would be eligible for the installation of latrines. Based on the findings of the socio-economic survey, the municipal area was divided into four distinct zones:

- city-centre;
- residential areas on the east side - Marriabad, Pasthoonabad and Baluch Colony;
- residential areas west of the railway - Hudda, Kili Deba and Kili Shaikhan;
- peripheral residential areas in the north - between Samungli Road and Chaman Road: the low income areas Kili Ismail and Shabo.

The characteristics of these areas, given in Table 3.2, are only a generalization and some variations are likely.

Table 3.2 Characteristics of the project areas

Zone	Population density	Water service level	Per capita water consumption	Sanitation level	Housing level	Income level
City centre	medium/high	high	very high	medium	high	medium/high
Residential east	high	high	medium/low	low	low	medium/low
Residential west	high	low	low	low	low	low
Peripheral areas - Satellite Town	high/medium	high	very high	high	high	high/low
- northern areas	high	low	low	low	low	low

The RMR recommended the implementation schedule of latrines given in Table 3.3. It was envisaged that some of the higher income households will pay for the latrine themselves, and thus reduce the total funding requirement for the programme.

Table 3.3 Sanitation programme at feasibility stage

Programme Area	Construction 1988 - 1994	
	Total	Programme
- City centre	5,950	4,450
- Marriabad/Pashtoonabad/ Baluch Colony	5,900	5,400
- Hudda/Deba/Shaikhan	3,000	3,000
- Peripheral areas (killis)	1,000	1,000
Total	15,850	13,850

*Information meeting at the Municipal Corporation:* Early in the preparatory phase information meetings with the Mayor, councillors and Zakat Committees were scheduled at the Quetta Municipal Corporation. The Sewerage and Sanitation Project was introduced, particularly the latrine programme, with its 100 latrine pilot project for the different regions of the project area. With the help of some 20 charts the specifics of the project were explained, such as:

- the pour-flush technology and location within the compound;
- water-seal of the pan and accumulation of sludge in the soak pits;
- relationship between present unsanitary facilities and communicable diseases;
- programme targets and cost recovery issues.

Those present were requested to help promote the programme to residents in their constituencies and to request their cooperation with surveys and other activities in order to make the project a success.

*Selection of beneficiaries and inspection of houses:* To select the households for inclusion in the pilot project the following procedure was adopted. Contact was first made with the Quetta Municipal Corporation, particularly the councillors for the relevant areas and the chairmen of the local Zakat committees. The latter are especially involved with the extremely poor families in the areas.

It was suggested that each of the councillors and the Zakat chairmen select one or two houses within their area suitable to construct a latrine for pilot project purposes. About 160 houses had to be inspected as not all sites proposed proved to be suitable. The main constraints were the availability of water and the number of persons residing in one compound. The latter ranged from 5 to 45 and it was decided to place a limit of 15 persons, considered to be the maximum number of users for one latrine.

Standard designs adopted for the pilot project included latrines with 5, 10 or 15 user capacity. For purely practical reasons the limit of 15 persons was therefore maintained. For larger families special provisions will have to be made, generally by duplicating the facility.

Information collected during the house inspections concentrated mainly on the physical conditions of the compound. The total number of persons, grouped according to age and sex, were recorded, and the ethnic background was established. For each site a sketch was prepared to show where the proposed latrine was to be constructed. At a later date, orientation of the compound in relation to Caaba was added to the form, as this affected positioning of the latrine pan.

With the PF latrine, the availability of water is of prime concern. There are areas where the water supply is at a premium and has to be purchased from local suppliers at a rate of Rs 30 per 400 litres. When the daily wage is low, water for ablution may have a low priority. In such cases the installation of a PF latrine has not been recommended and a VIP latrine was proposed. However, these water-short areas are limited and considering the priorities of these communities, piped water is pursued vigorously and usually follows suit.

The other constraint is one of space. While the compounds are generally large enough to accommodate the latrine without a problem, some of the sites in the established areas have been built up to such an extent that the pits may need to be constructed outside the compound. However, this was not attempted in the pilot project.

### 3.2.2 Socio-economic household survey

A socio-economic survey of 800 houses in selected areas of Quetta was carried out during the feasibility study. The main purpose of that survey was to determine:

- the existing situation with respect to the level of water service and sanitation arrangements;
- preference for the new type of sanitation facility;
- willingness to pay for improved services.

More detailed information was required for the pilot project and an updated questionnaire was prepared. The questionnaire comprised four parts covering the following aspects (see also Appendix A):

- socio-economic conditions of the household;
- physical conditions in and around the house;
- suitability of latrine and opinion of the family;
- engineering parameters.

This survey was carried out at the 100 households selected by the councillors for the pilot programme. The collected data can only be regarded as indicative of trends as the selection of the households was not carried out on a random basis. The survey was carried out between October and November 1987. Some of the most important results are presented below.

*Family structure and education:* Family composition data were collected to gain information about the living structure per compound, and to verify whether there is a correlation between the various ethnic groups and the average family size. The average (extended) family structure for the various ethnic groups, based on languages spoken in the family, is given in Table 3.4.

Table 3.4 Family size and composition by ethnic group

Language	Adults		Children (6 - 15 y)		Children (0 - 5 y)		Average size
	Male	Female	Male	Female	Male	Female	
Pashto	3.26	3.42	1.94	1.57	1.13	1.13	12.45
Bravhi	3.00	3.20	1.76	1.60	1.08	0.68	11.32
Persian	3.08	2.92	1.92	1.42	1.42	0.67	11.42
Baluchi	3.20	4.20	1.00	1.00	1.00	1.20	11.60

The question relating to the education of children, the respondent, and the head of the household revealed that there are large discrepancies in education levels amongst the areas, as illustrated in Table 3.5.

Table 3.5 Literacy rate and child education by reigon

	Marriabad	Pashtoonabad	City Centre	Baluch Colony	Hudda/Deba/Shaikhan	Total
No of households	16	20	10	21	33	100
Literacy rate(%)						
male	37.5	25.0	80.0	23.8	39.4	41.14
female	6.2	0.0	30.0	0.0	6.1	8.46
School attendance (%)						
Primary school						
male	65	60	47	52	51	54
female	36	25	20	0	31	25
Secondary school						
male	23	18	23	20	16	19
female	5	0	23	8	5	6
Higher education						
male	4	6	23	2	6	6
female	0	0	7	0	0	0

The low literacy rate directly influences the way the publicity campaign has to be directed at households to stimulate public awareness about the programme. Hygiene education via school programmes has limited impact since only half of the boys and only a quarter of the girls attend school.

*Financial conditions:* The income levels per unit were recorded and grouped into income ranges. The data were then analysed, especially in relation to:

- income levels per household per area;
- family size per household per area;
- per capita income in the various areas.

The expenditure information collected indicates that a minority of the households live in rented houses, and that the largest single items of expenditure are for food and daily purchases. The specified expenditure sum is generally less than the stated monthly income, leading to the possible accumulation of savings (see Table 3.6). A relatively high proportion of poor households are found in Hudda, Deba and Shaikhan.

Table 3.6 Household income and expenditure by region

	R E G I O N					Total
	Marriabad	Pashtoonbad	City Centre	Baluch Colony	Hudda/Deba Shaikhan	
No of households	16	20	10	21	33	100
Household income (%)						
Rs / month:						
< 1000	12.5	15.0	10.0	-	30.3	17.0
1000 - 2000	62.5	40.0	30.0	31.6	36.4	39.0
2000 - 3000	6.3	15.0	10.0	47.3	18.1	18.0
3000 - 4000	12.5	10.0	30.0	10.6	6.1	12.0
4000 >	6.2	30.0	20.0	10.5	9.1	14.0
Average monthly income	2144	2965	2790	2700	1940	2407
Average household size	12	12	13	15	10	12
Average income per capita	190	274	234	207	192	215
HOUSEHOLD EXPENDITURE (%)						
Housing	4.4	-	-	-	-	0.6
Food	25.0	23.4	27.1	30.4	30.9	27.6
Daily expenses	20.3	14.2	16.8	16.8	17.0	16.7
School	3.6	3.2	4.8	3.2	5.0	3.9
Clothing	4.4	7.6	9.3	8.7	8.7	7.9
Services	7.0	6.5	7.2	5.5	8.4	7.0
Transport	6.7	6.0	9.1	6.7	5.7	6.5
Other	10.1	10.3	11.1	11.0	10.4	10.6

The RMR had established that the average charge for sanitation facilities should not exceed 2.5 - 5% of the family income. This ability to pay would result in affordable charges as listed in Table 3.7.

Table 3.7 Affordable charges

Income group (Rs/month)	Income (%)	Sanitation levy (Rs/month)
< 500	2.50	12
500 - 1000	3.00	29
1000 - 2000	3.50	64
2000 - 3000	4.00	181
3000 - 4000	4.50	191
4000 >	5.00	328

It can be concluded that a monthly charge of Rs 30-35 is affordable by most of the households. The lowest income group will either need assistance from the Zakat or direct subsidization by the project.

*Household facilities and services:* Information collected about the basic services available to households relates not only to the existing latrine facilities but also to the level of water supply and availability of household appliances. With respect to the publicity campaign, data about ownership of radio or TV is particularly important. Data about the present method of solid waste disposal was also collected, although not directly related with the project.

Table 3.8 Level of water service and media coverage by region

	Marriabad	Pashtoonbad	City Centre	Baluch Colony	Hudda/Deba Shaikhan	Total
No of households	16	20	10	21	33	100
<u>Water supply</u>						
House connections (%)	87.5	95.0	80.0	90.0	83.0	87.0
Stand post (%)	12.5	5.0	20.0	10.0	17.0	13.0
Average distance to stand post (m)	15.0	10.0	10.0	-	26.0	20.0
Average daily supply (hours)	2.0	2.5	2.5	2.0	2.5	2.5
<u>Media</u>						
Radio	37.5	65.0	80.0	58.0	43.0	53.0
Television	56.2	55.0	60.0	5.0	49.0	44.0
Newspaper	-	10.0	10.0	-	6.0	5.0

From the water supply data collected (see Table 3.8), it is concluded that many householders have made an illegal connection to the municipal water supply system, because the connection rate is much higher than official records indicate. Even though they have their own connection, the level of water availability is still very low as water is provided for only a few hours daily in some areas. Some of the new katchi abadies have no water distribution network and water has to be bought from vendors. In both cases, storage of water is therefore an important factor to enable flushing of the latrine.

*Social interaction and women's participation:* The social interaction of the families, particularly the female members, varies considerably among the areas.

In the Pathan communities of Pashtoonabad and Baluch Colony the purda system is still very much in vogue and opportunities for women to attend social gatherings and meetings outside the family structure are extremely limited. As a general rule, women aged between 10 and 45 do not leave the compound. In case of sickness a visit can be made to the doctor, but when a child is sick it is the father who will take him/her to the doctor. All other outside functions will be performed by the husband or the older women.

Conditions in the Baluch and Bravhi communities are slightly more relaxed and shopping, etc. is generally done by women. Social interactions and visits to neighbours and vocational centres take place. For this reason, vocational centres have been established in the Hudda, Deba and Kili Shaikhan areas.

The Hazara community of Marriabad is very neat and tidy and social interactions between women are not restricted. Women organize social gatherings in individual homes.

It can be concluded that communication with women, especially in Pashtunabad and Baluch Colony, may prove problematic. This is unfortunate because women play an important role in household sanitation and children's hygiene education. More effort should be spent to establish contact with the Pathan community, win their confidence and support, and subsequently get the message through to the women.

### 3.2.3 Project promotion and publicity

A great need was identified for public information to stimulate applications for the installation of latrines, particularly for the low-cost sanitation programme. The objective of the promotion campaign is to create public awareness about all aspects of the low-cost programme. Various groups of people should be informed in a way tailor-made for each particular group.

In December 1987 the communication expert visited the project with the objective to prepare a short video film on the entire Sewerage and Sanitation Project to inform the authorities and public and to set up a communication programme for the low-cost sanitation component in particular.

The video film was prepared with the help of the Pakistan Television in Quetta and was screened on local TV a few times. It is the intention that the present film will be extended to cover also procedural and educational aspects of the sanitation programme so that it can be screened at the sanitation reference centers in the project areas.

A complete schedule for publicity and information/education was formulated and is presented in Table 3.9. This schedule essentially recognizes four different programmes directed at separate target groups. The means available and methods used to reach these groups are indicated, while the actual nature of the message is given by reference to specific "message numbers" (see Table 3.9). Each facet of the promotion campaign is further elaborated below:



Table 3.9 Schedule for publicity and information/education

Activity	Objective	Target Group	Medium	Method	Message
General information	<ul style="list-style-type: none"> <li>. Create awareness of programme</li> <li>. Create awareness of health, sanitation and economic aspects</li> <li>. Create awareness of who is responsible and where to get information</li> </ul>	<ul style="list-style-type: none"> <li>. General population</li> <li>. Local authorities</li> <li>. Local leaders</li> </ul>	<ul style="list-style-type: none"> <li>. Mass information media (TV, radio, newspapers, cinema, advertisement boards)</li> <li>. Local Reference Centres (WASA)</li> <li>. Social Welfare Organizations NGO's</li> <li>. Involve religious leaders</li> </ul>	<ul style="list-style-type: none"> <li>. TV programme about pilot project                             <ul style="list-style-type: none"> <li>- spots for TV, cinema, radio</li> <li>- posters for boards</li> <li>- Press releases for newspapers</li> <li>- Advertisements for newspapers</li> </ul> </li> <li>. Posters, brochures, model PFL, access to videos</li> <li>. Brochures, posters</li> <li>. Meetings with imams</li> </ul>	<p>General information about project (it is involved with LSC)                      Message No. 1,2,3,4,5,6,17,18,21</p>
Specific information	<ul style="list-style-type: none"> <li>. Initiate project and motivate participation</li> <li>. Clarify choices that were made</li> <li>. Basic principle of PFL</li> </ul>	<ul style="list-style-type: none"> <li>. Community representatives</li> <li>. Specific target group (potential users); people who asked for more information</li> </ul>	<ul style="list-style-type: none"> <li>. Meetings                             <ul style="list-style-type: none"> <li>- visit demonstration Project</li> </ul> </li> <li>. Local Reference Centres (WASA)</li> <li>. Social Welfare Organizations NGO's</li> </ul>	<ul style="list-style-type: none"> <li>. Lectures with video-tapes (WB)                             <ul style="list-style-type: none"> <li>- video TV programme</li> </ul> </li> <li>. Information about:                             <ul style="list-style-type: none"> <li>- project area</li> <li>- three solutions and costs</li> <li>- sewerage, septic tank, PFL</li> <li>- how PFL works</li> <li>- how much the user will be charged</li> <li>- maintenance</li> </ul> </li> </ul>	<p>Specific information about the project                      Message No. 4,5,6,7,8,9,21,22</p>
Users education	<ul style="list-style-type: none"> <li>. Information about how to use the PFL (limitations and damage, pollution and wastage, early identification of problems, information about service)</li> </ul>	<ul style="list-style-type: none"> <li>. Users</li> <li>. Potential users (if they are selected to have a PFL)</li> </ul>	<ul style="list-style-type: none"> <li>. Personal contacts, social workers, NGOs</li> <li>. Local Reference Centres (WASA)</li> </ul>	<ul style="list-style-type: none"> <li>. Information about:                             <ul style="list-style-type: none"> <li>- teaching children how to use it:</li> <li>- water instead of stones in PFL</li> <li>- prevention of problems</li> <li>- use little water</li> <li>- informing Local Reference Centre (WASA) when problems</li> </ul> </li> </ul>	<p>Specific information about the project                      Message No. 10,11,12,13,14,15</p>
Specific sanitation education	<ul style="list-style-type: none"> <li>. Create knowledge of relationship between excreta/dirt/diseases</li> <li>. Change hygiene practices and conditions</li> </ul>	<ul style="list-style-type: none"> <li>. All potential users</li> <li>. School children</li> </ul>	<ul style="list-style-type: none"> <li>. Local Reference Centres (WASA)</li> <li>. Social Welfare Organizations NGO's</li> <li>. Schools</li> <li>. Mass information media</li> <li>. Involve religious leaders</li> </ul>	<ul style="list-style-type: none"> <li>. Information about:                             <ul style="list-style-type: none"> <li>- excreta in public places</li> <li>- buckets</li> <li>- dry pit latrine</li> <li>- cleanliness</li> <li>- PFL</li> <li>- sewerage</li> <li>- septic tank</li> </ul> </li> <li>. TV and radio spots</li> <li>. Cinema spots</li> <li>. Newspapers: press releases</li> <li>. Advertisement boards: posters</li> <li>. Meetings with imams</li> </ul>	<p>Specific information about sanitation habits with disadvantages and solutions ..... PFL                      (at this stage PFL; later - sewerage)                      Message No. 1,2,3,4,5,6,16,17,18,19</p>

*General information:* General information is intended to create public awareness about the low-cost sanitation programme through the mass media. The information is kept quite general and illustrates current detrimental conditions prevailing in Quetta and possible solutions to eliminate them. It is emphasised that cleanliness is a very important aspect of the Quran's teaching and that people have a moral duty in this respect. People are also informed about the organization responsible for implementation, and who can supply all relevant information.

The campaign aimed at local authorities and community leaders was worked out in more detail, as they need sufficient background information to satisfy the immediate questions of people they come into contact with.

When interest is shown, a number of avenues will be available to obtain the required information and to lodge applications. Individuals can go to their councillors, social welfare organizations, the Zakat Committees, and future LRCs. The latter are to be established by WASA as part of the main programme.

The main thrust of the publicity campaign is therefore directed at informing the public about:

- existence of the programme;
- benefits of having a hygienic latrine installed;
- consequences of exposure to excreta in terms of illness;
- responsible authority (WASA);
- sources for further information and submission of applications.

*Presentation of the message:* It was not difficult to arrive at the most appropriate method of presenting the message. The literacy rate in the whole of Baluchistan, as well as Quetta, is not very high as shown by the results of the socio-economic survey. It is therefore necessary to use an audio-visual method of presentation (slides and video films). It can be used in individual discussions as well as for TV and cinemas in the form of small advertisements.

A uniform message for Quetta is more difficult to formulate, because of the different customs and languages. Each of the ethnic groups have their own living habits and a message which may be self explanatory to one group, may be confusing to another.

Basically, the message will contain the following subjects:

- inconvenience and dangers of old sanitation habits/facilities;
- alternative facilities offered by the programme;
- principle of the latrines;
- benefits of the new latrines;
- charges associated with the latrines;
- manner in which the latrine is to be used;

- damage that can result from improper use;
- beneficial aspects of personal hygiene and environmental cleanliness (yard and home);
- causes of disease (flies, contaminated water);
- the responsible agency;
- responsibility for maintenance.

The message has finally been captured in a series of illustrations which can be used for the posters, brochures, TV and cinema spots. The basic drawings were prepared in the project office and tested in the field to ensure that the message was understood. Further corrections and enhancements of the illustrations were carried out by a local professional advertising agency.

*Media coverage:* With the very low literacy rate prevailing in Quetta, the project will mostly rely on radio and TV for carrying its message to the public. Ownership of radio or TV is quite high in the project areas, but the effectiveness and impact of the broadcast will have to be tested further during the main programme.

As part of the pilot project a script was prepared for a TV documentary. During the final stages of the pilot project a short film was made and screened on the national network during the evening hours. At a later stage, an upgraded version of the same film will be screened in the various languages during local news telecasts.

The main topics in the video documentary are:

- Quetta city as a whole;
- the various project areas;
- interview with the authorities;
- a model of the PF latrine;
- construction of the latrine;
- visits of social workers to the community;
- interviews with householders in local language.

Such a documentary not only makes the project known to a large percentage of the population, but will be of great benefit in the LRCs where it can be regularly shown to inform people at a leisurely pace. The documentary will be extended for use in LRCs with specific information on how to apply for a latrine and subsequent steps in the implementation procedure.

Detailed discussions have been held with the radio and TV authorities and both are keen to cooperate with the promotion of, and information about, the project. With respect to radio, much work is still to be done as broadcasts are usually transmitted in four local languages.

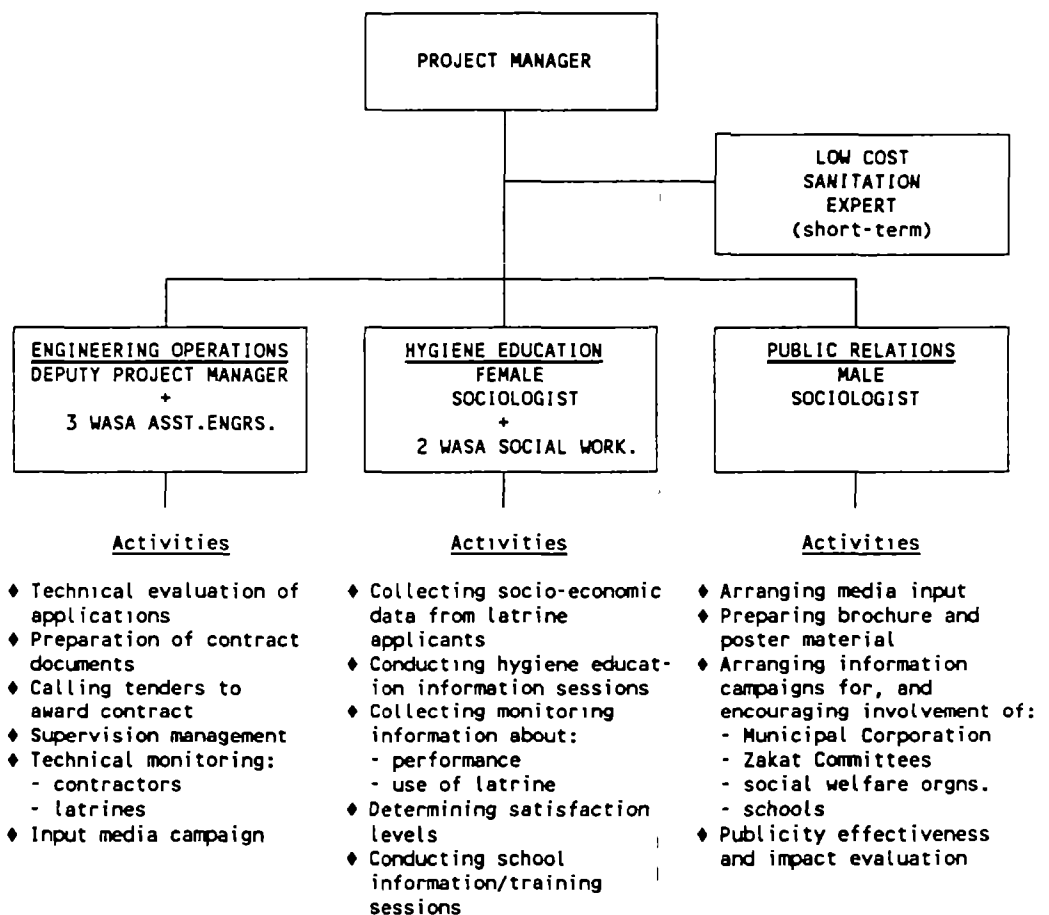
### 3.2.4 Project organization and staffing

During the demonstration phase three distinct tasks had to be carried out relating to:

- engineering operations;
- hygiene education campaign;
- publicity campaign.

In order to clearly define the various activities to be undertaken an organization structure was defined as detailed in Fig. 3.1.

Figure 3.1 Organogram pilot project



In total the team for the pilot project was staffed as follows (see Figure 3.1):

Consultants:- Project Manager (part-time)  
- Deputy Project Manager (part-time)  
- Female and male sociologist

WASA :- Two female social workers  
- Three Assistant Engineers

Although the tasks are quite independent, the team members could not function properly without input from the other sections. Therefore a free flow of information and exchange of ideas had to take place.

During his visits, the Low Cost Sanitation Expert took great pains to promote the idea of team work and instil awareness of the need to report and exchange information.

*Engineering operations:* The compounds of the applicants first had to be inspected. Preliminary data were collected to determine a suitable location for the latrine and to decide on the fate of the existing facility, bearing in mind that the latrine could not be oriented towards Caaba. After site inspection the social workers collected the socio-economic data detailed in Parts A and B of the questionnaire (see Appendix A).

When the 100 latrine sites had been selected, contract documents were prepared, tenders called, evaluated, negotiated and contracts let. As the purpose of the pilot phase was to introduce the PF latrine concept in Quetta while observing the performance of the latrines, only lined soak pits were constructed, mostly with superstructures.

Monitoring of the latrine's technical performance, particularly the rate of accumulation of excreta in the pits, also had to be carried out.

*Hygiene education:* Promotion of latrine use is primarily conducted through direct contacts between the female social workers and the women of the household where the latrines have been constructed. Repeated visits were made to each household to provide information about:

- hygiene benefits of the PF/VIP latrine,
- methods of looking after the latrine;
- amounts of water that should be used for flushing;
- problems caused by putting stones and dirt in the latrine;
- effect of excreta on health;
- excreta-related diseases, particularly in relation to children.

When the monitoring officers were satisfied that the instructions and information had been assimilated, the households were questioned about their satisfaction with the latrine installation (Part C of the questionnaire).

*Public relations:* Public relations has the dual role of maintaining contacts with the local authorities and organizations, while preparing the publicity material required to bring the message across. In this context, special material was prepared for meetings with the Municipal Corporation and Zakat Committees, and later for the posters (see Appendix B).

Firm contacts are maintained with welfare organizations in the communities. Since these organizations are manned with volunteers, contacts usually have to be maintained after office hours.

### 3.2.5 Engineering design and costs

The PF latrine has largely been based on designs presented in the RMR. Reference was also made to UNICEF and UNDP/TAG manuals.

*PF latrine and soak pits:* The basic internal dimensions of the latrine's length and width have been kept at 900 x 750 mm. The pit dimensions were in line with the requirements of the number of persons using the latrine and are as follows:

<u>Users</u>	<u>Diameter(mm)</u>	<u>Depth(mm)</u>
5	900	1475
10	1100	1775
15	1250	1975

At the time the feasibility study was prepared the standard latrine pan shape included a vertical outlet and P-trap to provide the waterseal. Since then, a considerable amount of development work has taken place at UNICEF to improve the hydraulics of the pan.

In the design of the pan two conflicting requirements are important; firstly the amount of water used for flushing and secondly, maintaining a waterseal. To keep the amount of water required for flushing to a minimum, total vertical height in the waterseal has to be as small as possible, so the problem is only one of geometry.

The development work carried out by UNICEF has resulted in an improved pan design. The new pans use an S-bend instead of the nearly vertical P-trap, yet still maintain a proper waterseal. In the pilot project all the PF latrines have been provided with the new type of pan, and have been found to function well. Major differences with the P-trap are:

- the vertical height the water has to lift through the trap has been much reduced;
- the direction of flow in relation to orientation of the pan can only change after the water has passed through the S-bend;
- the P-trap allowed the flow direction to be changed from the pan and therefore made placement of the latrine in relation to the pits slightly more flexible.

For the purpose of the pilot project a small cast iron lid was fitted into the pit cover to facilitate monitoring of the degree of pit filling without having to remove the entire pit cover.

*VIP latrine with deep pit:* For the VIP latrine the problems are somewhat different, as it is built directly over the (dry) pit. The depth of the unlined pit has been increased to 4.75 m and provides some ten years storage for a family of ten persons.

While the PF latrine is guaranteed to inhibit fly access to the excreta by using closed pits and a waterseal in the pan, the VIP needs special attention as flies will be able to gain access through the pan. The interior of the VIP latrine is dark and any flies that have entered the pit will seek to exit through the vent pipe. The vent pipe has therefore been covered at the top with a fly screen gauze to prevent flies from escaping into the environment.

The latrine has been equipped with a vent pipe to combat the general smelliness of the latrine. The pipes should be high enough to catch the cross-flow winds. As only three VIPs have been installed in the pilot project, the degree of odour nuisance in the community will require further monitoring and evaluation, especially in densely populated residential areas.

*Soil permeability:* During construction of the PF latrines a number of infiltration tests were carried out on the soak pits. The nature of the sub-soil varies from area to area, but generally the soil in Pashtoonabad and Baluch Colony is extremely gravelly, mixed with some loam. The infiltration rate with this type of soil is very high. In the lower lying areas of Deba and Hudda, the soils tend to be more loamy but the infiltration rates are still considered good. In Marriabad, the ground is very rocky and although infiltration problems were expected, they did not materialize.

All the soak pits have been lined with honeycomb brickwork with openings of some 32 mm. The bottom of the soak pit is unlined.

*Material choice:* The choice of materials was mainly restricted to the construction of the superstructure. Two alternatives were available: either a construction in mud with straw, which is widely used for building of houses and compound walls, or a brick construction.

Building the superstructure in mud presented a special problem. The walls are generally placed in 300 mm layers and each layer has to gain sufficient strength before the next can be added. Because of the small quantities of mud involved and the time required for it to dry out, the construction sequence became very impractical as a large number of superstructures would be under construction at the same time. It was therefore decided that all superstructures would be executed in brickwork.

The roofing material was specified as 6 mm asbestos cement sheeting. Difficulty was experienced in obtaining the flat sheets and some latrines have been built with corrugated sheets instead. Both types adequately serve their purpose.

Concrete lintels have been constructed over the door and ventilation openings included to support the additional layers of brickwork. With the price of steelwork at some Rs 10,000 per ton, it was cheaper to execute this work in concrete.

*Hydraulics junction box:* Improvements in the design of the pan and the S-bend meant that the amount of water used could be reduced, and this in turn placed higher demands on other components in the system. The junction box and connecting pipes required particular consideration and construction supervision.

Under normal circumstances the junction box has one pipe entering and exiting pipes in each of the opposite corners. The change in the direction of flow is therefore only some 45°. The chance of a blockage occurring in the junction box is related to the actual finish of the cement work in the box. This has been the largest single source of problems during construction.

PVC pipes were used in construction because of their smooth walls which offer minimal resistance to the flow. A minimum gradient of 1:15 was maintained on the pipes to prevent the pipes from clogging. Depending on the total length of the pipe between the junction box and the pit, the depth of the pit was also varied to provide the required volume below the invert of the pipe.

*Cost estimates:*

In the pilot project two types of latrines were constructed: the pour-flush latrine (10 and 15 user capacity) and the ventilated improved pit latrine. Several contractors were prequalified but only three have submitted tenders. After detailed negotiations the agreed prices came down considerably although they remain some 30 percent above the engineering estimates.

Contractor	10 User PF	15 User PF	V.I.P.	Superstr.
Al Rahim Enterprises	6,317.20	6,661.20		4,754.80
Sana'i Associates	7,118.00	8,678.00		5,818.00
H. Sirajuddin & Sons	8,251.00	9,111.00		7,124.00
Agreed price	3,361.20	3,941.10	2,066.10	2,958.20
Engineering estimate <sup>1)</sup>	2,474.00	2,917.00	1,560.00	2,436.00

1) For details of cost breakdown see Appendix B

However the agreed price include additional expenditures such as site cleaning of the existing latrine and cost of iron inspection lids in the pit covers for monitoring accumulation rate. The total expenditures for the pilot project are presented in Table 3.10.

Table 3.10 Pilot project costs

Facility	No's installed	Unit price(Rs)	Total costs(Rs)
PF 10 user/lined pits	35	3,361.20	117,642
PF 15 user/lined pits	62	3,941.10	244,342
VIP latrine	3	2,066.10	6,198
Superstructure	100	2,958.20	295,820
Petty expenses			2,697
Total			Rs.666,699



### 3.3 Construction Phase

#### 3.3.1 Selection of contractors

In May 1987 advertisements were placed calling for interested contractors to make their submissions for prequalification. In total 12 submissions were received, and seven contractors shortlisted in June were subsequently invited to tender. The response to the invitation was poor and only three tenderers submitted their bid in September 1987.

As the 100 latrines to be constructed were evenly distributed over the project areas, the bids of the three contractors were evaluated and re-negotiated to bring them more in line with the estimate. Each of the contractors was assigned a particular area and given 33 latrines to construct.

The work started at the beginning of November with the completion date scheduled for the end of December 1987. This was the winter period in Quetta and some delays on account of cold weather had to be allowed for. Construction of the latrines was finally completed as indicated below:

<u>Contractor</u>	<u>Date of completion</u>
1 Al Rahim Enterprises	31 January 1988
2 Sanai Associates	29 February 1988
3 H. Sirajuddin & Sons	27 February 1988

#### 3.3.2 Supply of materials

The contractor was made responsible for the supply of all bricks, cement and mortar. Deliveries were usually made before any work had started on a particular site. This then posed a problem for the householder, particularly where space on the compound was rather restricted. On the other hand, it was necessary to deliver materials onto the compound as pilferage is common and the contractor may have lost half his materials.

The squatting pan and S-bend were supplied through WASA as there is only one manufacturer who can make the pans in the required quality and shape. The contractors were issued with the pans through the central store as required. Initially, the supply of the latrine door was also undertaken by WASA but it proved easier for the contractors to obtain their supplies direct once a suitable supplier was established.

It was left to the contractor to construct the footrests next to the pan, either by constructing them in situ or by obtaining them from the market. All contractors opted for the latter solution.

The property is often situated along a narrow lane, so that there was no space to dump materials. Additional labour would often be required to assist with unloading materials, as the donkey or camel cart would not be able to reach the front of the compound.

### 3.3.3 Implementation and supervision

Prior to commencement of construction, the latrine site in the compound was confirmed by the WASA Engineer with the householder and the contractor. Visits to the compound were generally made in the afternoon when householders were more likely to be available.

The contractor worked with one team of labourers to excavate a number of sites at one location. During the period the assistant engineer made daily visits to the site to ensure that the standard and quality of work was maintained. The project-manager and deputy project-manager made additional site visits during the progress of the work, giving particular attention to the construction of junction boxes and placement of pipes.

Prior to accepting the latrines as being substantially complete, detailed inspections were made by the project-manager and deputy project-manager accompanied by the assistant engineer. Rectification works were detailed and the contractor instructed accordingly. The procedure was followed again at the end of the maintenance period to ensure that the rectification work had been carried out to the standard required.

### 3.3.4 Construction aspects

Precast concrete work was limited to the pit covers and the lintels over the door and jali. If space within the compound permitted this was done on site. If space was restricted, however, there was a delay in construction as excavated pit material had to be removed first. The concrete would be left for 28 days to cure after casting and only then would the cover be placed on the pits. In the meantime, the contractor would place a temporary cover over the pits for safety reasons. These methods will need to be reviewed for the main programme and it may be preferable to produce pit covers centrally, thus maintaining proper quality control.

The orientation of the pan will have an influence on the use of the latrine and how its benefit is perceived. The positioning of the S-bend determines whether the waterseal will function as intended. Both the pan and the S-bend are made of glazed earthenware. The latrine floor is finished flush with the pan. Because the cleaning water is washed into the pan, it facilitates cleaning and prevents waste water being disposed of in front of the latrine and creating an unsanitary situation. To facilitate proper installation of the S-bend, a small foot has been cast into the bend. Placing this foot horizontally will ensure correct working of the waterseal, and the water level in the pan will be about 25 mm high in the throat of the pan.

The internal dimensions of the junction box are 225 x 225 mm. The finish inside the box was completed with a fine cement mortar to ensure a smooth finish. All sharp angles which could cause blocking were carefully removed.

The change in direction of flow was the greatest single cause for rectification work. The orientation of the box in relation to the direction of in-and outflow lines is of crucial importance. A minimum slope of 1:15 was maintained on the pipes. It was found that the smooth walls of the PVC 100 mm diameter pipes allowed no clogging. The placing of the pipe outlet in the pit must take into account that the flow should not impinge onto the pit wall.

It is clear that using current implementation methods, the goal of constructing some 300 latrines per month will not be achieved. The approach adopted involved completing a particular operation, for example excavation, at a number of sites before starting with the next operation. This caused lengthy delays between the various stages, resulting in a very long construction time per latrine.

Through regimentation and better organization it must be possible to complete construction much quicker; that is in 1 to 1.5 weeks. To achieve this the contractor will need to use specialist teams, each carrying out a specific task: excavating pits, brick lining, backfilling around lining and removing surplus material, substructure, installing pan and junction box, and cleanup and plastering.

### 3.4 Post-construction Monitoring

Once the latrine was installed the task of the monitoring team started. For the pilot project stage the team consisted of one male and three female social workers. It was decided that the male social worker would maintain contacts with the authorities, Zakat committees and the social welfare organizations. The female staff concentrated on contacts with the household, in particular the female members.

The monitoring aspects referred to in this section concentrate largely on the latrine's performance and the work carried out by the female social workers. Their task was to provide information to the householders about:

- diseases associated with excreta;
- health aspects of personal hygiene;
- use and cleaning of the latrine.

In carrying out their duties, the officers were provided with brochures and questionnaire material.

#### 3.4.1 Use and function of the latrine

In monitoring the use of the latrine the questions detailed in Part C of the questionnaire were put to all households. The questions concentrated on construction aspects, use, performance, cleaning of the latrine, as well as personal hygiene. Suggestions for improvements and comments were also solicited from the households (see Table 3.10).

Response to the design of the latrine has been very favourable. Ninety-two percent of the respondents found the design to be good or acceptable, as well as the quality of the workmanship.

The householders perception of the time taken to construct the latrine is not reliable. Twenty-two householders responded that their latrine was constructed within one week. The construction performance of the contractors belies this response as all latrines took two or more weeks to complete.

Little inconvenience was experienced by the householders during construction. Definition of the term "inconvenience" limited itself to the availability of a latrine, and did not cover the nuisance value caused by construction of the latrine.

Table 3.11 Design and construction of the latrine

Q. No.	Q u e s t i o n	Marri-abad	Pasht. abad	City Centre	Baluch Colony	Deba/Hudda	Total
2.1	Design of PFL system						
	(a) good	7	16	11	16	22	72
	(b) acceptable	7	1	-	5	7	20
	(c) not acceptable	2	1	1	-	4	8
2.2	Quality of work						
	(a) good	6	14	11	15	22	68
	(b) acceptable	6	1	1	6	8	22
	(c) not acceptable	4	3	-	-	3	10
2.3	How long did construction take from start to finish?						
	(a) 0 - 1 weeks	4	14	1	2	1	22
	(b) 1 - 2 weeks	4	4	3	6	8	25
	(c) 2 - 3 weeks	8	-	8	13	24	53
2.4	Did construction cause inconvenience to household?						
	(a) yes	8	-	2	1	8	19
	(b) no	8	18	10	20	25	81
	If yes, describe						
	(a) neighbour's toilet	8	-	1	1	4	14
	(b) relatives	-	-	1	-	4	5
	(c) other	-	-	-	-	-	-

At the time of the survey, the majority of households had used their latrine for more than four weeks. Most family members were using the latrine, but where not, they were still relying on their old system (see Table 3.11).

Particular reasons for not using the latrine are as follows:

- the children in the age group 0-2.5 years are too small to use the latrine, their mothers look after them as far as possible;
- men still tend to fall back to the old "rural" habits;
- female members could not use the latrine when it was installed in the guest area because of the purda system;
- lack of privacy in some latrines where the door latch did not function properly and the door could not be securely locked.

The amount of water use per flushing is 1-2 litres, resulting in an average water use of about 40 litres per day per household. Cleaning of the latrine was carried out on a daily or twice weekly basis using about five litres of water at a time. None of the latrines were used for bathing purposes.

Table 3.12 Use of the latrine

Q. No.	Q u e s t i o n	Marri- abad	Pasht. abad	City Centre	Baluch Colony	Deba/ Huuda	Total
3.1	How long has the latrine been used?						
	(a) 0 month	-	-	4	1	2	7
	(b) 1/2 month	1	1	3	7	12	24
	(c) 1 month	6	-	2	7	13	28
	(d) more than one month	9	17	3	6	6	41
3.2	Do all the family members use the latrine?						
	(a) yes	12	14	6	7	27	66
	(b) no	4	4	6	14	6	34
	If no, give reasons:						
	(1) small children have difficulty in using the latrine	1	2	1	5	3	12
	(2) women observe purda	-	3	-	7	1	11
	(3) construction defects	-	1	4	3	3	11
	If they don't use latrine where do they go:						
	(1) mothers take care of children	1	6	1	1	1	10
	(2) out in the open	-	2	-	5	2	9
	(3) previous system	3	4	4	9	4	24
3.5	How much water per flushing (no. of Lotas)	1	1	1	1	1	-

Important issues concerning proper functioning of components are the latch on the door, clogging of pipes, and any evidence of smells. A high response to the functioning of the latrine being good or satisfactory was given. Improper functioning of latches was one particular defect, which was also a cause of not using the latrine, as well as clogging of poorly graded pipes. Both these defects will be remedied during the maintenance period.

Inspections of the functioning of the soakage pit have indicated that the liquids soak into the sub-soil as intended. It is still too early to indicate whether the rate of excreta accumulation is higher, or lower, than intended.

Suggestions regarding the latrine design focus on two basic aspects: size and privacy. It was suggested that the dimensions of the superstructure were too small and that some increase in depth and width should be contemplated. In comparison with the standard pan, the S-trap pan is somewhat narrower and this caused problems in a number of households resulting in requests to increase the diameter of the bowl end of the pan.

Concerning the privacy aspect, the need for a properly functioning inside latch has already been mentioned. It was suggested that a latch also be placed on the outside to ensure that the door remains shut when the latrine is not in use.

### 3.4.2 Personal hygiene

The concept of personal hygiene must be viewed in the light of ethnic background and level of water supply. Three main areas can be distinguished, each dominated by one of the ethnic groups:

<u>Area</u>	<u>Ethnic Group</u>
Marriabad	Hazara
Pashtoonabad/Baluch Colony	Pashtoon
Hudda/Deba/Shaikhan	Baluch/Brahvi

The people in Marriabad maintain a very high standard of personal hygiene which is also reflected in the environmental cleanliness being maintained in the area. The level of water supply in this area is also high. The conditions in the Pashtoonabad/Baluch Colony area are not as good, both in terms of personal hygiene, environmental cleanliness and level of water supply. The area to the west of the railway line defined as Hudda, Deba and Kili Shaikhan is a mixture. Some pockets within the area are extremely neat and tidy while others leave much to be desired.

These general conditions are also reflected in answers received to the personal hygiene questions of the monitoring questionnaire. The overwhelming majority used water for ablution after defaecation. Virtually all the responses where this was not the case came from the Pashtoonabad/Baluch Colony area (see Table 3.12).

The prime reasons for not using water were a shortage of water and a matter of tradition. Since most of the beneficiaries had a house connection to the water supply it is concluded that (rural) defaecation habits still play an important role in some of the communities.

Table 3.13 Personal hygiene with latrine use

Q. No.	Q u e s t i o n	Marri- abad	Pasht. abad	City Centre	Baluch Colony	Deba/ Hudda	Total
6.1	What do you use for cleaning after relieving yourself?						
	(a) water	16	17	8	18	32	91
	(b) stone	1	1	-	3	1	6
	(c) paper	-	1	-	2	-	3
	(d) earthen piece	-	4	-	8	3	15
	(e) any other	-	-	-	-	-	-
6.2	If you use anything other than water what is the reason?						
	(a) shortage of water	-	1	-	5	-	6
	(b) tradition	1	5	-	8	4	18
	(c) any other	-	-	-	-	-	-

The Latrine Programme aims to promote and advance improved personal hygiene behaviour. With proper use of the latrine, exposure to excreta and therefore the transfer of diseases, can be substantially reduced. These benefits will not be directly apparent to the users of the latrine and the monitoring officers have therefore conducted an educational campaign to inform people about the benefits of the latrine.

From the socio-economic survey it was clear that the literacy rate is low in the project areas and that any information material would need to be largely pictorial. Posters were prepared for this purpose (see Appendix B). When discussing the message portrayed in the posters the monitoring officers would give due consideration to the different habits of the various ethnic groups. Their primary aim was to provide information about:

- personal hygiene and the need to use soap when washing hands;
- the need for training small children to use the latrine;
- the diseases associated with excreta and contaminated water.

On personal hygiene aspects, attention was focused primarily on contact with excreta. This contact may be direct as a consequence of defaecation or indirect resulting from contact with exposed excreta which may be in the compound or outside. The need to use soap when washing one's hands or those of children being trained to use the latrine was emphasised. Thus in all these discussions the use of water and cleanliness was stressed.

Discussions about diseases provided information about the consequences of contact between excreta and food and water. This contact need not necessarily be human contact as flies can transmit diseases over long distances. Even if the householder maintains the compound in an immaculate condition, food and water still need to be protected from contamination.

The need to train small children to use the latrine was established. An advantage of the latrine pan used, is that the front section is not too wide and allows small children to position themselves without problems. The physical and mental limitations of the age group 1 - 2.5 years must be taken into account in the future programme. It was stressed that the excreta of sick children are highly contagious and should be cleaned up whenever noted.

As an extension of the personal approach presently being carried out by the monitoring officers, the cooperation of schools will be encouraged during the main programme, such as lessons on the need for personal hygiene and its relationship to illness. The organization of these information campaigns will be carried out through the LRCs, to be established under the project.

### 3.5 Findings and Conclusions

In the pilot project various data were collected for the formulation of the full scale implementation programme. These data relate to:

- methods of creating public awareness;
- the involvement of various welfare organizations;

- social acceptance;
- need for hygiene education;
- technical aspects;
- cost recovery from the recipients.

### 3.5.1 Promotion and publicity

During the pilot stage the publicity aspect was played down, partly because suitable publicity material was under preparation. Promotion was limited to a few screenings of a video film about the entire project on television, and interviews on radio.

The publicity campaign via radio and TV has not yet started, primarily through uncertainty about the starting date of the main programme. A large number of applications have already been received and the start of a full-scale publicity campaign would result in a much larger number of applications than the programme could handle.

Although this method of promotion will contribute to acceptance of the latrine scheme, it is the experience of the Consultants that promotion and information at community level is far more effective in arousing interest, resulting in application for latrines. Moreover, the education component of the programme can only be carried out successfully within the specific communities using tailored messages. The role of the various community welfare organizations in this appears to be indispensable.

### 3.5.2 Involvement of community organizations

During the initial stage of the pilot programme the councillors and chairmen of the Zakat Committees have been introducing and promoting the programme in their areas. They have assisted in the selection of households for the first 100 latrines and were also cooperative during the later stages of the project.

At a later stage local community organizations became involved, especially in promotion of the programme. The large number of applications for PF latrines (more than 1000) is mainly a result of their efforts. It is therefore expected that their role in the main programme will be extended, also in implementation activities.

### 3.5.3 Social acceptance

The PF latrine concept has been received very well indeed. The majority of family members use the latrine properly, while the difficulty for small children to use the latrine and the purda system are given as reasons why some family members do not use the facility.

The main reasons the new applicants change to the PF latrine system are the elimination of odours and fly nuisance, general improvement in cleanliness, and the privacy that the latrine offers.



However, the positive response to the question on disease prevention must be interpreted as participants knowing that such a response is expected, than really understanding the cause and effect of contact with excreta. Furthermore, it was noticed in some areas that having a PF latrine is also a sort of status symbol.

Acceptance of the programme was higher than could be expected, especially in the more traditional areas of Pashtoonabad and Baluch Colony. In this respect the pilot project can be considered a success, whereby the taboos on sanitation have been eliminated to such an extent that the issue can be discussed in public.

#### 3.5.4 Hygiene information

Hygiene information has concentrated predominantly on the personal aspect. It is interesting to note the overwhelmingly positive response to the use of water for cleansing. This can also be correlated with the fact that most households in the demonstration have some form of connection to the water supply distribution network.

Only in the areas of Pashtoonabad and Baluch Colony, where water supply is less readily available and people are more conservative, is there a tendency to maintain old "rural" habits (using stones and/or earthen balls for cleansing). Continued hygiene education is thus required to achieve the objectives.

The hygiene promotion and health education material used during the pilot project is still in an experimental stage. Improved illustrations based on experience gained in the last year, as well as education at schools, LRCs and community gatherings will all contribute to a better understanding of the objectives of the programme. This will result in improved hygienic behaviour and a more healthy environment in general.

#### 3.5.5 Technical aspects

The basic internal latrine dimensions of depth and width had been kept the same as those proposed in the RMR, 900 x 750 mm. It has been the general experience that these dimensions are somewhat small and that an increase to 1050 x 800 mm should be contemplated. The dimensions for the pits were determined by the requirements of the number of persons using the latrine.

Experience has shown that in the areas of Marriabad, Pashtoonabad and Baluch Colony the walls of the pits seem very stable and that there is no immediate need to install honeycomb brickwork in the pits as lining. Whether the stability of the pit can be sustained under wet circumstances (flushing by water) remains to be investigated. Solid brickwork is therefore only used in the top 450 mm to act as support for the pit cover slab. This can reduce the cost of the latrine significantly, as both the quantity of excavation and brickwork will reduce. Care must be taken when positioning the pipe outlet in the pit that its discharge does not impinge onto the opposite wall.

During the pilot phase some experience has been gained of converting the existing latrine into a PF system. Generally, the following aspects must be taken into account:

- Location and orientation are limitations to the conversion of the existing latrine structure, because the pan cannot be oriented to Caaba and its shape only allows a change in the direction of flow after passing the S-bend.
- Existing dry pits, which are often very deep, could be converted to a VIP system and possibly to a single pit PF system. In this case a new latrine must be connected to the pit, which will have to be closed off by a cover, and a new soak pit constructed.
- When an existing water-seal latrine is linked to new pits the existing discharge point may prevent conversion as it is often pointed at the street where it is not practical to place the soak pits. In such cases, a new latrine substructure needs to be constructed.
- The old sanitation facilities were all positioned outside the house, so that there is considerable reluctance to have a PF latrine placed inside. Therefore, all latrine installations have been constructed outside the house.

It can be concluded that the technical questions have mostly been resolved by the pilot project. Only the issue of the stability of unlined pit walls with PF latrines in certain areas of the city remains to be investigated.

#### 3.5.6 Cost recovery

The construction method and type of latrine has an influence on the total cost. An improved construction schedule and better manpower organization can reduce the contractors' overheads significantly. The pilot phase has been a training ground for both the contractors and supervisory staff, and as a consequence, the final price paid for latrine construction has been too high. Prices for individual latrines varied between Rs 6000 and Rs 7000, although this includes superstructure which will be deleted in the main programme. Current estimates for the revised design and costing range from Rs 1720 (VIP) to Rs 3165 (PF 15 user lined twin pit).

Except for the pilot project, the latrines will not be available free to the householder. He has the option to either purchase the latrine himself or be financed through the sanitation programme. The householder choosing the latter will pay a monthly or quarterly charge to cover the cost of capital investment, including interest, operation and maintenance.

During the pilot phase information was presented to the householder regarding the likely charges that will be levied for installation of the latrine. It was indicated that an anticipated monthly charge of Rs 30 be levied for having a latrine constructed via the programme. The indication from householders is that they have no objection to paying such a charge, as they are well aware that the latrine will benefit their family.

The large number of applications received, knowing they are not free of charge, proves acceptance of the latrine programme in all its aspects.

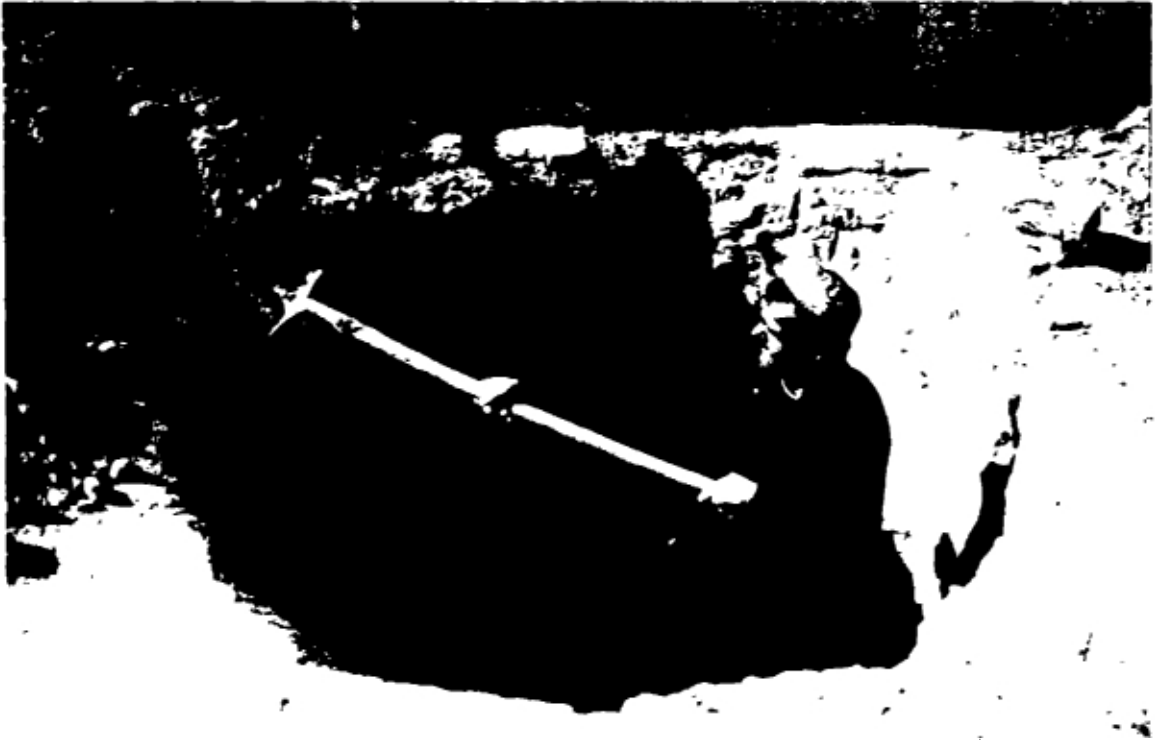
Defining the tariff is the responsibility of WASA and will require the sanction of the Government of Baluchistan, as a subsidy may initially be required to make it more acceptable to the latrines recipients.

The aspects of revenue collection and defaulting still remain to be tested. At present the householders are paying a sweeper to remove the excreta and garbage from their yard. However, there is a steady decline in the number available and the sweeper usually does not appear for a number of days. Thus, the system of service latrines is also declining.

In the case of the latrine programme the situation is slightly different because the service has been provided and cannot be removed, and the householder cannot be prevented from enjoying the benefit. Therefore, if the householder fails to make the required payment there are no effective options available to the Authority to secure such payment. Any actions involve lengthy and cumbersome legal procedures.

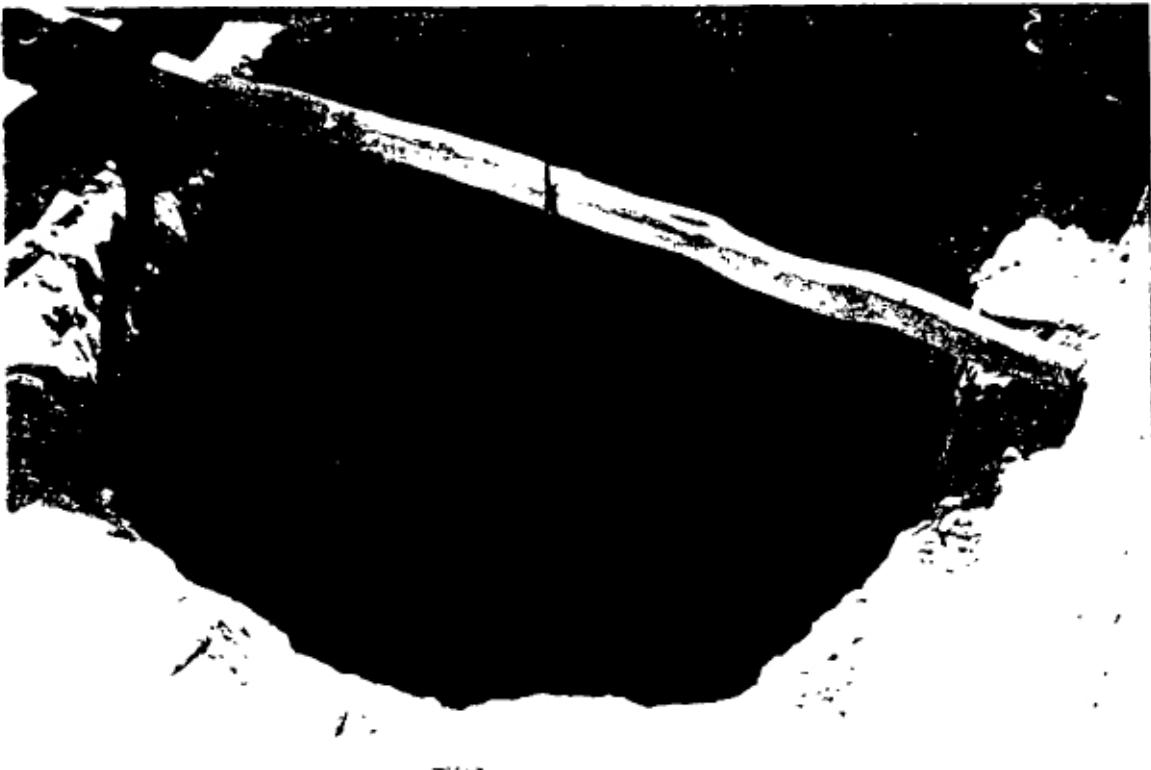
However, experience with tax collection in Quetta indicated that 50 % of the property tax demand notices are paid on first demand. Of the remainder, 46 % are collected during that same year, although with some difficulty, and 4 % are passed to the Collector of Land Revenue as land revenue arrears. This implies that with cooperation from the community, acceptable collection rates can be achieved. However, the method of collection was not determined in the pilot phase (see Chapter 5).

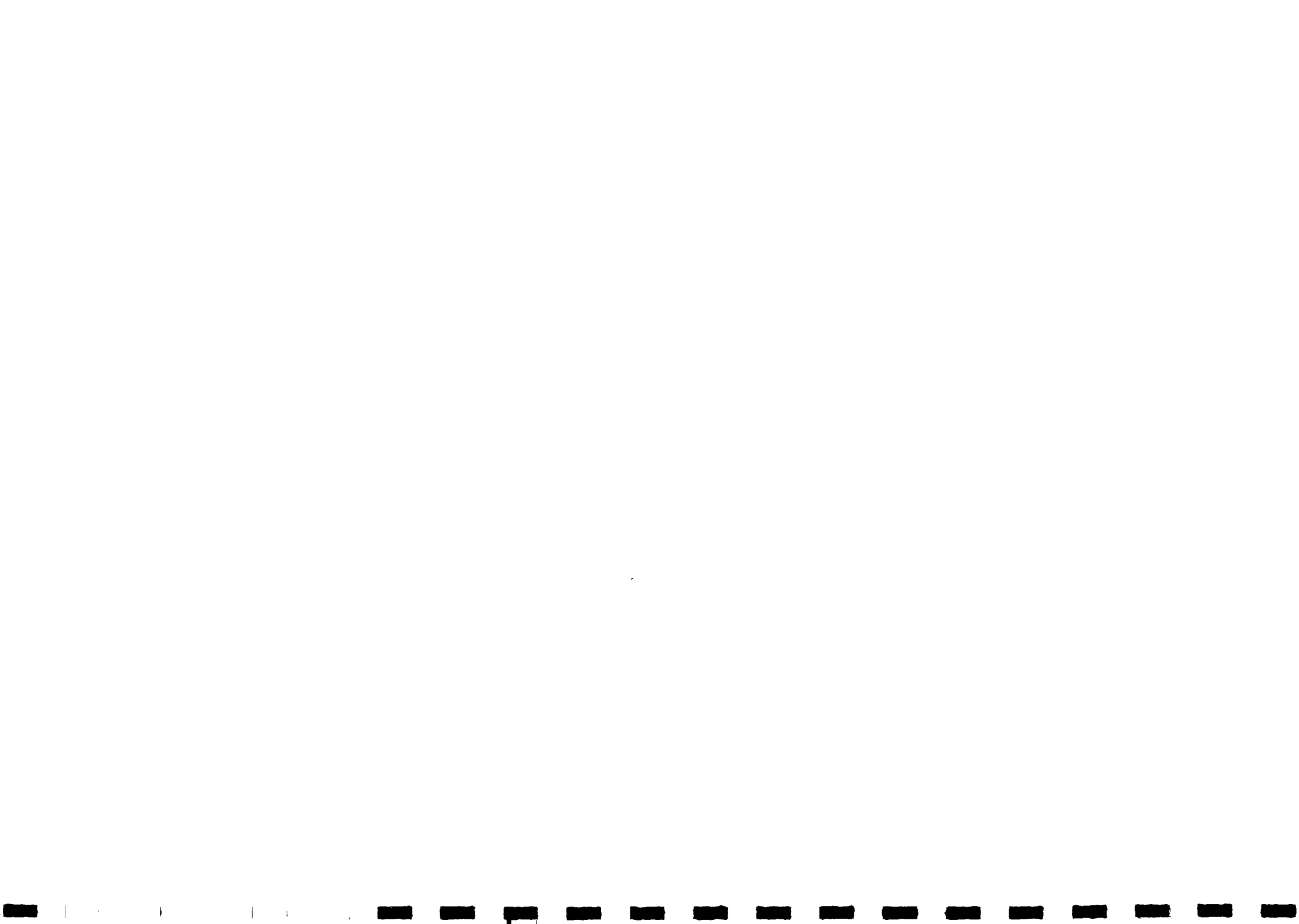


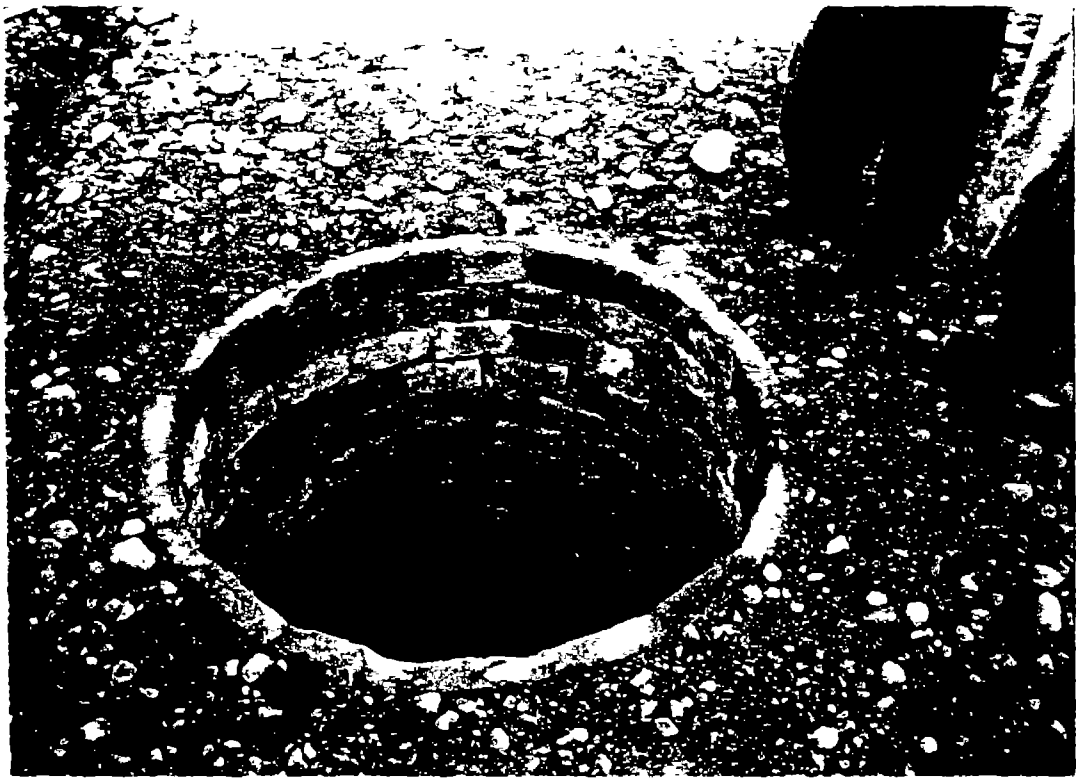


▲  
Photo 1 Digging of the soak pit

Photo 2 Construction of the honeycomb brickwork lining



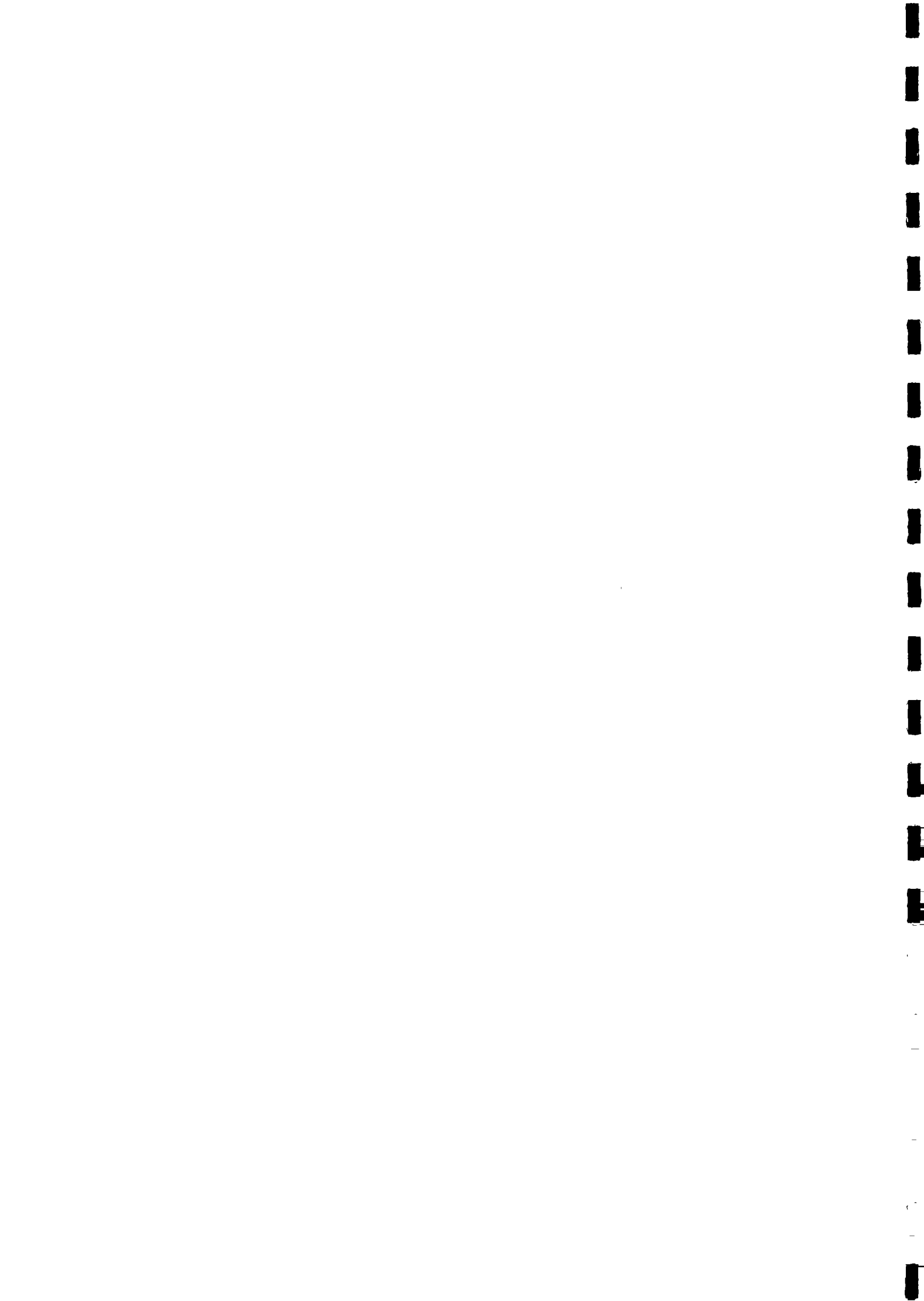




▲ Photo 3  
Completed soak pit with  
honeycomb brickwork lining  
(above)



◀ Photo 4  
Twin soak pit in front of  
latrine. Pit covers fitted  
with inspection lid for  
monitoring filling of the pit  
(only for pilot project  
purpose)

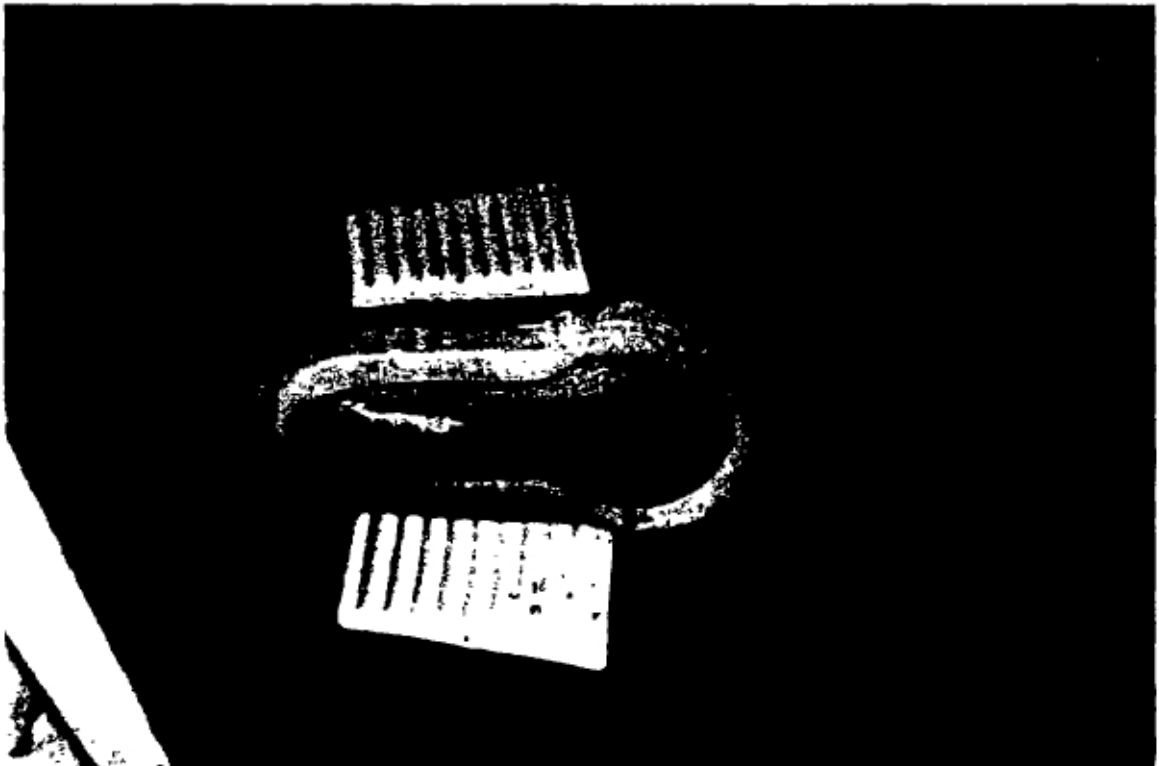


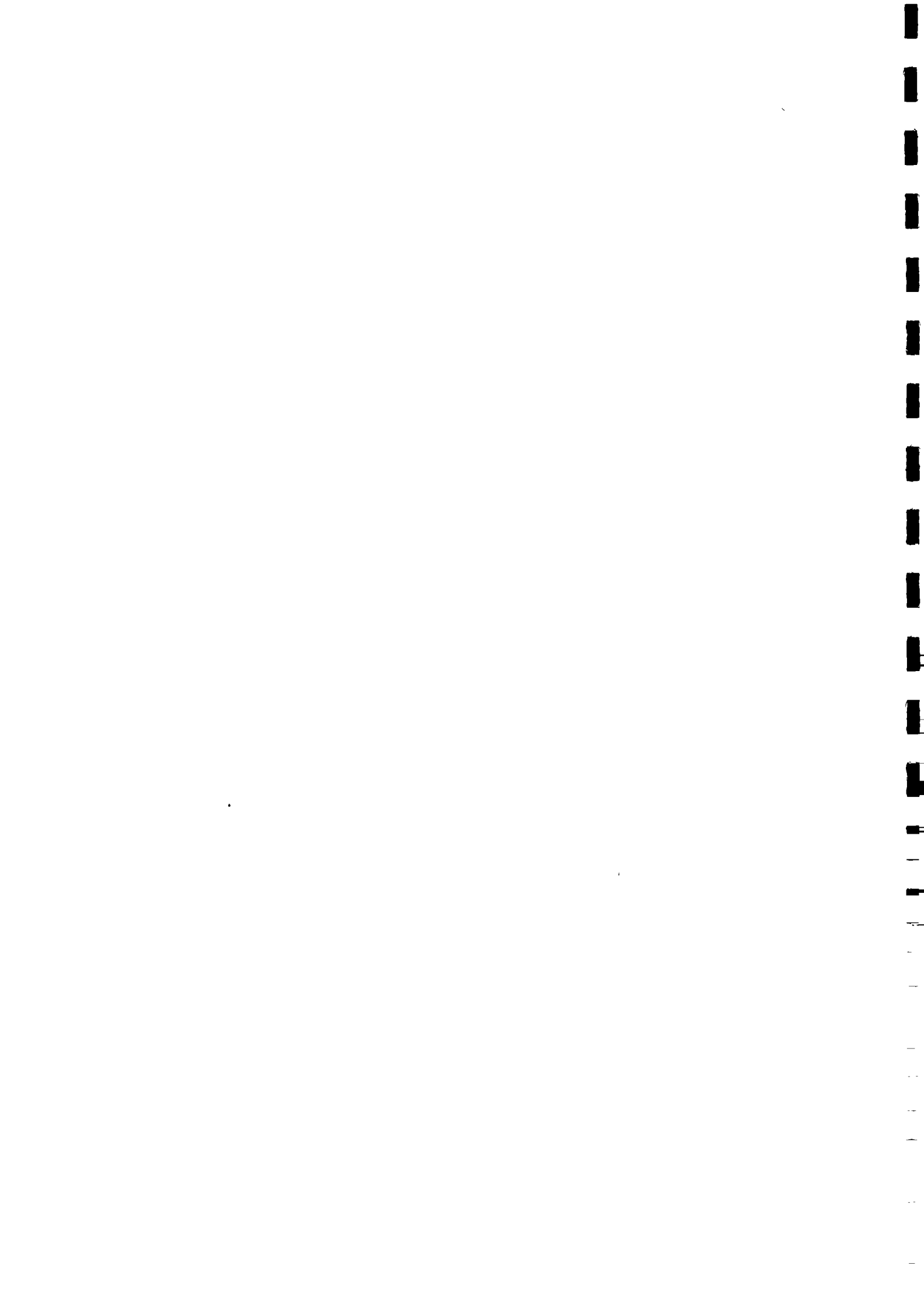




▲ Photo 5 Installation of squatting pan

Photo 6 Completed latrine substructure with pan and footrests

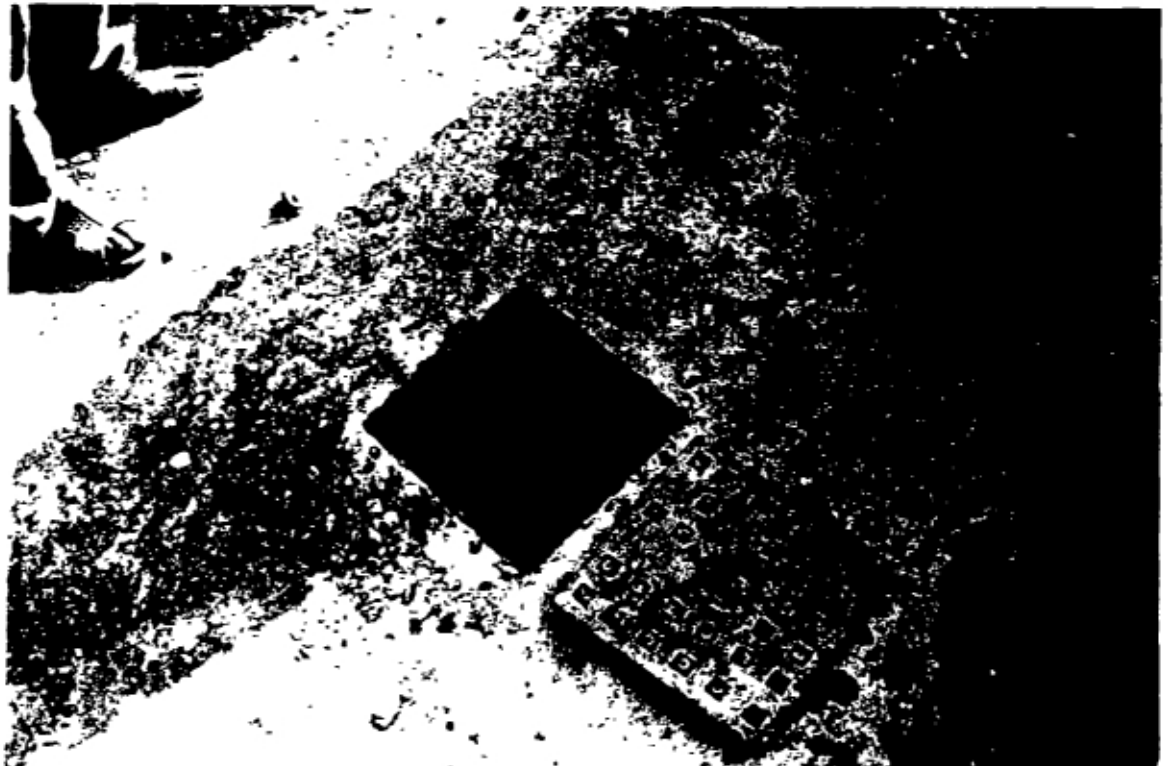


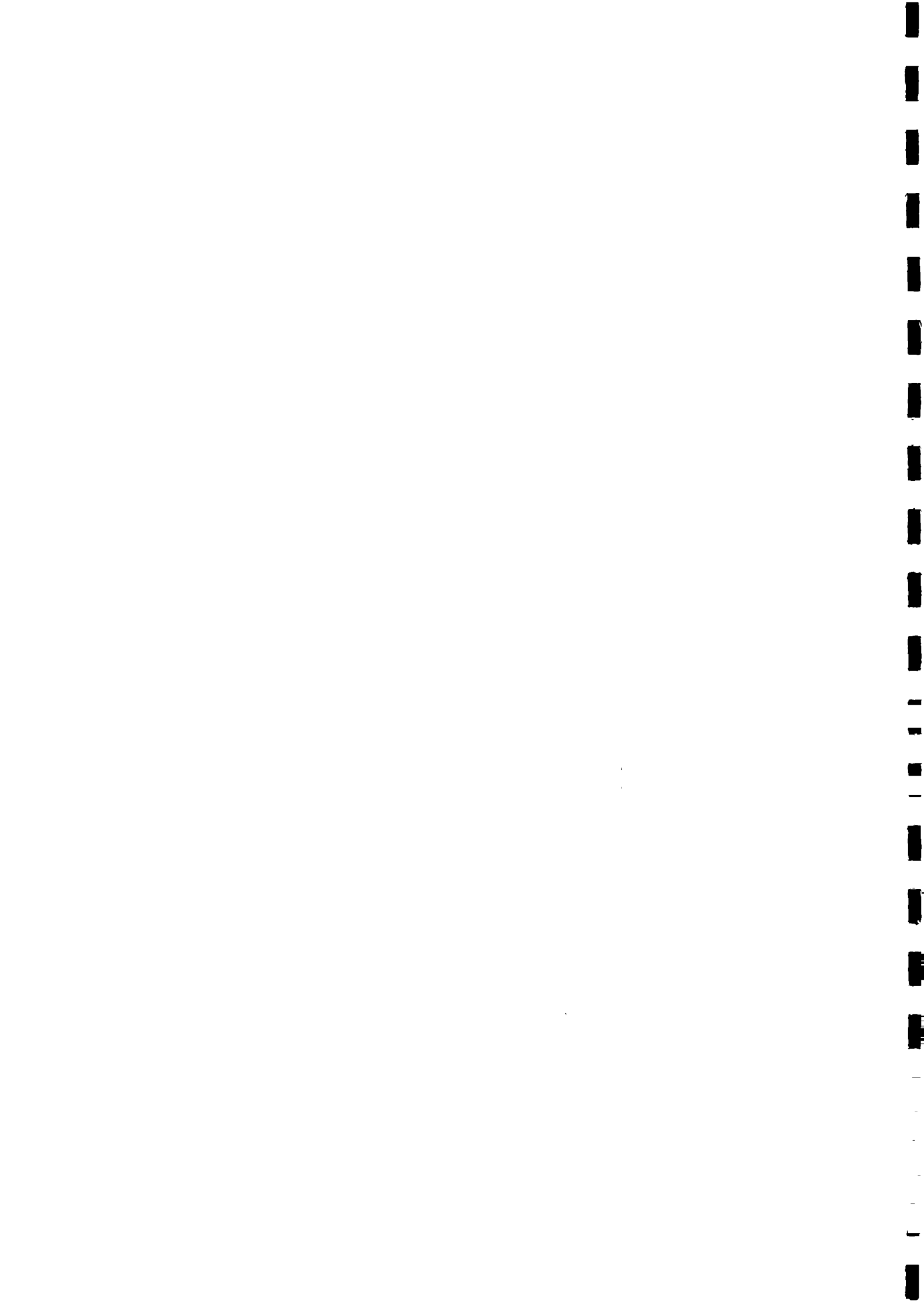




▲  
Photo 7 Junction box with fine cement mortar finishing and wooden plug for selecting discharge to pit

Photo 8 Galvanized iron lid in pit cover for monitoring of pit filling







◀  
Photo 9  
Completed twin pit pour-flush  
latrine

Photo 10 ▶  
Completed single deep  
(dry) ventilated pit  
latrine (VIP)





#### 4. PROJECT EVALUATION: CONSTRAINTS, EXPERIENCE AND STRATEGIES

##### 4.1 Context

When installation of the latrines was completed and the results of monitoring surveys became available in mid-1988, a review of the pilot project was carried out. It became apparent that:

- Involvement of regular contractors was not very successful, especially in terms of implementation speed and cost of construction. Subcontracting to smaller entrepreneurs was common practice, and outside contractors had difficult access into purda areas.
- The addition of a superstructure raised the cost of the facility far above the amount the intended beneficiaries could afford and outside the financial means reserved for the LCS programme.
- Logistical and staffing difficulties were encountered with project promotion, hygiene education, construction supervision and end-use monitoring.

The Consultants realised that the adopted approach for providing low-cost latrine facilities had to be evaluated in more detail to revise the strategies with respect to delivery method and enhancing the participation of the community particular. For this purpose the Consultants obtained assistance from Dr Mike G. McGarry and Ms Q.A. Bakhtari, who carried out a field visit in October 1988. During the subsequent months, the new approach and strategy was formulated in consultation with the project team.

The following sections in this chapter look at the social and community development aspects of the latrine programme, identifying constraints to sanitation development in Quetta, experiences of the pilot project, and strategies to overcome constraints in the future programme.

##### 4.2 Health and Disease Awareness

*Constraints:* Generally people in the low income areas of Quetta do not relate ill health or disease to excreta disposal. Health and disease are commonly believed to be God-given. Illness such as diarrhoea and other excreta-related diseases are seldom taken seriously. Women in particular, do not relate sanitation to health improvement. Latrines are considered a convenience, not for hygienic disposal of excreta or better health. Latrines have a degree of status attached to them and are considered desirable, a normal attribute of urban living.

*Experience:* Hygiene education was found difficult to implement with any degree of measurable effect. This was partly due to the engrained nature of traditional practices and beliefs, and partly due to the messages and media used.

UNICEF's experience with hygiene education posters in rural areas highlights the need for clear, theme-focused pictures to convey the message to illiterate audiences. The number and complexity of messages must be kept to an absolute minimum.

Traditionally, women are reluctant to talk about sanitation, for men it is almost taboo. The pilot project succeeded in breaking through the barriers of talking about sanitation with the men. It is now a topic of concern and open discussion in meetings held with the men of community-based organizations. This is an important step in promoting sanitary latrines and improved hygiene.

Women, especially in the Pathan communities, were found to be reluctant to discuss sanitation openly and a change of attitudes towards hygiene education will therefore take time. For example, the women, who seldom relate health with latrines, are not receptive to the idea that children's excreta could be as dangerous as their own.

Several key sanitation related practices were observed which, if not improved, will be problematic to the project. These are: the use of mud and stones for anal cleansing which clog the PF toilet; the lack of latrine use by children, who prefer to defaecate near the latrine or outside the compound altogether; and the continued use of the bucket or plinth latrine despite the installation of a new one nearby.

*Strategies:* Hygiene education must become a central component of the latrine programme. It should be imparted equally to men and women, with a focus limited to the use of latrines only. The focus should be on:

- use of water for anal cleansing, hand washing after defaecation and flushing the pans;
- the proper use and cleaning of the latrines;
- ensuring that traditional latrines are no longer used;
- encouraging child use of the latrine;
- use of religion to counter taboos against sanitation.

The most effective way to bring messages to all men and women is via the literate individuals of the community, and especially via the community based organizations (CBO). For example, a full-time CBO (funded by WASA) female sanitation educator (saned) can be very effective in reaching women of all ages in their homes. Similarly, a male sanitation promoter (sanpro) can be trained as a hygiene educator of the men in CBO meetings, and in homes during regular house visits with the saned. The saned and sanpro should be supported in their work by trained WASA supervisory staff, preferably located in the locality. Such a system of implementation is described in Chapter 6.

#### 4.3 Sanitation Practices

*Constraints:* In some areas there are often two latrines in the compound. One for the family located in the family (purda) area, and a second near the gate intended primarily for guest use.



The women of the compound invariably use the family latrine. It is less used by male members of the family who use the "guest latrine" or go outside the compound. Children are not encouraged to use latrines. This is particularly true of the deep pit latrines which commonly consist of a hole over a rather intimidating 45 foot deep pit. The children often defaecate in the open or in the immediate vicinity of the latrines.

The socio-economic study of 1984 provided valuable insight into the various types of latrines in each colony. It should be noted that whereas latrine coverage was relatively low in the newer areas of Baluch Colony, it has increased substantially since 1984. Latrine superstructures are often uncovered and spacious and there are seldom doors on latrines. Family members are accustomed to an open spacious feeling during defaecation, this preference coming from their defaecation habits in the rural areas.

In the Deba, Hudda and Kili Shaikhan areas, the people are not used to digging deep pits. In most instances they are not able to, because of the higher groundwater table. The predominant latrine in these areas is the bucket or plinth type which requires regular cleaning. On the east side of the railway tracks however, the groundwater is deeper and the "rural" Pathan people are skilled at digging pits of 30 - 45 feet or more. The perception of excreta being "outside" the living area by being down a deep pit prevails amongst the Pathan. The deep pit is perceived as an acceptable solution, apart from the danger of the slab collapsing and odours in and around the superstructure.

*Experience:* The pilot project provided valuable information with respect to the design of the latrine and local preferences. In particular, householders suggested that the superstructure be enlarged so that squatting by men was easier and more comfortable. UNICEF are now proposing a 1.0 x 1.2 m squatting plate.

There had been no first-hand experience with the PF toilet in Quetta itself. Thus householders were unfamiliar with its principal advantage, namely the ability to empty the pit after three years with its contents remaining dry and not foul smelling. The perception was that the waste material remained in the compound (in contrast to excreta in the deep pit). Householders were apprehensive about what would happen when the pit filled up, as they have not had the process of pit-emptying demonstrated to them.

In Pashtunabad and Baluch Colony areas, about one third of the 41 toilets installed were located in the guest area of the homes. Thus they were not used to the extent intended. This is particularly true of the women who do not use guest latrines. It is not uncommon that latrines located in the guest area are seldom used and not flushed. This is especially true in areas of water shortage. However, this should not negate the use of PF latrines in areas which have only standpipes for water supply. The family latrine in the purda areas is used far more frequently than the guest latrine.

Water is carried into the home and would be used for flushing if hygiene education was implemented effectively. Water shortages are likely to be alleviated in these areas in the near future where water supply is a top priority. The CBOs are likely to successfully lobby for increased water supplies.

*Strategy:* Every effort should be taken in the ensuing programme to ensure that the latrines installed in each compound should be those located in the family area. The project should not support the installation of guest latrines, but leave this to the householder.

#### 4.4 Motivation for On-site Sanitation

A number of options should be provided to the purchaser. In marketing a product such as a latrine for home installation and use, sales will depend on acceptability as well as terms of payment. Standards and quality of construction should not be jeopardized by this. Minimum standards pertinent to technical efficiency, sustainability and reliability should be clearly set down and upheld. Options should include use of the existing deep pit to minimize costs and overcome the apprehension concerning pit clean-out. With respect to the option of building new pits for PF toilets, discussions at CBO level should determine local wishes with respect to household provision of new deep pits and the most cost effective and acceptable policy to both WASA and the consumer. In any case, investigations are required into the stability of the deep pits under use with the PF toilet. Within the project area east of the rail road tracks, it appears that 45 foot deep pits are stable and very slow to fill. However, soil investigations are required to determine whether or not periodic vertically directed flushes of water would destabilize the wall of pits four feet in diameter.

Most households have constructed their own latrine superstructure or surrounding wall at little expense and are quite capable of upgrading it themselves. Superstructures do not have any significant impact on health although the privacy aspect promotes the use of the latrine. Thus, superstructures should not be included in the loan given to the householder for latrine construction.

Promoting PF toilets would be made considerably easier if audio-visual material were prepared which demonstrated the ease of pit emptying. Such audio-visual (A-V) material should reflect the ethnic background and sanitation norms of the audience it is intended for. Thus it may be necessary to prepare two similar A-V's, one for the Pathan community and one for the Baluchi. In addition, the project should familiarize all the staff with double pit PF toilet construction and operation through visits to the UNICEF projects in rural Baluchistan and the BUSTI project in Baldia.

The question of water use for flushing in water shortage areas is yet to be answered definitively. The CBOs in these areas are adamant that water will be used provided adequate hygiene education is given, even where water has to be carried in by donkey cart! Nearly all of these areas will have augmented water supply in the near future, probably before the latrine programme is fully underway.

On the other hand, the project must be sure that its latrines do not fall into disuse because of misjudgment of the householder's willingness to adopt new sanitation practices quickly. Water sealed PF latrines should be tested in these areas as soon as possible, but in limited numbers.

The hygiene education backup to these latrines should be representative of what can be provided through the project at the larger scale. The test program should also be well monitored to identify and solve problems as the programme proceeds.

*Constraints:* There are several constraints facing the project team's efforts to motivate community members to improve hygiene and upgrade existing or install new latrines. Those related to hygiene have been discussed in the two sections above. Those pertaining to acceptance of improved on-site sanitation can be summarized as follows:

- The vast majority of households already have insanitary latrines in their compound. In the minds of the householders, the next upgrade is to sewers, not an intermediary on-site facility.
- The benefits of improved on-site sanitation are not clearly understood by the families.
- The private sector has traditionally been called upon to build latrines, and sanitation is considered a private household matter. Government is looked upon as a free provider of infrastructure and not as a seller of latrines.

*Experience:* Construction of the 100 latrines under these circumstances in the low income communities was an accomplishment in itself. In motivating the community to accept these and apply for another 1000, many expectations have been raised within the community and the CBOs themselves.

During the pilot project the principal liaison points in the community were the councillor and Zakat committee chairman, although using the CBOs later for motivation had far better results. The fact that the project succeeded in generating over 1000 applications for new latrines was a result of efforts by the project team, but even more so by the CBOs. However, delays have slowed production rates and resulted in some demotivation of the CBOs.

Field methodologies are not standardized, communications are mainly one-way oriented and messages naturally varied. For example, the first 100 latrines were provided free of charge, but full cost recovery is now being pursued. The repayment scheme however, has not been decided upon. This naturally creates difficulties for all concerned.

*Strategies:* The CBOs should be used as the main point of entry and marketing agent for the project. Motivation should be designed and supervised by the project team. It should be community-based and delivered through the CBO and its members. In this way, messages will reach the households and the role of government will be understood and respected. Methodology and messages must be clear and consistent to all concerned. Although the next phase will necessarily include elements of testing delivery methodology, these should be kept to an absolute minimum and the CBOs informed precisely on what may or may not be altered over time. In particular, the community is anxious for the following questions to be resolved:

- who will construct the latrines?;
- how will the householder who pays for the latrine be sure of quality control and of a fair price?;
- who will be responsible for maintaining the latrines and for emptying the pits?;
- what is to be included in the loan: pits, superstructure, plinth, pan, pipe?;
- how will repayment of the loan be made, how much per month and for how long?;

These and many other questions must be answered before motivation and marketing can succeed.

The sociologists, especially females, should extend their understanding and role into the technical area. In this way they will be able to speak with confidence about all aspects of the project. The role of the CBOs needs to be systematized. Recommendations for the establishment of LRCs, and funding of male sanitation promoters and female sanitation educators hired by the CBOs is given in the ensuing chapters of this report.

The CBOs should be regarded as partners in project development and respected as such. Well defined terms of reference and operational field methodology are required. The CBOs will need financial and technical assistance to carry out their roles in project development. Only in this way will WASA effectively inform and motivate the community to achieve its targets and recover costs during the next phase of the project.

#### 4.5 Communications

The communication required for this type of project takes place at different levels:

- households, especially between male and female members;
- community level between households/families and formal and informal organizations within the different communities;
- project versus community in explaining the project objectives and the promotional activities;
- internally within the project team with its technical and non-technical members.

At all these levels problems and constraints have been encountered. Some of them have been already discussed in another context (household level and community level).

*Constraints:* Lack of strong links between technical and social staff in projects such as these is common. This is due to their educational backgrounds, which separate rather than integrate disciplines. The education of engineers draws them to large, capital intensive and high-tech systems. The classical engineering education and career path excludes low cost technology. It is therefore understandable that engineers are less than enthusiastic when asked to undertake work in low income communities implementing simple (although appropriate) technology.

The government is accustomed to operating in a monopoly situation. WASA is formally mandated as the only provider of water and sewerage services in Quetta. Providing latrines is quite another matter, and

WASA must be competitive with alternative sources of sanitation, such as the digger and mystrie (local mason) who install the traditional deep pit or the septic tank. In promoting low-cost sanitation, WASA must compete by providing a better commodity at a competitive price. It must succeed on the open market by marketing its product through effective and efficient communication, and providing efficient distribution and installation services. Only by providing soft loans and technical assistance to the consumer can WASA insist on maintenance of technical standards.

*Experience:* Past community experience with government-driven projects has demonstrated that government is slow to respond directly to community needs. Although appreciative of its efforts, the community has come to understand that government is not always open with information and a credibility gap has developed which must be overcome in projects such as this. The method of communication is as important as the message itself.

That is to say, "The message is the media". While being careful to acknowledge the political dimension, government will normally dictate solutions to problems. Thus there is a tendency among civil servants to communicate from the top down. In projects where marketing an idea or product is very important, an executing agency such as WASA must take a different approach which treats the consumer and his/her community as a respected partner rather than a passive recipient. Initially, the pilot project approached the community through the local councillors and Zakat Committees. At a later stage CBOs were approached to assist in promoting the programme. Acceptance of the latrines was based on a minimal commitment from the householder. The latrines were given free of charge under the condition of full cooperation with socio-economic investigations and frequent site visits by the team. Project methodology and delivery strategy was predetermined by the project team, based on experience from the socio-economic survey in the feasibility phase and project preparation activities.

Although the sociologists and engineers were supervising the pilot project, most day-to-day communications with the householders were through the contractors, who were merely constructing latrines. Later discussions with the community-based organizations revealed that communications between contractors and households were not always smooth. In particular, the families did not appreciate outside contractors in their homes. The CBOs and community members felt, rightly or wrongly, that excessive profits were being made and asked why the CBOs and local masons could not install the facilities themselves.

Both female and male sociologists of the project team made regular house-to-house visits during the pilot phase. While their intentions were perceived as good and well meaning, a definite preference was expressed for local community members to be trained and conduct such visits. Communication would then be much improved, and would be a much more cost effective approach. Problems were also experienced in contracting the community through the female sociologists. Whereas reaching the women, available during the daylight hours, is important for motivation and hygiene education, authority rests with the men who are available only in the evening.

The female sociologists are reluctant or not allowed to work after dark which therefore limits their effectiveness. This could be avoided by involving female members from each community.

*Strategies:* Good communications with the consumer is essential. The project should adopt a strong motivational/marketing approach in its delivery methodology. Interaction with the community must involve a two-way communication between the project/WASA and the community, learning, adapting and compromising through the process. The community should be directly involved in project planning and delivery through its CBOs, and should come to regard the project as a shared responsibility between itself and WASA. All discussions with the community indicated that they were ready to do so. Several commented that such an interactive process would be welcomed.

Empathy and an appropriate attitude with the community's problems and needs, built on respect, are essential ingredients in promoting and marketing sanitation. The project should endeavour to employ staff who have such attitudes and orientation.

Good communications cannot be achieved through large contractors. Local masons are widely available within the communities themselves and can be trained in sanitation unit construction. This could go a long way to ameliorate difficulties encountered using larger contractors from outside the community.

Contact with the households for motivation, construction, supervision, and hygiene education should be through trained community members. The sociologists from WASA should supervise and train the above mentioned sanitation promoters and educators.

#### 4.6 Expectations

*Constraints:* An "aid mentality" prevails in Quetta. The Afghan refugee situation has brought a myriad of international agencies offering assistance. Consequently, people feel that support in the form of infrastructure, such as latrines, should be free. The question is raised "After all, if Dutch money is given as a grant to the government, why should we pay?"

*Experience:* This attitude was reinforced by the pilot project in which 100 demonstration latrines were installed without cost to the household in return for long-term cooperation and the right to periodic inspection. Raised expectations and the "aid mentality" create a difficult environment for full cost recovery.

The project team and the CBOs were successful in motivating and substantiating the need for latrines. One thousand applications for new latrines were generated by the project with the help of the CBOs. However, because of the change in delivery approach the expectations cannot be met immediately. Moreover, the delay in installing latrines has caused several of the CBOs to lose some credibility amongst their members.

As one CBO member said, "We don't mind if the latrines come later, we just want to be told when, so that we can tell our members and they can rely on it."

*Strategies:* Extreme care must be taken to strengthen the project's credibility within the CBOs and communities. Subsequent phases should be carefully planned so that targets and promises do not exceed the project's capacity to deliver. Decisions on cost recovery should be made as soon as possible and consistent information given to the community.

Any cost recovery policy has to be backed by logic. For example, if aid funds are given to WASA in the form of a grant and the recovery of the latrines' capital costs is insisted upon, the community must understand why. Valid reasons, such as the costs of administration and the need to establish a fund for future expansion, should be explained clearly and openly to the community. Otherwise rumours may spread and cost recovery will suffer.

The strategy behind project implementation should be such that the householder is left with a feeling that it is his/her latrine and not the government's. If properly applied, education will eventually prevail over the "aid mentality" as the Afghan situation eases and donors withdraw.

#### 4.7 Community Organizations

*Constraints:* Some of the CBOs are relatively new. Many act principally as pressure groups for water, electricity, gas, education and health facilities. They lack experience in community development and use an approach which is basically survival- or charity-oriented. The project team should ensure that the CBOs act as representatives for all the community members and no favouritism is exerted.

*Experience:* On the whole, work with the CBOs has been positive. Good communication exists between the project team, CBOs and households. The fact that initial contact between the CBOs and communities resulted in over 1000 applications for latrines is encouraging, particularly as the applicants knew that the latrines are not free.

*Strategies:* The involvement of CBOs should be encouraged and operational working relationships developed. This requires an evaluation of their resources and capacity (see Appendix IV). The CBOs will require training in project operation and low-cost technology. Their roles should be explained clearly in the local dialect to avoid misconceptions and to clarify details. The operational links between the CBOs and the sanitation LRCs should be delineated.

#### 4.8 Affordability and Willingness to Pay

*Constraints:* Families, especially in Hudda and Deba, are paying Rs 20 - 30 per month for sweepers to clean their latrines. This is the amount people are willing to pay for an alternative system of comparable service. In the majority of cases families are able to pay more. Only an approximate ten percent of the community cannot afford Rs 20 per month. These are the unemployed, widows and female-headed households. They are clearly identifiable as those receiving charity in the form of Zakat.

*Experience:* Although various estimates have been made of the household's willingness to pay, there have been no field trials to date. In providing the demonstration latrines free of cost, the pilot project unintentionally fostered the belief that future latrines would be free as part of an aid package. The pilot project did not include cost recovery because the technology had not been confirmed in the Quetta setting. Further, the administrative and accounting system was not established at the time the field trials took place. There is also the perception that the poorest cannot afford latrines even if they are willing to pay for them.

*Strategies:* The next phase of construction should include cost recovery to confirm the understanding that repayment is necessary. With the exception of the Zakat households, costs should be recovered as quickly as possible up to a maximum of five years. The formula used to determine repayment schedules should be easily understood and embody the principle that the consumer pays for what is received and visa versa. In this way repayment and full cost recovery will be perceived as fair. The formula should be designed in such a way that once established and used within the community it need not be changed. It is essential that communications concerning how the project will operate are clear and straightforward. Changes should never be made without early and full discussion with the community.

The Zakat families' latrines (one per family) should be free in accordance with the traditional practice of Zakat charity within the community.

#### 4.9 Operation and Maintenance

*Constraints:* The double pit pour-flush toilet (DPPF) is new to WASA. Although 100 are now installed in the community, demonstration of their maintenance and pit cleanout is not yet possible. This is a major constraint in motivating families to purchase the DPPF. Having no practical first-hand experience, the project team cannot be confident marketing the unit. The community naturally prefers WASA to undertake maintenance and cleanout responsibility, and provided they give good service, Rs 20 - 30 per month is regarded as a fair price.

Concern has been expressed that in water shortage areas such as Muslim Colony, where water must be purchased and transported by donkey, water will not be used for flushing. Thus, the "dry" VIP latrine has been installed in these areas.



*Experience:* Although the engineers were active during installation of the 100 latrines, they have not participated in the community since. This leaves the sociologists answering technical questions related to operation and maintenance which they feel ill-equipped to do. Families are aware that the pits must eventually be emptied, and soon. Yet the arrangements for emptying the pits have not been decided upon. Consequently the issue has been circumvented by the suggestion that WASA may provide this service. This supports the perception that WASA will provide sweeper service in a different form at roughly the same price.

The concern that communities in water shortage areas do not want flush toilets has not borne out in practice. The CBO members express a clear preference for the PF latrine and declare that it will be properly used once adequate education has been given to the household.

*Strategies:* The project team needs first-hand experience with DPPF toilets as soon as possible, which may entail travelling to UNICEF's rural sanitation projects or to Baldia. The importance of practical experience cannot be understated. It has been decided that the sociologists and technical staff undergo training in DPPF construction during which they participate in building the substructure. They should also be given the opportunity to empty a pit themselves, otherwise the concept is difficult to convey to the community. The leaders of the CBOs should also see the pits emptied, so they too can talk from first-hand experience.

A slide sound show will be made about construction, operation and maintenance for community viewing. It has the advantage of being easily presented on a large screen at community meetings, where males and females are separate. The slides should be aimed at the audience's ethnic groups, Pathan and Baluchi. A second A-V presentation will be prepared about the entire project cycle from the householder's viewpoint, from first contact with the project through signing an agreement, construction, cost recovery and cleanout.

Project strategy will ensure that the household considers the latrine its property and not a service provided by WASA. In this way the household will willingly assume responsibility for maintenance and cleanout. WASA will not be interested in nor able to organize a cleanout service four to six years hence. For the project to succeed in the long term, the household must accept full responsibility for clearing out blockages, maintaining the latrine, and emptying the pit material. Maintenance and emptying services can be privatized by sweepers within the communities or potential users of the pit content. There is some potential for re-use of the dried pit content as humus/fertilizer, especially in and around the semi-arid Quetta valley. Also, the proposed waste-water irrigation scheme could provide a demand, but this needs investigation.

The next series of installations should include DPPF toilets in areas where water must be purchased and carried. In such cases full education about toilet use should be given to the households, and assurances from the CBO received that families will be monitored for proper use of the latrines.

#### 4.10 Human Resources

*Constraints:* Engineers are limited by their lack of practical technical skills and training in community development and appropriate technology. The sociologists are constrained by their lack of technical expertise, as previously indicated. Quetta contractors are inexperienced and require training, not only in the technology/quality aspects but also communications. Constant supervision and inspection of the contractors is a severe drain on project resources.

While providing as much direct supervision and guidance to the sanitation component of the project as possible, the project manager has other major responsibilities which demand attention. Management of the sanitation component requires skills in community development and communications.

*Experience:* The pilot project was mainly technology-oriented to test implementation aspects such as technology, construction rate and quality of work. Although the sociologists were given the opportunity for strong social input, the major difficulty encountered was the lack of integration between the engineers/contractors and sociologists. This made field operations difficult and provided few opportunities for exchange of ideas and skills. The project team has made substantial progress in practical learning in the field, but this has been consuming in terms of resources and time.

*Strategies:* The project should focus on implementation strategies and delivery methods over the coming months. Although recommendations are made in the ensuing chapters as to which approach may be used, careful detailed planning should be undertaken and immediately implemented in the field in one or two mohallas. These mohallas should be selected for their potential success and not problems. It was concluded from the pilot project that resources other than the large contractors must be brought into the project.

Success of the project now hinges on its organizational, social and delivery components. Although experienced personnel in community development are scarce in WASA, there is no shortage of resources available. Most CBOs have experience of mounting small projects within their communities. Further, mystries are widely available in the target communities and can be trained in PF toilet technology.

Additional field staff are required. They should have community development experience and be trained into the project as quickly as possible. Delivery rather than technology will play the most important role in future. Professionals competent in community development work should manage this component of the project. As the technology is simple, lower grades of technical staff, trained in both the social and technical aspects of sanitation delivery, will be best suited in the new approach.

#### 4.11 Summary of Conclusions

This section provides a summary of the main conclusions from the pilot project evaluation discussed in this chapter.

1. The inexperience of government organizations like WASA with social community activities, and the absence of suitable personnel, make the CBOs better suited for considerable involvement in the latrine programme.
2. Careful planning is required so that raised expectations can be met. Therefore, communications should emphasize community motivation through participation of the CBOs in planning and development.
3. Basic activities within the community with respect to promotion, education and supervision should be carried out by full-time, WASA paid, CBO members. They are better suited for convincing the local community than outside social workers from WASA. The saneds and sanpros will be trained by the WASA social workers and technologists at the various LRCs.
4. Motivational messages should be very clear about what will be supplied, who carry out construction, how much should be paid, and responsibility for maintenance.
5. Health education should focus on hygienic use of the latrine and related activities only, with a clear and simple message. Supporting material should be effective and understandable to the recipients. The information should preferably be delivered by members of the respective community organizations.
6. Construction by contractors was not cost efficient and did not achieve the expected implementation speed and construction quality. This can probably be realized more effectively through local mistryies, to be trained by WASA engineers to maintain quality.
7. The latrine should be used by all family members, not only guests. This implies that in the more traditional areas of Pasthoonabad and Baluch Colony the latrine should be installed in the purda area. Only local mistryies will be allowed to enter the family area.
8. The programme should instill the feeling that the latrine is the household's property and responsibility.
9. Cost recovery schemes should be clear, understandable and affordable. The agreement should not be changed over time.
10. All WASA sociologists and social workers, both male and female, should be trained intensively on practical motivational, sociological and technical aspects of the programme. Visits to ongoing latrine programmes are recommended, such as at Karachi.



## 5. ALTERNATIVE STRATEGIES AND RECOMMENDED DELIVERY METHOD

## 5.1 Alternative Delivery Strategies

Success of this project component and long term sustainability of low-cost sanitation in Quetta now depends on delivery methodology. There is a full spectrum of alternatives open. They range from a private enterprise-driven option with no government support, to full support and control in which the government itself installs facilities in every home. Inbetween, there are a variety of alternatives which can be chosen. These were considered in depth and an attempt was made to identify the most cost effective strategy to respond to the socio-cultural conditions pertaining in the low-income areas of Quetta. The options are presented in Table 5.1, with institutional roles given next to the various stages of the project cycle.

Table 5.1 Alternative delivery strategies

Activities	Household -driven	WASA -driven	Limited CBO	NGO/ CBO- driven	WASA/ CBO- driven 1	WASA/ CBO- driven 2
Community Survey	-	W	-	O	OW	O
Contact & Info.	-	W	O	O	O	O
Demonstration	-	W	-	O	WO	WO
Training	-	-	-	N	W	W
Motivation	-	W	O	O	WO	O
Application	-	W	-	-	OW	O
Site Inspection	-	W	-	-	WO	OW
Approval & Agreement	-	WH	-	-	WOH	WOH
Contracting	HM	WC	HM	HM	WM	WM
Procurement	M	W	M	O	W	O
Construction	M	W	M	HM	M	HM
Supervision & Insp.	H	W	H	NH	WOH	OH
Warrantee	-	W	-	-	W	W
Operation	H	H	H	H	H	H
Monitoring	-	W	-	-	W	O
Maint. & Repair	HM	WC	HM	HM	WHM	HM
Cost Recovery	H	HW	H	H	HW	HWO
Hygiene Education	-	W	-	O	WO	OW

## Note:

- H = Household
- O = Community-based Organization (CBO)
- W = WASA/project team
- N = NGO (eg. UNICEF, UNHCR, Oxfam)
- C = Contractor
- M = Mystrie (trained mason)

*Household-driven:* In Quetta, private households have been actively providing some form of sanitation for themselves without subsidy for generations. In Kili Shaikhan, Deba and Hudda, most houses have service latrines which are regularly cleaned by sweepers.

In Pashtunabad and the Baluchi Colony the predominant approach has been deep pits of more than 10 m. Only a small percentage of houses do not have on-site sanitation. Although private enterprise has been active, the level of hygiene which traditional technologies provide is deemed substandard. This is particularly true of the sweeper system. Unfortunately the vast majority of individual households have been unable to attain adequate hygiene standards without external support, which is required in the form of hygiene education, technical assistance and financing. Experience to date has indicated that this strategy cannot be sustained in the long term.

*WASA-driven:* At the other end of the spectrum is the government-driven strategy. WASA assumes all responsibilities, except those of the household and contractor. WASA is therefore involved at all levels from motivation by sociologists to hygiene education within the community, which requires an extreme amount of resources. Moreover, households would probably soon reject WASA's pervasive presence in and around the community.

*Limited CBO involvement:* With little financial and technical assistance the CBO could make contact with households and motivate them to improve their own sanitation. Limited improvements would be achieved in this way. The key limiting factor is hygiene education, without which fundamental improvements in sanitation are not possible.

*NGO/CBO-driven:* External support could come from a foreign NGO. It would probably provide technical assistance in the form of training, and concentrate efforts on strengthening the existing CBOs. The CBO would be in a better position to motivate households and provide hygiene education. Typically, such NGOs include sanitation as one of several improvements, taking a longer term perspective across a broader front than WASA. In fact, UNICEF is in the planning stages of a basic urban services initiative which will include elements of sanitation, although its impact will probably be diffused.

*WASA/CBO-driven (1):* WASA has the distinct advantage of being a government agency with the necessary resources and mandate to have a stronger impact than external NGOs. However, WASA cannot function alone, and limited resources and access to the community necessitate drawing on the CBOs as intermediary resources. The sociologists could lend support in surveying the compounds, providing demonstration latrines, training, motivating the households for applications and carrying out site inspection.

WASA could also be directly involved in approvals, contracting, procurement, supervision and inspection, certification, providing warranties, monitoring, maintenance and repair, cost recovery and hygiene education. Provided that such inputs are appropriate to the community, this approach would probably succeed in widespread coverage within Phase I of the project. However, the costs and resources required would be high, and is considered unnecessarily strong government/ WASA presence and input. With adequate training and financial support, many of these functions and responsibilities can be undertaken by the CBOs.

*WASA/CBO-driven (2):* The CBO is given more responsibility than in the preceding strategy, especially in surveying, motivation, application and hygiene education. This strategy aims to draw on community resources to the maximum extent possible to benefit the project. Operational details of this alternative are given in the following chapter.

Considering the above delivery strategy alternatives, and the experience gained from the pilot project, the Consultants have concluded that the WASA/CBO combined approach would be most successful. However, the extent of CBO input cannot yet be determined and depends on the commitment and manpower available with the CBOs. If the approach proves to be successful more responsibility can be delegated to the CBOs.

## 5.2 Recommended Delivery Method

### 5.2.1 Organization

In terms of resource mobilization, functional responsibility should be placed in the hands of those best suited to carry out the work in the most cost effective manner. The community should carry out community-based responsibilities, after training, where they are willing and reliable.

The Tanzeem or Community-based organization is in a unique position to perform monitoring and supervisory tasks within the community. It also has access to households through its membership.

It is recommended that the CBOs employ sanitation promoters (sanpros) and sanitation educators (saneds) as presented in the following organizational structure of the sanitation section. The sanpros and saneds would be employed directly by the CBO (funded by WASA) and supervised by CBO executive committees. The work of the mystrie teams is supervised by the sanpros.

In Figure 5.1 it is assumed that the staff of each CBO is capable of installing 1000 PF toilets within four years after initial training. However, not all CBOs will be capable of installing this number, and the predicted construction figures are considered in Chapter 6.

In the example discussed here, two CBOs with approximately 1000 toilets each would be supervised by a team of sociologists and technical staff based at the LRC within its mohalla. The manpower requirements for each stage of implementation is presented in Table 5.2. There are six LRCs planned as shown in Fig 5.1. These will be supervised by two project teams, managed by sociologists and directed by the sanitation coordinator. The process of marketing, installation and cost recovery is described in the following sections, each representing a step in the overall project cycle.

Table 5.2 Manpower requirements (weeks per 1000 sanitation units over 4 years)

Activities						
Management	45	45	5	-	10	10
Contact/Survey/Info	5	5	5	-	10	10
Demonstration	5	5	5	-	-	-
Training	4	5	5	3	5	5
Motivation	4	4	4	-	35	30
Applications	4	-	-	-	2	-
Site Insp/Appr/Agr.	20	-	-	80	100	-
Contracting	-	-	-	-	-	-
Construction	-	-	-	-	-	-
Supervision/Inspection	-	-	-	20	100	-
Certification	-	-	-	35	25	-
Monitoring	-	5	5	-	-	50
Warrantee	-	-	-	10	10	-
Cost Recovery	-	-	-	-	10	10
Hygiene Education	-	15	40	-	-	80
Total (weeks)	87	84	69	148	307	195
Annual (weeks)	22	21	17	37	77	48
% of time	50	48	39	84	174	110
Staff Required	0.5	0.5	0.5	1.0	2.0	1.0

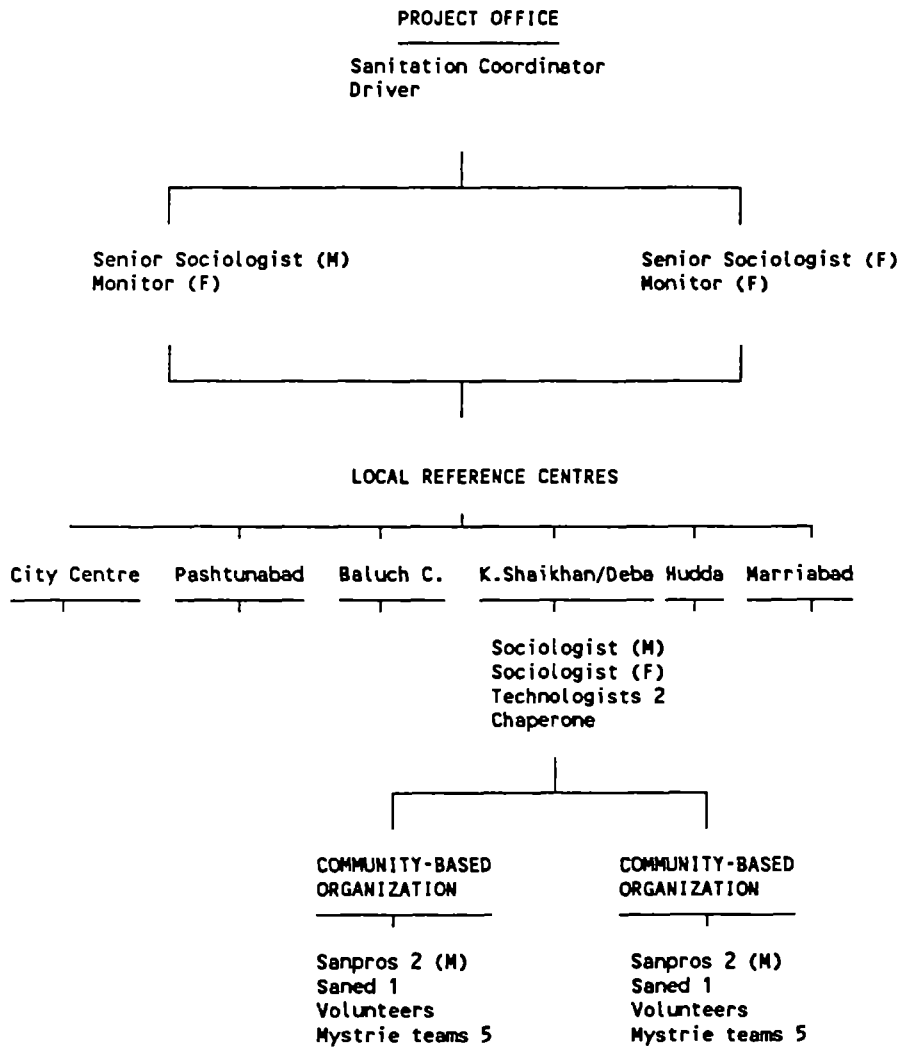
### 5.2.2 Initial contact

The 1984 socio-economic survey covered two percent of the households, providing necessary and useful information. However, before work begins in a mohalla, it is necessary to have more detailed and updated information on the number of households, their sizes and configurations. Presently, the available maps of the areas include no streets and housing detail. This can be acquired through aerial photography. Use of ultra-light photography is recommended as the least costly and most effective way of collecting this information and making it available to the sanitation project team.

The CBOs should make initial contact with the households. There can be a series of meetings between the CBOs and the household either before, during, or after the survey. The householder could also come to the CBO for further clarification. The initial contact would introduce WASA as a government agency, and would begin the motivational process. Arising issues related to sanitation would be referred to the LRC.



Figure 5.1 Organization chart for low cost sanitation



Meetings and contacts made with men in the CBOs are of greater importance, mainly because decision-making is by men. It was openly expressed in Muslim Itihad Colony that: "Once we, the men, have understood what WASA wants us to do, and if we agree, then our women will do what we say."

Clearly, though, the CBO should contact both men and women through the male sanitation promoter and female sanitation educator.

### 5.2.3 Provision of information

Information (posters, leaflets and audio-visuals) should be prepared about the project for distribution through the LRCs and CBOs. Careful control should be maintained to ensure its consistency and accuracy. The information will describe clearly all relevant aspects of the project, including various technologies, choices, costs, agreements, obligations, staff functions, chronology of events, warranties, cost recovery methods, maintenance and repair. The media and format will be adapted to the message and audience. This information will be used as a reference point, enabling the implementation methodology to be clearly understood by all concerned.

The information will be provided by the CBOs at community meetings, held at the LRCs, with the use of audio-visuals. The sanpros should take a lead role at these meetings, backed by the CBO committee. It is also recommended that the sanpros support the saneds in house-to-house visits, leaving descriptive material such as pamphlets with the family members. It is important to recognize that most family members are not functionally literate and the material must be prepared and disseminated accordingly. Particular attention will be paid to the preparation and presentation of information aimed at women of the households. Their low literacy level makes communication slower and less effective than with men (especially compared to men of the CBO committees).

### 5.2.4 Motivation and demonstration

As seen in Table 5.3, the project team educates and motivates the CBO, which in turn motivates households through the male sanpros and female saneds. The LRCs will offer practical demonstrations, including the drying out process of the PF latrine, proper water use, handling of excreta and final disposal. Discussion topics should include different PF designs, community management, cost recovery responsibility, health, and the religious importance of keeping promises for loan repayment.

Equipped with information and practical training, the CBO will be prepared to hold between two and five community meetings before construction actually begins.

To add credibility to the meetings, the project coordinator, senior sociologists and technical staff will attend. Householders should be encouraged to visit the LRC.

The CBO can do further "PR" work through door-to-door campaigns, local schools, MCH centres and clinics. To reach women more effectively, their role as mother and family minders should be addressed by the saneds without contravening the community traditions.

Table 5.3 Principal responsibilities

Activity	Project team	CBO	Household
Training R.C. staff	Project office		
Training CBO	Soc., Tech.	San pro/ed, mystries	-
Initial contact household	-	San pro/ed	-
Information provision	-	San pro/ed	-
Demonstration	LRC	-	-
Motivation	-	San pro/ed, mystries	-
Application	-	Sanpro	Householder
Site inspection	Techn.	Sanpro	-
Approval	Soc., Techn.	Sanpro	-
Agreement	Management	CBO	Houseowner
Contracting	Management	-	-
Construction supervision	-	Sanpro	-
Certification	Techn.	Sanpro	Houseowner
Hygiene education	-	Saned/pro	-
Cost recovery	Bank	-	Householder
Monitoring	-	Saned	

#### 5.2.5 Applications

Upon application the householder will be visited by both the sanpro and the saned as a team. A limited household sanitation survey will be carried out. The information obtained should be limited to:

- name, address, survey plot number, owner/tenant;
- number of families, children, adults;
- number of latrines and types;
- walked out sketch of compound (if aerial photos are not yet available);
- use of latrines by men, women, and children;
- availability of water;
- cleansing method;
- hygiene level observed;
- health/hygiene awareness.

Applications should be screened by the CBO before forwarding to the LRC.

Care must be taken that each CBO takes on the responsibility to deliver the information. CBOs need initial guidance to assess their own capacity to avoid over-estimations of their capability. The following guidelines can be adopted by the LRC to assess CBO capacity:

- number of active members;
- ability to call general motivational meetings;
- experience of handling funds and staff;
- number of mystries identified;
- availability of a sanitation promoter/sanitation educator;
- active participation in the training programmes;
- ability to provide social support for women's involvement.

#### 5.2.6 Site inspection, approval and agreement

After the application is forwarded to the LRC, the staff and CBO will inspect the site. Once the site is selected according to the technology choice available, the application will be approved jointly by the CBO and the project team.

A written agreement is an important aspect which should delineate the responsibilities of all parties involved.

#### 5.2.7 Procurement

In house construction, the owner traditionally purchases all materials from the supplier. They are then transported to the house by the mystrie's own transport or a hired cart. Procurement of materials by the project office is preferred for two reasons: firstly, the large quantities of materials purchased will lead to a cost reduction, and secondly, the mystries will not need cash prior to construction. Advance funds should not be given to the mystries.

The project office will be the procurement centre for deliveries to the LRCs. Larger items, such as cement and bricks, can be delivered straight to the site, while the pans and pipes can be stored at the LRC.

On approval of an application, the mystrie will be supplied materials from the LRC stores with the necessary receipts. Purchase orders for larger items such as bricks and cement bags can be given to the mystrie. If the manufacturer does not provide transport to the site, the mystrie must provide his own transport. These costs are included in payment to the mystrie on completion of the work.

On the whole, the project office will have better control of funds, as advances to the CBOs and mystries will not be necessary and discounts on large purchases from manufacturers will be available.

#### 5.2.8 Construction and inspection

Five or more mystrie teams will be trained by the technical staff at the LRC. Each team will be licensed by WASA to ensure that quality, honesty and productivity are maintained. On agreement and approval, the mystrie obtains the necessary materials directly from the LRC or through a purchase order system. Construction proceeds under day-to-day supervision of the sanpro and the watchful eye of the household. Coming from within the community itself and being accepted by the family, the mystrie team can work within the purda area.

The household loan will be made for the toilet and sub-surface components only, not the superstructure. Arrangements for adjusting, repairing, or building the superstructure can be made separately by the householder, possibly with the same mystrie. Additional work not foreseen will be agreed upon between the householder, sanpro and mystrie, and the agreement original amended accordingly.

### 5.2.9 Certification and warrentee

On completion, the work will be certified by the technical staff from the LRC. All parties will sign the original completion form, stating that the work has been completed satisfactorily within the stated (or adjusted) time and at the agreed cost. The mystrie will be paid by the LRC within seven days of completion. Education and maintenance, toilet use and sanitation then begins. Likewise, cost-recovery also starts according to the agreed schedule and charges.

Throughout the construction period, the sociologist managing the LRC, who is trained and fully conversant with the technology, will monitor the work, the CBOs involvement and the sanpro/saneds' work in the community. The sociologist will also be responsible for keeping records and passing them on to the project office. Monitoring the programme will be facilitated by key records such as the sanitation survey, applications, agreements, purchase orders and certification slips. The project office will maintain a computerized data base to record progress. This will enable the project coordinator to identify problem areas as they arise, and suggest additional or different recources and approaches when needed.

After certification, WASA will provide a warrantee to the owner against poor workmanship and faulty materials. Such a warrantee will not cover maintenance or repair caused by misuse of the facility.

### 5.2.10 Maintenance and repair

The method of marketing, installation and cost recovery should ensure that, once installed, the toilet is not considered the property and responsibility of WASA. Maintenance and repair must be left to the owner, who can hire the mystrie for repairs and the sweeper for major maintenance (including cleanout). Payment for services should be made by the householder directly to those providing the work. WASAs continued responsibility after the initial installation would be highly undesirable.

The Consultants will investigate alternative methods for emptying the soak pits after decomposition, and opportunities for using the manure as fertilizer in surrounding orchards and agriculture farms. The possibilities for privatization of the maintenance service will be studied, and where necessary stimulated and supported.

### 5.2.11 Sanitation education

The CBO, sociologist and sanpro should provide social, cultural and communicational support to the female saned. Trained by the LRC, the work of the saned and sanpro will be closely coordinated to collect information, provide educational forums and monitor progress. Before initial contact, the sanpro will advise the families that the sanitation educator will be visiting.

Various issues will be discussed in the first household meeting:

- project objectives to improve sanitary conditions of the latrines;
  - role of the CBO in project management and operation;
  - role of the sanitation educator and sanpro as a community member working for the CBO;
  - importance of sanitation for good health;
- a set of visual materials such as pamphlets will be left with the family.

A review of sanitation conditions should be made during the meetings covering such basic questions as:

- how much water is available to the house daily?;
- how does the family get water?;
- what types of latrines do the family members (including children) use?;
- how often do the women wash their hands?;
- what are the defaecation practices?

The saned should contact local schools, MCH Centres and Nai Roshani Schools. Meetings should be held with women to discuss sanitation education, with the presentation of slide shows and/or videos. During these meetings, hygiene and the proper use of the PF latrine should be discussed. This will include practical demonstrations of flushing the excreta in the pan, training children to use the latrine, discouraging the use of stones or mud as cleansing material, and encouraging washing hands after use of the toilet. Koranic verses pertaining to sanitation can be referred to frequently for added emphasis.

The sanitation educator should question women to determine the level of communication about sanitation between themselves and men (including CBO male members and sanpros). Any information exchange between men and women, and families within and outside the community, should be encouraged.

Once the latrines are accepted, an application made, approval given and installed, the sanpro and saned follow up by monitoring the following:

- use of new latrine by family members;
- use of old latrine(s);
- water use for flushing and washing, and use of other cleaning materials;
- damage to the pits, pipes, interception chamber and pits;
- smell from the latrine or the pits, other complaints;
- changes in sanitation practices.

#### 5.2.12 Cost recovery

Cost recovery is a central concern to WASA, the CBOs and the households. It is recommended that the following principles be adhered to if the project is to succeed.

- All parties (WASA, CBO, and the householder) must agree in writing about what is to be built, its cost, and conditions of repayment.
- Any additional work or extras should be agreed by the sanpro, project technical staff and the householder before amendments are made to the agreement and the work is undertaken.
- Within set standards of construction and technical efficiency, the householder must be given options. Thus the use of double or deep pits provided by the household should be an option which the householder can choose and pay for through the sanitation loan.
- On completion and certification, all parties must confirm satisfaction and the householder should again agree to the repayment schedule.

- The householder must feel that the latrine is priced fairly. There should not be any imaginary or real commissions.
- Repayment charges and schedules must conform to the householder's ability and willingness to pay.
- Cost recovery should be in the form of a loan payment, and not a tax or tariff with an indefinite period of repayment. Once paid off, there should be no further obligation of the householder to WASA as far as the sanitation unit is concerned.
- Early payment of the loan should be encouraged. However, the terms of the loan should not be prejudicial to the lower income groups so monetary incentives for early pay-out cannot be applied. The householder should have the option of paying off the loan more quickly by doubling or trebling his payment.
- Terms of the loan should be easy to meet and payment should be complete within six years.
- The loan should be repaid in full if any house/compound is sold.
- Repayment of the loan should be made through known and respected channels, and should be commensurate with other WASA collection methods.
- Simplicity and understanding of the repayment scheme would be assured if payments were in equal amounts of Rupees each month. Lower cost latrines would then be payed off in a shorter time period.
- The lowest income group should be provided with latrines paid for from existing Zakat funds.

The basis of the repayment charges and schedule should be the consumer's ability and willingness to pay. As described in Section 4.8, willingness to pay is widely determined by opportunity cost, that is, the cost of alternative sweeper charges at R 20 - 30 per month. Discussions with CBOs and their members almost universally indicated a willingness to pay Rs 30 per month. However, it is felt that with inflation and higher economic standards over recent years, repayment should be set at Rs 35 per month. Further details of the cost recovery scheme is given in Section 6.4.





## 6. PROJECT IMPLEMENTATION

### 6.1 Project Areas

Project areas intended for low cost sanitation during the first phase of the project (1987-93) are illustrated in Fig. 6.1 and cover the entire city of Quetta. To the west are Hudda, Deba and Kili Shaikhan (Hudda includes areas 16 & 17), being principally Baluchi in ethnic background, and to the east Pashtunabad, and New Baluch Colony (comprising Karkar, Braich and Muslim colonies), which are inhabited primarily by Pathan. Marriabad lies to the far east and is populated by the Hazara/Persian population. Kili Almo, to the north of Kili Ismail, is included but lies outside the map. The city centre is also part of the project area, whereby households which cannot afford a sewerage connection are provided with latrines and soak pits. Also the households which will be connected to the sewerage system but do not have a proper latrine as yet, can call on the sanitation programme.

All sanitation project areas are included in Table 6.1, listing the estimated population based on a 1981 census. The number of people per compound has been estimated on the basis of the 1984 social survey. With both the number of people per compound and population projections being estimates, the number of compounds can only be considered approximations. Under these circumstances only aerial photography can provide data with the required degree of accuracy. Apart from the need for better estimates about the number of compounds to be served, it is necessary to know the size and location of each compound.

Existing maps fall well short of providing this information, although aerial photography would provide it without expending large amounts of time and resources on door-to-door surveys otherwise required (see Figure 6.2).

Table 6.1 Project area population

	1981 pop. (census)	1989 est. (RMR)	Pers. per compound (RMR)	Number of compounds
City-centre (1)	22,367	26,865	9.0	2,985
Marriabad	21,888	26,380	8.5	3,100
Pashtunabad (2)	40,627	54,950	10.9	5,040
Baluch Colony (3)	13,637	33,605	10.9	3,085
Kili Shaikhan	8,943	16,530	9.5	1,740
Hudda	15,000	17,400	9.5	1,830
Deba	37,064	45,675	9.5	4,810
Ismail/Almo	13,109	22,180	9.5	2,335
Total	172,635	243,585	9.8	24,925

Note:

- (1) Only estimated population eligible for a latrine under the project
- (2) New and old Pashtunabad, Shaldara and areas 2 and 5 are included in Pashtunabad.
- (3) Karkar, Braich and Muslim are included in Baluch Colony.

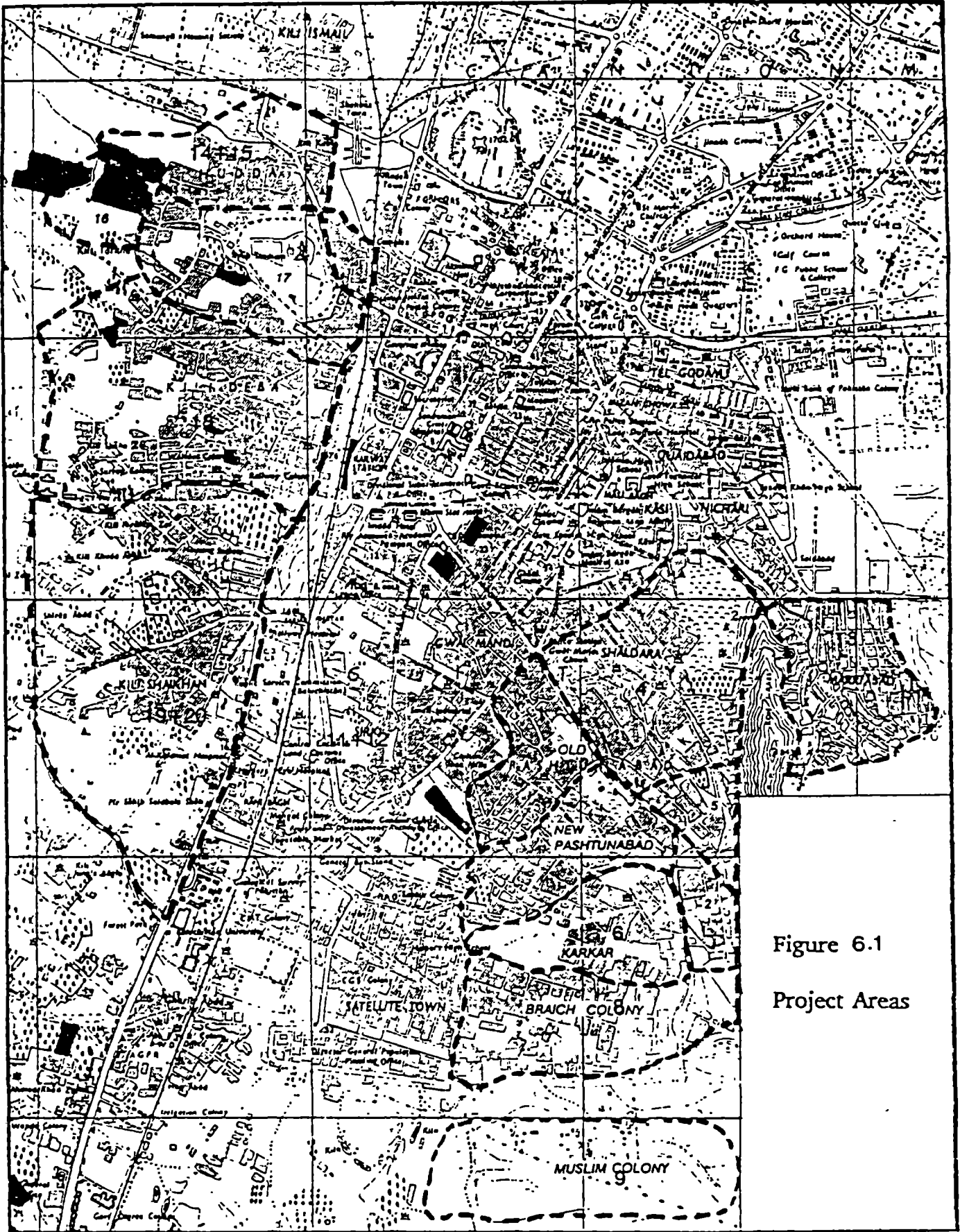


Figure 6.1  
Project Areas



**FIG: 6.2**  
**AERIAL VIEW BALUCH COLONY**



The topography slopes from the south-east to the north-west; from 1750 m at Muslim Colony to 1640 m at Hudda. The water table in the south east is deep (>30 m) whereas in parts of Deba it seems to rise to the surface, especially in the vicinity of Sariab Lora. There are areas on the southeast of Hudda where even DPPF toilets will not be viable due to the high groundwater table in that area.

There are several community-based organizations in the project areas. These are listed in Table 6.2, giving their name and location. The numbers refer to those in Fig. 6.1.

Table 6.2 CBOs in the project area

No.	Name CBO	Service area
1.	Anjuman-e-Falah-o-Behbood	Pashtunabad
2.	Tanzeem Samaji Falah-o-Behbood	Pashtunabad
3.	Anjuman Islah-e-Dehat	Pashtunabad
4.	Tanzeem Samaji Behbood-e-Nowjawan	Shaldara
5.	Tanzeem Nau Jawanan-e-Pashtoon Dara	Shaldara
6.	Anjuman-e-Islah-e-Committee	Kakar Colony
7.	Anjuman-e-Falah-o-Behbood	Achakzai Colony
8.	Anjuman-Falah-o-Behbood	Braich Colony
9.	Muslim Itehad Committee	Muslim Itehad Colony
10.	Tanzeem-e-Nowjawan	Pashtunabad
11.	Anjuman-e-Nowjawan	City Centre
12.	Tanzeem-e-Nowjawan	City Centre
13.	Anjuman-e-Falah-o-Behbood	Marriabad
14.	Tanzeem Nowjawan Flah Behbood	Hudda (Fakirabad)
15.	Tanzeem-e-Nowjawan	Hudda (Main)
16.	Tanzeem Itehad-e-Nowjawan	Hudda (Kili Baranzai)
17.	Tanzeem Itehad-e-Nowjawan	Hudda (Kili Shaik Hussain)
18.	Anjuman-Falah-o-Behbood (Jawan?)	Kili Deba
19.	Anjuman-e-Falah-o-Behbood	Kili Shaikhan
20.	Tanzeem Itehad-Nowjawan	Kili Shaikhan

A fact-finding survey was carried out during meetings with eight CBOs (See Appendix D). While the survey should be regarded as preliminary, it did illustrate the strengths and weaknesses of the CBOs, all of which are interested in being involved with and supporting the low cost sanitation efforts of WASA. The stronger CBOs are located in Karkar (6), Braich (8), Muslim (9), Pashtunabad (10), Hudda (14), Deba (18) and Kili Shaikhan (19). These could be incorporated at an early stage in the next activities of the low-cost sanitation programme.

This assessment has been made on the basis of 2-3 hour meetings with the CBOs and needs verification. Although attitudes and orientations gathered during such meetings are reliable, data such as each CBO's precise area of influence is indicative only.

In almost all instances, members of the central committees of the CBOs postulated that their circle of influence would expand to the entire mohalla if they were responsible for implementing the sanitation programme within it. It is difficult to summarize results of the several disparate meetings with the CBOs, but it was generally observed that:

- The CBOs were very interested in being involved and made responsible for implementation of the low-cost sanitation project in their areas of influence.
- They were willing to allocate members of the community (funded by the WASA) to be trained as full time sanpros and saneds.
- Although assuming responsibility for the sanitation project in their areas, they were anxious to obtain technical assistance, guidance and supervision from the project team through the proposed LRCs in the vicinity of their areas.
- An agreement spelling out each party's obligations and responsibilities would be welcomed to clearly define operational terms of reference for their work.
- Cost recovery would be supported, but the CBOs unanimously felt that funds should not be collected directly by the community organizations themselves. They recommended that costs should be collected through banks, as practiced by the electricity authority.
- The manner in which the first 100 latrines were implemented should be changed to allow greater involvement by the CBOs, thereby ensuring quality and cost effectiveness by using local mystries supervised by the CBO and LRCs.

## 6.2 Technologies and Unit Costs

### 6.2.1 The double pit pour-flush toilet

The PF toilet proposed by the project is appropriate and perceived by the community as a desirable intermediary between the existing latrines (deep pit and plinth) and full conventional sewerage. The primary reason for preferring the double pit latrine is its water seal which allows for anal cleansing by water and protection against insects and odour. It is also seen as being modern and somewhat of a status symbol. Technically, the PF toilet has been shown to be cost effective and reliable in other areas of Baluchistan and the Sind, as well as India and Bangladesh. Recent changes in the pan by UNICEF has resulted in less water being required per flush and greater acceptability. The UNICEF design, introduced from India, is being used in the project.

Minimum design and construction standards have been set relating to operation and maintenance of the toilet, such as pipe size, slopes, construction and material quality. These relate to components at or below ground level. Beyond these minimum criteria the consumer will be given as much choice as possible, such as location in the compound, and the configuration of pan and pits. No financial assistance will be given for the construction of the superstructure which is the responsibility of the householder.

The PF toilet is most appropriate for the mohallas to the west of the city centre, and the city centre itself. In these areas the groundwater table varies considerably. Early in the programme, an investigation of the groundwater table should be undertaken to determine the extent to which the PF toilet can be used, especially in the areas approaching the Sariab Lora.

Seasonal variations in the groundwater table depth will be determined and projections made of the influence which increased water supply throughout the area will make on it. These projections will also take into account the impact of the proposed sewerage scheme.

The PF toilet's use in water shortage areas has been questioned. Fears have been expressed that families will not flush the toilet with water, which is either carried from standpipes located away from the home or is purchased from vendors. These may be allayed by repeated assurances from the community-based organizations that, provided hygiene education is given, families will flush the toilets as required. Also, water remains the top priority in these areas, and the CBOs are constantly lobbying for improved supplies. It is very likely that in the near future, they will succeed in gaining a distribution system for standpipes (in Muslim Colony for example), and increased quantities of water from the newly built well fields (in Pashtunabad). Precise timing of the improvements in water supply is difficult to predict, due to the political nature of the decision process.

The existing distribution system in Pashtunabad and Marriabad will be joined to the new well fields in the near future. This will bring higher pressures, greater leakages and an excess of water in these areas where the existing drainage systems cannot cope. With the increased water, families will install their own house connections, legal or otherwise, and further exacerbate the situation. Water supplies to the west of the railway are already adequate for using PF toilets in most areas.

#### 6.2.2 Deep pit pour-flush toilet

The desirability, from the CBOs point of view, of re-using the existing deep pits in the Pashtunabad and New Baluch Colony has been discussed in Section 4.3. Basically, families prefer the traditional deep pits because the excreta is stored away from the yard underground, and there is still the question of how the pits will be emptied and who will do it. The CBOs suggestion that existing deep pits be used rather than digging new double pits seems logical. Many of the compounds in these areas already have deep pits.

The best use of previous investments in these pits and their superstructure could be made by installing a PF toilet in the superstructure area, next to the deep pit, and connecting the pan directly to it.

The stability of unlined pit walls needs further investigation in order to determine whether the originally dry pit can also be used under wet circumstances. If the outcome is positive, re-use of the deep pits will be promoted.

### 6.2.3 Unit costs

There are several sources for pricing the sanitation units. The most direct and recent is the large scale contractors whose prices were 1.5 to 2 times higher than anticipated. It is universally felt that dealing with larger contractors resulted in unnecessarily high costs. The second source of prices were the small scale contractors who submitted bids based on government-published unit costs. They are presented below in Table 6.3. The costs include the price of pits but exclude superstructure. Cost breakdowns are presented in Appendix B.

Table 6.3 Costs of toilets

10 User PF lined	Rs 2495
10 User PF unlined	Rs 1970
15 User PF lined	Rs 3165
15 User PF unlined	Rs 1720
Deep pit PF toilet	Rs 1100
10 User PF no pits	Rs 910

There is a possibility that these costs may be further reduced, as they are based on government-published unit cost estimates which local mystries will probably undercut. However, for estimation purposes at this stage, it is considered advisable to retain the above cost estimates.

## 6.3 Phase I Development

### 6.3.1 Demand for sanitation units

Thus far, demand figures for sanitation units have been approximations only and are based on the population and socio-economic data from the feasibility study. More reliable figures will only become available when aerial photography and direct contact with the households through the CBOs is possible. In the meantime, estimates have been based on the present population in the project areas as given in Table 6.1. Together with the results of the 1984 survey on existing sanitation facilities it is estimated that a total of 24,925 households need the provision of an appropriate latrine or upgrading of the existing facility. The first phase of the sanitation programme can only provide some 13,850 latrines, which means that only a part of the demand can be satisfied during this phase.

A major objective of the Sewerage and Sanitation project is the eradication of the unsanitary conditions in the densely populated and commercially important city center. As a consequence it was decided at feasibility stage to provide full sanitation to this area during Phase 1 (1988 - 1993) through the installation of sewerage facilities as well as the provision of adequate latrines to those households presently not having a proper toilet.



The latter means that approximately 40% of the population in this area need to be provided with a PF latrine. However, based on the socio-economic survey (1984) it was concluded that for the middle-high income residential areas in the city center only 50% of the concerned households will be eligible for financing their latrine under the programme. In the low-middle and low income areas this percentage will be about 75%. Based on the 1989 population estimates for the various Wards comprising the city center, the latrine demand is calculated as such at 2,985, of which 90% is the provision of the latrine without pits, so that it can be connected to the sewer system.

Assuming that the remaining households will construct a proper latrine from their own resources, when sewerage is installed in their area, ultimately a full sanitation coverage is obtained in the city centre. For the peripheral residential areas a number of about 11,000 latrines can be constructed during this phase. The demand, however, is estimated at 22,000 latrines, which means a coverage of about 50%. During the next project phases (after 1993) this need to be completed to full coverage by expansion of the sewerage network and provision of latrines.

#### 6.3.2 Sanitation programme development

Basically the latrine types suited for the Quetta conditions are the Pour Flush Latrine and the Ventilated Improved Pit Latrine. Both types have been tested in the pilot project. At the request of the CBOs the VIP latrine is temporarily omitted from the programme since there is a strong preference in the communities for the PF latrine. In the case water shortage interferes with the proper use of the latrine, the VIP will be again included in the programme for areas with water shortage.

The following latrine types have been included in the programme:

- Latrine only : mainly for connection to the sewer system (city center) and existing unlined pits
- Latrine + lined : in those areas where soil conditions are poor  
soak pits that lining is required (western part Quetta)
- Latrine + : in those areas with highly stable sub-soil  
unlined pits conditions (eastern part Quetta)
- Soak pits only : complementing adequate latrines which now  
discharge to street drains (city center)

As a result the implementation targets, as indicated in Table 6.4, are determined of latrines to be installed in the various areas. While the use of unlined soak pits is still under investigation, good hopes exist that this solution will be feasible.

Table 6.4 - Area split of latrine implementation

A R E A	Latrine total	Latrine only	Latrine + lined soak pits	Latrine + un-lined soak pits	Soak pits only
City Center	2,985	2,685	300	-	-
Marriabad	1,535	240	-	1,050	245
Pashtunabad	2,495	485	-	2,010	-
Baluch Colony	1,530	320	-	1,210	-
Kili Shaikhan	860	-	860	-	-
Hudda	910	-	910	-	-
Deba	2,380	-	2,380	-	-
Kili Almo/Ismael	1,155	160	585	410	-
Total	13,850	3,890	5,035	4,680	245

Fig. 5.1 presents the organization and staffing of the sanitation component. Five mystrie teams are capable of installing 1000 sanitation units without superstructure per year. Although the contractors originally took a week per latrine, with superstructure, this estimate is considered conservative. In Baldia, Karachi mystrie teams typically take only one day to install the ground-and subground components of a latrine after the pits are dug. Supervising construction, reference centre management, community motivation and education will require support from WASA.

Based on developing a balanced programme between the various katchie abadies in Quetta, and working first with those CBOs which have the greatest capacity and interest in the programme, it is recommended that:

- The first LRC should be established in the New Baluch Colony, centrally located in the Braich Mohalla. It should be staffed by two sociologists, two technologists, and a chaperone, as indicated in Fig. 5.1. It should serve only Karkar and Braich initially, then serve Muslim Colony as soon as possible after a conclusion is reached about the viability of PF latrines there.
- The Baluch LRC should be the spring board for developing detailed field methodology. For example, the demonstration latrines should be constructed and training take place in its compound. The Braich and Karkar CBOs should assist in the formulation and be the testing ground for agreements, training materials, hygiene education methodology and all other components of the delivery methodology.

- As indicated in Fig. 6.3, preparation of information materials, surveys of CBOs, and specific studies (such as the groundwater table west of the railroad tracks and the unlined pit stability study) should begin soon and be completed early in 1989.
- Installation of latrines in the New Baluch Colony should begin early in the construction season, by June 1989 at the latest. Subsequent LRC start-ups should be initiated at two month intervals until after Shaikhan/Deba is established. They can then begin in parallel, first with Pashtunabad and Hudda, then Marriabad and the city centre and finally in the killies Ismail and Almo.

The anticipated latrine implementation schedule is presented in Table 6.5 during the period 1989 - 1993 for the different project areas.

Table 6.5 - Latrine production 1989 - 1993

A R E A	1989	1990	1991	1992	1993	Total
City Center	-	500	750	850	885	2,985
Marriabad	-	150	300	500	585	1,535
Pashtunabad	50	500	650	650	645	2,495
Baluch Colony	100	350	350	350	380	1,530
Kili Shaikhan	50	200	200	200	210	860
Hudda	50	200	200	200	260	910
Deba	100	400	600	640	640	2,380
Kili Almo/Ismail	-	-	355	400	400	1,155
Total	350	2,300	3,405	3,790	4,005	13,850

The outlined latrine delivery method will necessitate the recruitment of many new staff. In Table 6.6 the estimated staff requirement is indicated as well as the schedule for recruitment, based on the above described implementation schedule.

Fig. 6.3: Schedule of Activities

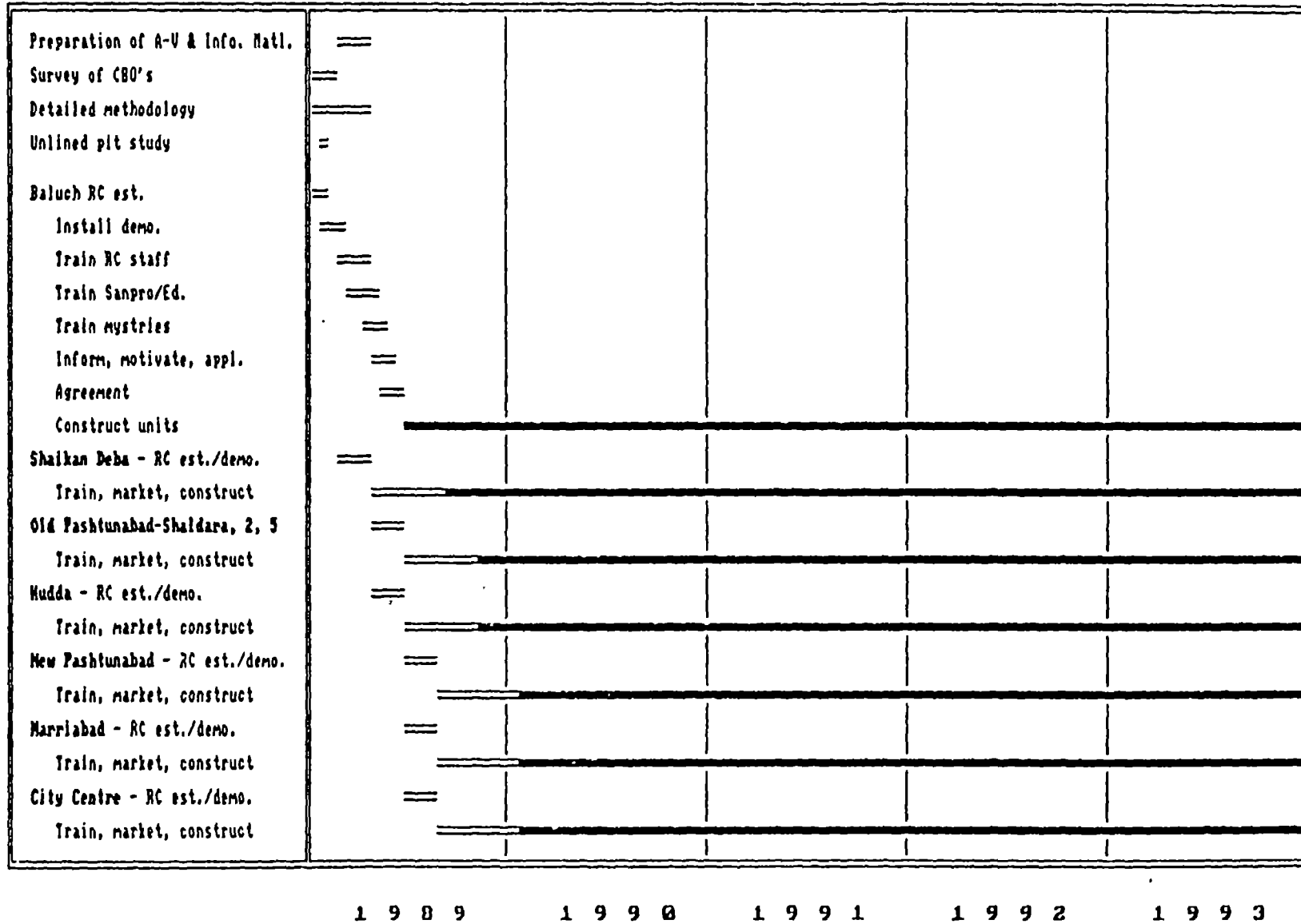


Table 6.6 Recruitment schedule: number of staff to be recruited during 1989

Staffing	Exist.	F	M	A	M	J	J	A	S	O	N	D	Tot
<u>WASA/Project office:</u>													
Sanitation Coordinator	-	1	-	-	-	-	-	-	-	-	-	-	-
Sociologist M	1	-	-	-	-	-	-	-	-	-	-	-	1
Sociologist F	1	-	-	-	-	-	-	-	-	-	-	-	1
Driver	2	-	-	-	-	-	-	-	-	-	-	-	2
Office assistant	1	-	-	-	-	-	-	-	-	-	-	-	1
<u>Local Reference Centres:</u>													
Social organizer M	-	-	-	1	-	2	-	2	-	1	-	-	6
Social organizer F	2	-	-	-	-	1	-	2	-	1	-	-	6
Technologist	-	-	-	2	-	4	-	4	-	2	-	-	12
Chaperone	-	-	-	1	-	2	-	2	-	1	-	-	6
Driver	4	-	-	-	-	-	-	1	-	1	-	-	6
Office assistant	-	-	-	1	-	2	-	2	-	1	-	-	6
<u>Community Based Org.:</u>													
Sanpro M	-	-	-	3	-	4	-	8	-	8	-	3	26
Saned F	-	-	-	2	-	2	-	3	-	4	-	2	13

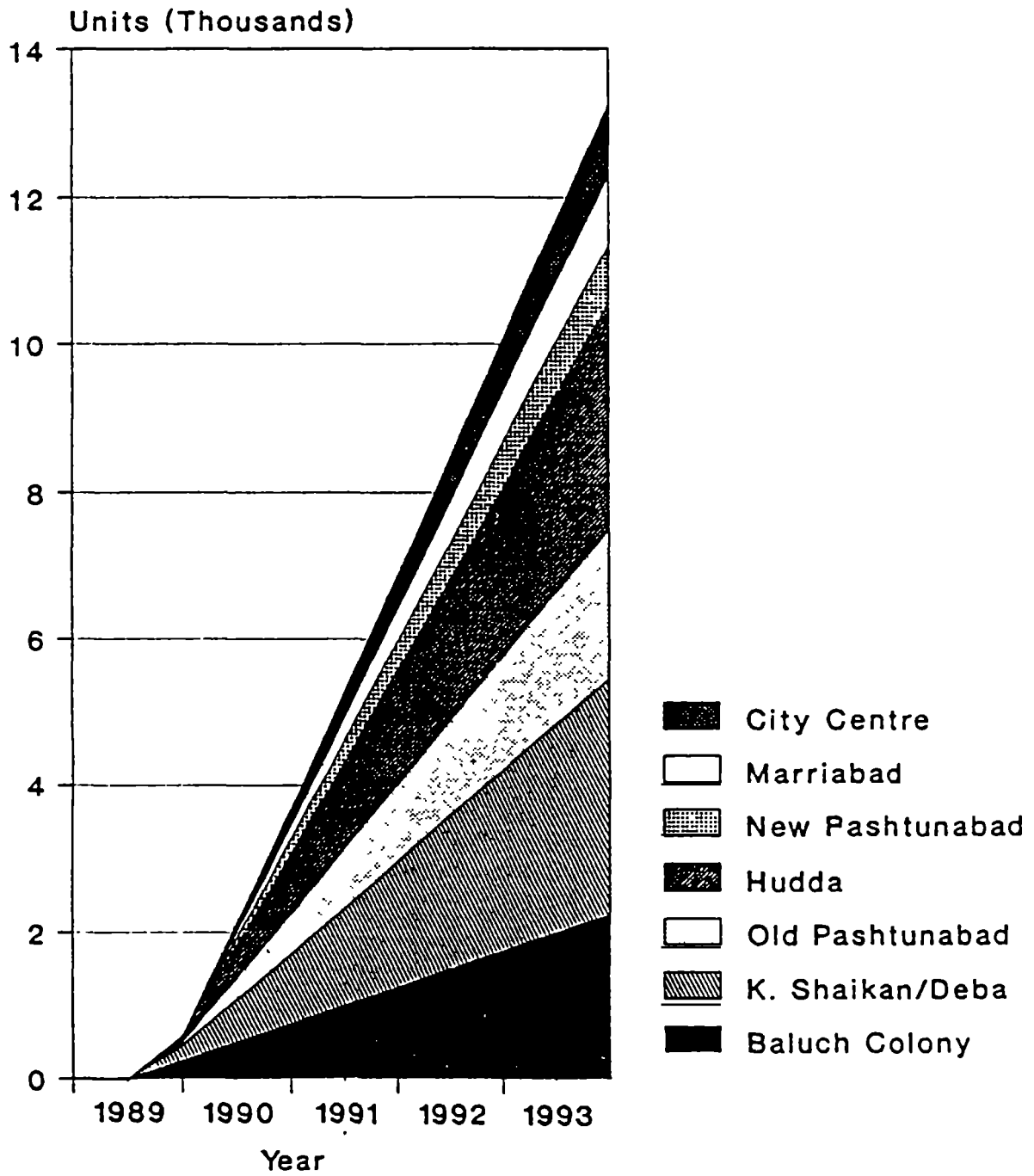
The above proposals are a substantial departure from the programme proposed over the past six months. The CBOs were asked to obtain applications for fully cost recovered latrines. This they did by acquiring over 1,000 applications.

A more recent review of those CBOs interested in new latrines with high expectation of early installation indicate that a total of 150 latrines are to be installed in the various areas as soon as possible.

Community leaders showed serious concern that there should be no further delays and that they should not be forgotten in the face of some new plan or direction. It is strongly recommended that this issue be discussed openly with the CBOs and agreement reached as to when and how the latrines are to be constructed. Persuasion to participate in the overall programme represented in Fig. 6.3 will be attempted. If this fails, training mystries as part of the Braich LRC training programme could be considered, so that installation of latrines may take place under supervision of the Braich LRC staff.

Fig. 6.4 illustrates the cumulative latrine construction. It is based on the construction programme presented in Table 6.5. The delay during early 1989 is quickly made up by increasing numbers of mystrie teams being trained, and new LRCs being brought on stream. Ultimately the target of over 13000 will be reached in 1993. It is anticipated that by then, the latrine programme will require less supervision and some of its social and technical staff will be employed in other sections of WASA.

**Fig. 6.4: Sanitation Units Constructed  
1989-1993**



The capacity to continue the programme in the mohallas will continue to grow beyond 1993, according to demand. A continued but reduced presence of WASA through the LRCs and support to the CBOs is recommended after 1993, until the demand for latrines is exhausted and sewers begin to serve the areas.

### 6.3.3 Programme Costs

Costs have been calculated using unit costs obtained from the pilot project evaluation. In Table 6.7 the total latrine construction costs have been calculated. In arriving at a total estimated current construction cost the average unit cost between the 10 and 15 user facilities has been used, taking into account that the average compound occupancy rate is 12 persons.

The total estimated construction costs at current price are:

- Latrine only	3890 x 910	- Rs	3,539,900
- Latrine + lined pits	5035 x 2830	- Rs	14,249,050
- Latrine + unlined pits	4680 x 2148	- Rs	10,052,640
- Soak pits only	245 x 1795	- Rs	439,775
			Total estimated cost
		- Rs	28,281,365

Table 6.7 Latrine construction costs by facility type and per annum

Type of latrine	Unit rate (Rs)	1989	1990	1991	1992	1993	Total
Latrine only	910	30	650	975	1,105	1,130	3,890
Latrine + lined pit	2,830	200	850	1,255	1,325	1,405	5,035
Latrine + unlined pit	2,148	120	755	1,130	1,275	1,380	4,680
Pits only	1,795	-	25	45	85	90	245
<b>Total nos. latrines</b>		<b>350</b>	<b>2,300</b>	<b>3,405</b>	<b>3,790</b>	<b>4,005</b>	<b>13,850</b>
<b>Total capital costs Rs (x 1000)</b>		<b>851</b>	<b>4,707</b>	<b>6,947</b>	<b>7,646</b>	<b>8,130</b>	<b>28,281</b>

The total project costs in Table 6.8 are split in Consultant (Project) and WASA costs. Concerning the delivery costs it is assumed that the Sanitation Coordinator will be funded from a separate Technical Assistance allowance from the Netherlands Government. The project staffing requirements have been taken from Table 6.6 and assumes that the reference centres will become operational at two months interval.

The cost of involving the CBO's has been included in the project budget, resulting in a total project cost of Rs 40.9 m for the latrines, which is exactly the budget available for this project component (refer section 3.1.2.e). In addition, the total WASA staff and operations cost is estimated at Rs 18.1 m over the five year period.

The average construction cost of the latrine is Rs 2,040, while the cost of marketing and supervising installation of latrines and providing hygiene education at Rs 28.6 million adds another Rs 2065 to the average cost of the latrine. Expatriate costs have been excluded from this discussion in that they are considered temporary and would not be included as a regular part of the program.

The cash flow requirements on an annual basis have been set out in Table 6.9, first in total and then separately for the Consultant (Project) and WASA. As may be anticipated "up-front" costs are somewhat higher due to the cost of establishing the Reference Centres.



Table 6.8 Low cost sanitation programme costs 1989 - 1993

COST ITEMS	Number staff proposed	Person years	Unit cost Rs/yr (x 1000)	Costs (x 1000 Rs)	
				Consult.	WASA
<u>Personnel</u>					
Project Office					
Sanitation coordinator	1	2	(2400)*	(4,800)*	-
Senior Sociologists	2	10	108	1,080	-
Sanitation experts	2	-	-	2,100	-
Driver	2	10	30	-	300
N.Q.	1	5	18	-	90
Local Reference Centres					
Sociologists (M/F)	12	60	63	-	3,780
Civil Technologists	12	60	60	-	3,600
Chaperons	6	30	30	-	900
Drivers	6	30	30	-	900
N.Q.	6	30	18	-	540
CBO's					
Sanpros	26	130	40	5,200	-
Saneds	13	65	36	2,340	-
Overheads of WASA Staff				-	5,500
<u>Investment</u>					
Construction costs latrines				28,281	-
Information materials				200	-
Audiovisuals				450	-
Rent LRCs					1,000
Utility services					500
Vehicles capital cost & maintenance				850	( 1,000
Motorcycles (12) capital cost & maintenance				360	(
<b>TOTAL</b>				<b>Rs 40,861</b>	<b>Rs 18,110</b>

\* financed from separate funds

Table 6.9a Project cash flow requirements 1989-1993, Rs '000 (1989 prices)

Cost item	1989	1990	1991	1992	1993	Total
Project office staff	294	294	294	294	294	1,470
LRC staff	1,440	2,070	2,070	2,070	2,070	9,720
CBO staff	840	1,675	1,675	1,675	1,675	7,540
Consultant sanitation experts	420	420	420	420	420	2,100
Overheads WASA staff	780	1,180	1,180	1,180	1,180	5,500
Construction	851	4,707	6,947	7,646	8,130	28,281
Training/Demo/Info.materials	650	--	--	--	--	650
Vehicles, capital	1,210	--	--	--	--	1,210
Vehicles O & M	100	225	225	225	225	1,000
LRC rent and utility	100	350	350	350	350	1,500
<b>Total</b>	<b>6,685</b>	<b>10,921</b>	<b>13,161</b>	<b>13,860</b>	<b>14,344</b>	<b>58,971</b>

Table 6.9b Consultant's cash flow requirements, Rs '000 (1989 prices)

Cost item	1989	1990	1991	1992	1993	Total
Project office staff	216	216	216	216	216	1,080
CBO staff	840	1,675	1,675	1,675	1,675	7,540
Sanitation Experts	420	420	420	420	420	2,100
Construction	851	4,707	6,947	7,646	8,130	28,281
Training/Demo/Info.materials	650	--	--	--	--	650
Vehicles, capital	1,210	--	--	--	--	1,210
<b>Total</b>	<b>4,187</b>	<b>7,018</b>	<b>9,258</b>	<b>9,957</b>	<b>10,441</b>	<b>40,861</b>

Table 6.9c WASA's cash flow requirements, Rs '000 (1989 prices)

Cost item	1989	1990	1991	1992	1993	Total
Project office staff	78	78	78	78	78	390
LRC staff	1,440	2,070	2,070	2,070	2,070	9,720
Overheads WASA staff	780	1,180	1,180	1,180	1,180	5,500
Vehicles O & M	100	225	225	225	225	1,000
LRCs rent + utility	100	350	350	350	350	1,500
<b>Total</b>	<b>2,498</b>	<b>3,903</b>	<b>3,903</b>	<b>3,903</b>	<b>3,903</b>	<b>18,110</b>

#### 6.4 Cost Recovery

Consideration was given to WASA's objective for full cost recovery of all expenses associated with low-cost sanitation delivery. The design of any cost recovery scheme must be practical and relate to the consumers ability/willingness to pay and the relative success of action which can be taken in cases of default. In this context, recovery of costs other than the construction costs of the on-site latrines will not be feasible.

The householder should, however, be required to repay the full amount of actual construction costs excluding marketing, delivery, education and interest charges, for the following reasons:

- In Quetta, the owner of the compound cannot be forced to install latrines at the moment. The individual's rights and privacy are carefully guarded. The required legislation would be difficult to enact and enforcement impossible. Each householder has the option of providing his/her own sanitation facility, many of which would be of a standard equivalent to the PF latrine. WASA does not enjoy a monopoly, and the householder would object to paying marketing, delivery and education charges substantially more than it would cost to purchase a latrine separately.
- The construction costs of the 15-user lined double pit PF toilet (Rs 3,165) already exceed what the CBOs have indicated householders would be willing, and in many cases, able to pay over a five year period. A subsidy covering the non-construction and interest costs will be required if the latrine is to be marketable and cost recovery successful in these low income communities.
- Government is attempting to introduce on-site latrines of good standard in a very tight framework. The programme has strong social overtones, but the economic benefits are difficult, if not impossible to measure. Thus, government made the decision to intervene. A strong argument can be made against the individual householder having to pay more, to include government costs, than it would have cost him to install an equivalent latrine in his compound.
- On-site sanitation brings benefits to the environment outside the compound. These external benefits to the community are again extremely difficult to measure. This is an element of the programme which is social in nature and an argument for subsidy can again be made.

According to discussions held with the CBOs, if it is assumed that a maximum of Rs 35 per month can be paid over 60 months the maximum repayment and cost of latrine should be Rs 2,100. It is recommended that all monthly payments be equal, and repayment periods vary according to the construction costs. An up-front charge to substantiate commitment is strongly recommended. This should be at least Rs 300 per latrine. Thus the total maximum repayment amounts to Rs 2,400, a figure quite sufficient to meet the average cost of a latrine.

Collection should be made in a way which allows least opportunity for leakage and mistrust. For example, electricity charges are repaid through commercial banks to the electricity authority. Discussion with the CBOs indicated that they preferred not to be involved in collection, and that the banks would be an effective respected channel. Further detail is required about the actual administrative detail. One alternative could be the issue of a bank passbook to the payee in which pages are reserved for each payment. Monthly payments would be made and forwarded to WASA, the payee's book would then be stamped and signed. In this way the payee, even if illiterate, is able to keep track of payments. Likewise, WASA would be able to track incoming payments and easily identify defaulters through monthly submission of computerized accounts and payments to WASA.

The cost of bank collection services is reported to be 14% of revenue. This is high but enables collection to be effectively contracted out through a proven method without increasing WASA staff.

Default is always a thorny issue. Legislation and enforcement methods have a very low success rate. Cutting off the water supply to defaulters would not be effective because a large percentage of house connections are illegal. Realistically, it will take several years before any semblance of effective enforcement is in place. The last resort in this approach is legal action against defaulters, but the costs would far exceed the benefits. The water authority may make examples of a few defaulters, but ultimately legal action is not a cost effective method of countering defaults.

There are several examples around the world, including Pakistan, where community-based projects have succeeded in very high collection rates with minimum defaults. Examples are in NWFP, Karachi, Thailand and Guatemala. They are based on a system of agreements and peer pressure. It is recommended that such measures be used in Quetta to minimize default. All CBOs responded favourably to the suggestion that the householder enter into a written and stamped legal agreement with WASA and the CBO, setting down all conditions of latrine installation, costs and repayment. It was indicated that, provided the agreement was formal and repayment conditions considered fair and reasonable, cost recovery would succeed. Several CBOs offered to follow up on defaulters by applying peer pressure as far as possible. This approach seems the most effective means of minimizing defaulters. It is stressed, however, that low income areas of Quetta are "aid" oriented and expect government support for infrastructure at no cost. Furthermore, these communities realise that funds from The Netherlands are being given to Pakistan at no cost. Cost recovery will not be easy.

Table 6.10 lists the annual construction costs and cost recovery potential through Phase 1. The Zakat contribution and the bank's 14% administration costs have been applied. Collection rates of 75-100% indicate that between Rs 19.2 million and Rs 24.7 million may be recovered from a total outlay of Rs 28.3 million for construction. The detailed design of the cost recovery scheme (after due consultation with the CBOs) and the calibre of its implementation will determine how effective it is. With proper design and management, cost recovery of at least 75% should be aimed for.

Table 6.10 Construction costs and cost recovery, in Rs millions

	1989	1990	1991	1992	1993
Number of sanitation units	350	2,650	6,055	9,845	13,850
Cumulative costs of construction	0.9	5.6	12.5	20.1	28.3
Cost recovery through Zakat Fund	0.1	0.6	1.3	2.0	2.8
100% cost recovery (less 14% bank charges)	0.8	4.9	10.9	17.6	24.7
75% cost recovery (less 14% bank charges)	0.6	3.8	8.5	13.7	19.2

### 6.5 Sanitation and Stormwater Drainage

There is every likelihood that excess wastewater (sullage and sewage) will be generated as a result of increased water supply over the coming two years. Micro-drains are already being installed in some parts of Pashtunabad and the New Baluch Colony to cope with the limited amounts of wastewater draining from households and away from standpipes. These micro-drains are immediate and unplanned responses to political pressure for improvements exerted by the residents. Micro-drain systems have also been built on the periphery of the city centre, where the resulting pools of polluted water, sometimes 1000 sq. metres in area, can be seen immediately adjacent to residences.

With the increase in water supply, this situation will worsen. As has happened in Baldia, Karachi, householders may succumb to the temptation of joining their PF toilets or double pits to the micro-drain immediately outside their compound. This practice will increase dramatically if there is no effective pit-emptying service once both pits are filled to capacity. In summary, there is a real danger that unless steps are taken to the contrary, households will dispose of excess wastewater into micro-drains outside their compounds on an area-wide scale in the next five to six years. There are four ways to ameliorate this situation:

- Technical assistance and education for CBOs about the construction and use of intermediate on-site soakaways. This would be viable in those areas most affected (Pashtunabad and New Baluch Colony) where soil permeabilities are highest. Soakaways are already being used there for this purpose in some households
- Legislation and enforcement against off-site wastewater disposal, other than by the sewerage system. However desirable, such legislation has proven extremely difficult to enforce.

- Early construction of sewer laterals and house connections for wastewater collection. This option would prove difficult to implement in view of time constraints already besetting WASA in its phased sewerage development programme.
- Early planning, design and construction of street drainage systems which would accommodate stormwater and sullage. Such a drainage system could be designed for eventual reclamation of collected waters by irrigation, in a manner similar to the intended sewage reclamation scheme. The purpose is to provide a macro-drainage system linking the micro-drains within a well-designed and well-constructed system serving the whole of Quetta. Such a system is currently under study, and should be promoted for integrated implementation in parallel with the sewerage scheme.

Ideally, all of the above steps would be taken to avoid the problem of excess wastewater accumulating throughout residential areas. At best, discharge of wastewater into the streets and construction of micro-drains should be stopped, and all of the water collected by drainage or sewerage systems for reclamation. At worst, illegal discharge will go unchecked and the water supply scheme will bring disadvantages to the community for many years, thereby offsetting much of its health benefits.

## 6.6 The Next Steps

### 6.6.1 CBO survey

The pilot project and the subsequent evaluation has provided insights into the composition and potential of some of the CBOs (See Table 6.2, Fig 6.1). Further detail is provided in Appendix D. A great deal more has to be learned about the CBOs before the implementation strategies can be concluded and a delivery methodology defined. A survey of CBOs is planned which will go into far greater depth and include a search for new CBOs. All registered CBOs have been identified, but others may not be registered which could assist in the sanitation programme. The survey will clearly define the level and extent of each CBO within its area. Detailed discussions will be held with each to glean ideas and further define each of the steps of the project cycle (see Chapter 5). Every attempt will be made to standardize field methodology, but there may be situations where variations from the standard are necessary in the light of local conditions and CBO requirements. In all cases, planning from the top downwards should be avoided. The CBOs will be given every opportunity to contribute to the planning process. Their interest and willingness to participate fully in project development is crucial to its success.

### 6.6.2 Information materials

Audio-visual materials, such as slide sound shows or videos, are very effective in getting messages across to largely illiterate audiences. For maximum impact they will be prepared in the community in which they are to be used. This is feasible in both formats, but the slide sound show has the greatest impact at community meetings.

The home-video is inexpensive to prepare but without professional editing and photography its poor quality detracts from the messages. Professional videos, however, are very expensive, but hand slide sound shows are not. They also offer flexibility and easy editing. Narration should be done by someone with the local dialect. The slide sound show can then be transferred into video format at relatively low cost. Material will be prepared to cover both the technology, the delivery, and cost recovery systems. Ideally they will be targetted at the three main audiences (Baluchi, Pathan and Hazaras).

The sanpros and saneds will need visual materials for illiterate audiences to describe the latrines, delivery method cost, recovery processes and explain hygiene education. As UNICEF has had considerable experience at producing and field testing such materials they will be approached to assist in the preparation of posters and cards for this project.

Guidelines will be prepared which describe field methodology in detail, and will be consistent across all mohallas with as little variation as possible. The purpose of the guidelines is to provide all project staff with a readable and easily understood booklet on all aspects of the project. In this way, the transfer of information from sociologist to sanpro/ed to householder will remain accurate and consistent.

The preparation of such a document will naturally standardize approaches being made and underline the need to do likewise as early as possible in the project. The guidelines will also be used in the training of WASA and CBO staff.

### 6.6.3 Training

Recruitment and training of staff for the first LRC in the New Baluch Colony will begin in February 1989 shortly after arrival of the Sanitation Co-ordinator (for Terms of Reference see Appendix E). Existing staff will both assist and participate in the training, which will include study visits of other PF latrine projects in Baluchistan and Karachi. These can be arranged with UNICEF and BUSTI.

A recruitment schedule is presented in Table 6.6. The LRC social organizers and technical staff will undergo similar training but with special emphasis on communication, social and technological aspects of the programme as appropriate. It is important that the social and technical staff of the LRC teams train and work together, and that they do not see themselves as "specialists" working in separate disciplines. Ideally, the social organizers should understand and be able to function in all technical aspects of the latrines. Likewise the technical staff should be able to communicate effectively and work closely with the CBOs and households of the community. The ability to communicate and work within low income communities will be important criteria in the recruitment and selection of both the social organizers and the technical staff.

The first training programme should be undertaken in March 1989 under the supervision of the Sanitation Co-ordinator with planning assistance from short-term experts. It will be carried out primarily at the Braich LRC and focus on the LRC staff themselves. The demonstration models should be utilized to provide practical construction experience. This will necessitate the employment of a local mystrie who built latrines in the pilot phase. Guidelines should be drafted as part of this training programme, and used to provide a focus for the training exercise.

Training the CBOs sanpros and saneds will follow. As in the first training programme, detailed methodology (especially for hygiene education) will probably not be defined in detail. The training programme itself shall focus on providing detail about delivery methodology. Mystrie training will be standardized, the first programme being developed as a model for the six that are to follow. Training should be led by the mystrie selected for the previous training courses, supervised by the technical staff and monitored by the sociologist.

A training team will probably emerge from the initial training courses which can be drawn upon throughout the first year. Aptitude and interest in training depends on individual ability and personality. Once identified, the training team will prove an invaluable tool in propagating management and technical skills to new staff as the programme expands.

#### 6.6.4 Detailing methodology

There are several components of methodology which will need individual attention and definition over the coming months. Setting minimum standards and unit costs for the pour-flush technologies is one such example. Minimum standards relating to the key components will be defined to allow for maximum flexibility at low cost, while maintaining quality control, technical efficiency and long term service. These will be described in the guidelines in a way which can be understood by non-technical staff.

Draft agreements have to be prepared, firstly between the CBO and WASA covering their overall relationship and responsibilities and secondly, between the householder, CBO and WASA pertaining to construction of the latrine and cost recovery. Similarly, a warrantee needs to be drafted to cover the latrine's workmanship and materials. These need discussing at the community level before final drafting and testing.

Full administrative details of the cost recovery scheme will require discussion with the banks. The collection scheme will have to be integrated into WASA's accounting system. Again, more detailed discussion with the CBOs will need to identify how the collection system can be streamlined and simplify repayment.

Construction, inspection and certification procedures will also require detailing. In particular, the procurement procedures outlined in Section 5.2.6 will need further discussion with the manufacturers, mystries, CBOs, and WASA staff before finalization and field testing.



#### 6.6.5 Aerial survey

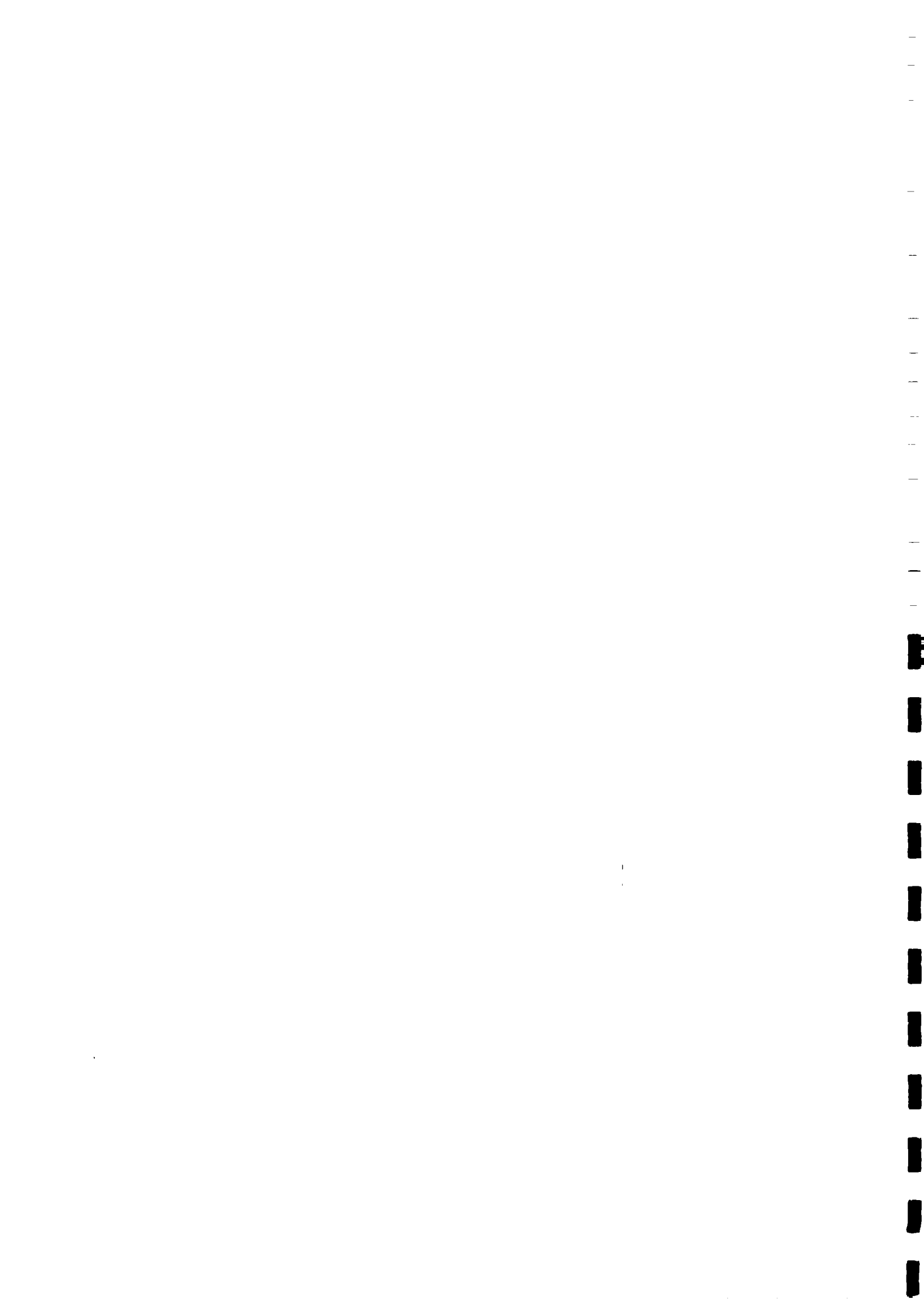
During the last Netherlands Government Monitoring Mission in October 1987, the absence of accurate and up-to-date mapping was discussed. It is also necessary for the Quetta Development Authority in the preparation of the Urban Master Plan study. The Consultants have suggested the use of an ultra light aircraft for aerial photography, a method recently applied in other urban development projects in the region to quickly and inexpensively obtain detailed mapping and settlement planning information.

A proposal is ready for submission to the Ministry of Development Cooperation as soon as the necessary clearance from the Pakistan Ministry of Defense is obtained. Following approval, aerial photography can take place by mid 1989. Photographic information such as that seen in Figure 6.2, will quickly prove beneficial in the planning and development of latrine facilities.



APPENDIX A

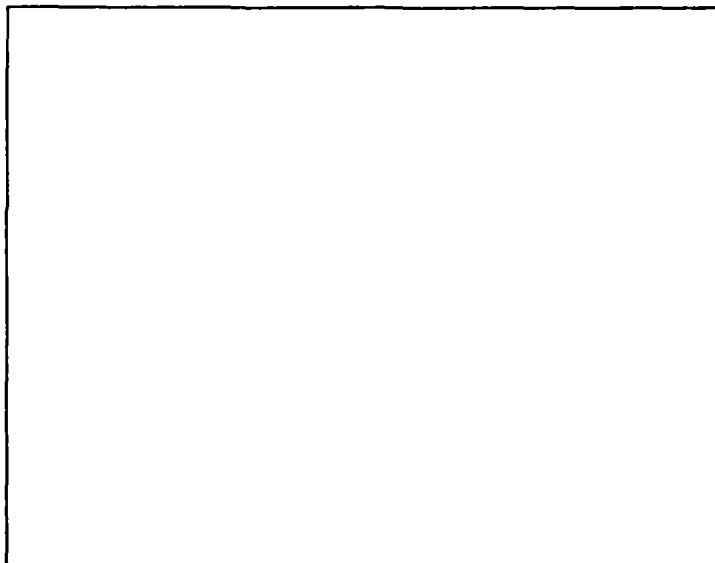
QUESTIONNAIRE SOCIO-ECONOMIC  
HOUSEHOLD SURVEY AND POST  
CONSTRUCTION LATRINE USE  
MONITORING



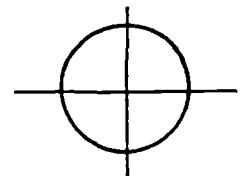
Date : \_\_\_\_\_

**QSSP/SANITATION COMPONENT  
INSPECTION OF HOUSES**

- 1.1 Area : \_\_\_\_\_
- 1.2 Address : \_\_\_\_\_
- 1.3 Name of Householder : \_\_\_\_\_
- 1.4 Ownership - ( ) Tenant, ( ) Owner
- 1.5 Family Member :      Aged (years) -    0 - 5      6 - 15      16 and above
- |          |       |       |       |              |
|----------|-------|-------|-------|--------------|
| - Male   | _____ | _____ | _____ |              |
| - Female | _____ | _____ | _____ | Total: _____ |
- 1.6 Ethnic Group : \_\_\_\_\_
- 1.7 Width of Street : \_\_\_\_\_
- 1.8 Type of House - ( ) Mud, ( ) Masonry
- 1.9 Domestic Water Supply:
- House Connection
  - Stand Post      Distance \_\_\_\_\_ m
  - Open Well      Depth \_\_\_\_\_ m
  - Hand Pump
- 1.10 Location of existing latrine facility:
- (a) Within house (b) Verandah (c) Within Compound (distance from house \_\_\_\_\_ m) (d) None
- Is there a tap in latrine - ( ) Yes, ( ) No.
- 1.11 Type of Latrine:
- (a) Dry pit (b) Flush (c) Bucket (d) Other (elaborate) \_\_\_\_\_
- 1.12 If Flush toilet, what is disposal system:
- (a) Septic tank (b) Open drain (c) Pit
- 1.13 Sketch of Compound layout with suggested location of PFL:



Orientation



- 1.14 Additional Works required: \_\_\_\_\_
- \_\_\_\_\_

**QUETTA SEWERAGE & SANITATION PROJECT**  
**HOUSEHOLD MONITORING QUESTIONNAIRE**

**(PART - A) Socio-Economic Conditions of the Household**

1.0 Quetta Suburb \_\_\_\_\_

2.0 Street Address \_\_\_\_\_

3.0 Occupants' Data	Head of Household	Respondent
(a) Name	_____	_____
(b) Relationship with the Head of Household	_____	_____
(c) Marital Status	_____	_____
(d) Age	_____	_____
(e) Education	_____	_____
(f) Occupation	_____	_____
(g) Ethnic Group	_____	_____

4.0 Living Structure

Composition	Age	Nuclear		with Parents		with Brothers/ Sisters	
		Male	Female	Male	Female	Male	Female
Children	0 - 5	_____	_____	_____	_____	_____	_____
	6 -15	_____	_____	_____	_____	_____	_____
Adults	16 and above	_____	_____	_____	_____	_____	_____

5.0 Where did family live previously?

(a) Urban community \_\_\_\_\_ (b) Rural community \_\_\_\_\_

6.0 Language; spoken at home \_\_\_\_\_

## 7.0 Education of Children ( enter name of school and number of children. )

Sex/School	Primary	Middle	Higher
Male			
Name of School			
Female			
Name of School			

## 8.0 Monthly family income Rs. \_\_\_\_\_

Contributors	Amount
(a) _____	_____
(b) _____	_____
(c) _____	_____
(d) _____	_____
(e) _____	_____

## 9.0 Monthly expenditure profile

Commodity	Amount
(a) Housing	_____
(b) Food	_____
(c) Daily Products	_____
(d) School	_____
(e) Clothing	_____
(f) Services	_____
(g) Transport	_____
(h) Others	_____

10.0 Is there any social gathering (for females)? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, do you attend this gathering? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, (a) Weekly \_\_\_\_\_ (b) Fortnightly \_\_\_\_\_

(c) Monthly \_\_\_\_\_ (d) Name of Club \_\_\_\_\_

If no, why \_\_\_\_\_

#### 11.0 Sickness

(a) Was the Head of household sick during last week? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how many days he could not work due to illness? \_\_\_\_\_

(b) Nature of illness \_\_\_\_\_

(c) During last week did any child (0 - 5 years) fall ill?

(i) Yes \_\_\_\_\_ (ii) No \_\_\_\_\_ (iii) No. of children \_\_\_\_\_

If yes, for how many days? \_\_\_\_\_

Name of disease ? (a) Diarrhoea \_\_\_\_\_

(b) Other illness \_\_\_\_\_

(d) During last week did any child (6 - 15 years) fall ill?

(i) Yes \_\_\_\_\_ (ii) No \_\_\_\_\_ (iii) No. of children \_\_\_\_\_

If yes, for how many days? \_\_\_\_\_

Name of disease ? \_\_\_\_\_

#### 12.0 Visitors

(a) How many visitors stayed at your home last week? \_\_\_\_\_ No.

(b) The visitors stayed for how many days? \_\_\_\_\_

(c) How often do you have visitors - per month \_\_\_\_\_

- per year \_\_\_\_\_



## HOUSEHOLD MONITORING QUESTIONNAIRE

(PART - B)

## Physical Conditions of the Household

1.0 Type of house

(a) Mud \_\_\_\_\_ (b) Pucka \_\_\_\_\_ (c) Semi Pucka \_\_\_\_\_

2.0 Area : (a) Covered \_\_\_\_\_ (b) Open \_\_\_\_\_

3.0 Number of Rooms \_\_\_\_\_

4.0 Separate Kitchen or Cooking Area: Yes \_\_\_\_\_ No \_\_\_\_\_

5.0 Bathroom

(a) Separate ( ) (b) Attached with toilet ( ) (c) None ( )

6.0 Type of Existing Latrine:

(a) Dry Bucket ( ) (b) Dry Pit ( ) (c) Septic Tank ( ) (d) None ( )

7.0 Location of Latrine:

(a) Within house ( ) (b) In Yard ( ) (c) Outside yard ( )

(d) Outside house but covered area or veranda ( )

8.0 Latrine facilities

(a) Is there a tap nearby? Yes \_\_\_\_\_ No \_\_\_\_\_

(b) Is there sufficient lighting? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Is it walled? Yes \_\_\_\_\_ No \_\_\_\_\_

(d) Is it roofed? Yes \_\_\_\_\_ No \_\_\_\_\_

(e) Is there a door? Yes \_\_\_\_\_ No \_\_\_\_\_

9.0 Use of latrine

How many members use latrine at:

Time of the day

Male

Female

Early morning

Morning

Afternoon

Evening

After Sunset

## 10.0 Domestic Water Supply

House Connection (No) \_\_\_\_\_ Storage Tank \_\_\_\_\_ gallons  
 Stand Post \_\_\_\_\_ Distance \_\_\_\_\_ metre  
 Hours of Supply \_\_\_\_\_  
 Hand Pump \_\_\_\_\_ Open Well \_\_\_\_\_

## 11.0 Collection of Water

By whom \_\_\_\_\_ Age \_\_\_\_\_ Time taken \_\_\_\_\_

## 12.0 Facilities in the house

(a) Electricity \_\_\_\_\_ (b) Gas \_\_\_\_\_ (c) Telephone \_\_\_\_\_

## 13.0 Present Equipment in the house

(1) Radio (2) Television (3) Washing Machine  
 (4) Type of Cooler (5) Refrigerator (6) Newspaper  
 (7) \_\_\_\_\_ (8) \_\_\_\_\_ (9) \_\_\_\_\_

## 14.0 Daily Garbage disposal

(a) Municipal Bins \_\_\_\_\_ Distance to \_\_\_\_\_  
 (b) In the Open \_\_\_\_\_ Distance walked \_\_\_\_\_  
 (c) Burning \_\_\_\_\_ Non Combustible \_\_\_\_\_

## 15.0 Why did you decide to switch to the PFL System:

(a) Nuisance (flies, odours, etc.) \_\_\_\_\_  
 (b) Concern about catching disease \_\_\_\_\_  
 (c) Cost of previous system,  
 give cost per month Rs. \_\_\_\_\_  
 (d) Others (explain) \_\_\_\_\_

16.0 If material is supplied by the Authority, will you  
 have the latrine constructed by yourself? Yes \_\_\_\_\_ No \_\_\_\_\_ Maybe \_\_\_\_\_

## 17.0 (Observation Only)

General household cleanliness (Rooms, Kitchen, Bathrooms and other areas)

## HOUSEHOLD MONITORING QUESTIONNAIRE

## (PART - C) Suitability of Latrine and Opinion of the Family

1.0 If the respondent the same as Part A? Yes \_\_\_\_\_ No \_\_\_\_\_

Name of Respondent \_\_\_\_\_

2.0 Construction of Latrine\*

2.1 Design of PFL system:

(a) Good \_\_\_\_\_ (b) Acceptable \_\_\_\_\_ (c) Not acceptable \_\_\_\_\_

2.2 Quality of work

(a) Good \_\_\_\_\_ (b) Acceptable \_\_\_\_\_ (c) Not acceptable \_\_\_\_\_

2.3 How long did construction take from start to finish:

(in weeks) (a) 0 - 1 \_\_\_\_\_ (b) 1 - 2 \_\_\_\_\_ (c) 2 - 3 or more \_\_\_\_\_

2.4 Did construction cause inconvenience to household: Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, describe \_\_\_\_\_

3.0 Use of Latrine

3.1 Since how long is the latrine being used? No. of Months \_\_\_\_\_

3.2 Do all the family members use the Latrine? Yes \_\_\_\_\_ No \_\_\_\_\_

(If no, fill in the following table)

Reasons for not using latrine exclusively while at home,  
by Age/Sex Group

Sex	Age	No.	Reasons for not using	Where do they go
M	1- 4			
A	5-10			
L	11-15			
E	Adult			
	1- 4			
F				
E	5-10			
M				
A	11-15			
L				
E	Adult			

\* Questions not to be asked for latrines of Demonstration Project.

Serial No. \_\_\_\_\_

3.3 How many guests visited during one month? Number of guests \_\_\_\_\_

3.4 Have all the guests used PFL? Yes \_\_\_\_\_ No \_\_\_\_\_  
(If no, fill in the following table)

**Reasons for not using latrine exclusively by Guests,  
by Age/Sex Group**

Sex	Age	No.	Reasons for not using	Where do they go
M	1- 4			
A	5-10			
L	11-15			
E	Adult			
	1- 4			
F				
E	5-10			
M				
A	11-15			
L				
E	Adult			

3.5 (a) How much water is used for flushing (litres/use)? \_\_\_\_\_

(b) How many times is the latrine used a day? \_\_\_\_\_

3.6 Is latrine also used for bathing? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how much water is used (litres/day) \_\_\_\_\_

3.7 Where does bathing water drain (if not put into toilet bowl)

Describe \_\_\_\_\_

3.8 Is latrine used for disposal of sullage/grey water? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, total volume of sullage put into toilet per day \_\_\_\_\_

3.9 Are solid waste materials put into toilet bowl? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how are these flushed? \_\_\_\_\_

4.0 Performance

## 4.1 Flushing

(a) Good \_\_\_\_\_ (b) Acceptable \_\_\_\_\_ (c) Not Acceptable \_\_\_\_\_

## 4.2 Defects noted

(a) Bad smells \_\_\_\_\_

(b) Defective fixtures (describe) \_\_\_\_\_

(c) Pipe clogs up excessively \_\_\_\_\_

(i) Reason for clogging (describe) \_\_\_\_\_

(ii) How clogging is corrected \_\_\_\_\_

5.0 Cleaning Latrine

5.1 How often cleaned? \_\_\_\_\_

5.2 How much additional water used for cleaning of latrine?

(a) \_\_\_\_\_ litres (b) Not known \_\_\_\_\_

5.3 Are any detergents, soaps or cleaners used to clean the latrine?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, give details \_\_\_\_\_

6.0 Personal Hygiene

(with discussion only)

6.1 What do you use for cleaning after relieving yourself?

(a) Water \_\_\_\_\_ (b) Stone \_\_\_\_\_ (c) Paper \_\_\_\_\_

(d) Earthen piece \_\_\_\_\_ (e) Any other \_\_\_\_\_

6.2 If you use any thing other than water what is the reason?

(a) Shortage of water \_\_\_\_\_ (b) Tradition \_\_\_\_\_

(c) Religious training \_\_\_\_\_ (d) Other \_\_\_\_\_

Serial No. \_\_\_\_\_

7.0 Improvements and Comments

7.1 Are you satisfied with PFL functioning and design? Yes \_\_\_\_\_ No \_\_\_\_\_

(a) functioning of the PFL, give details \_\_\_\_\_  
\_\_\_\_\_

(b) design of the PFL, give details \_\_\_\_\_  
\_\_\_\_\_

7.2 Why do you like the new latrine?

\_\_\_\_\_  
\_\_\_\_\_

8.0 Overall comments about the interview

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## HOUSEHOLD MONITORING QUESTIONNAIRE

(PART - D)

## ENGINEERING PARAMETERS

- 1 Area \_\_\_\_\_
- 2 Name of household \_\_\_\_\_
- 3 Address \_\_\_\_\_
- 4 Engineering parameters:
- (a) Soil type \_\_\_\_\_ Depth \_\_\_\_\_
- (b) Leaching test at site:
- When made? \_\_\_\_\_
  - by whom? \_\_\_\_\_
  - Results of test: \_\_\_\_\_
- (c) Depth of ground water table at house site:
- (i) minimum (rainy season) \_\_\_\_\_
  - (ii) minimum (dry season) \_\_\_\_\_
- 5 Size of house: \_\_\_\_\_ Sq.m., Covered Area \_\_\_\_\_ %

Serial No. \_\_\_\_\_

EVALUATION FORM

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| 1. Do you use this PFL?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Do all the members of the family use it?<br>If no, why _____  | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do you persuade the family members who do not use PFL?<br>If yes, how _____ If no, why _____  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there any difficulty for its use?<br>If yes, explain _____   | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. What is your opinion about PFL construction, materials and design, etc?<br>_____  |                          |                          |
| 6. Do you suggest any change?<br>If yes, what kind of change _____<br>If no, why _____   | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Do you think this a good programme?<br>if yes, what do you suggest for other people?<br>_____   | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. How did you hear about the programme?<br>Radio _____ T.V. _____ Newspaper _____ other _____<br>If from Radio, which transmission<br>Morning _____ Evening _____ |                          |                          |
| 9. Does your neighbour know about the PFL?<br>If yes, do they also want this system?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. What do you think about our team visits. Is it helpful for you?<br>If yes, what did you learn from these visits?<br>_____<br>_____                             | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Are you satisfied with our group discussions?<br>If no, what question is in your mind?<br>_____  | <input type="checkbox"/> | <input type="checkbox"/> |



12. Are you satisfied with the drawings we use for motivation? Yes  No

If no, do you suggest any improvement in the drawings?

---

13. Do you need help of our team in understanding PFL system?

If no, why \_\_\_\_\_

14. Any comments/advice regarding the use, design and publicity, etc?
-

Date : \_\_\_\_\_

Serial No. \_\_\_\_\_

HOUSEHOLD MONITORING QUESTIONNAIRE NO. 2

Quetta Suburb : \_\_\_\_\_

Street Address : \_\_\_\_\_

Name of Respondent : \_\_\_\_\_

1.0 Since how long is the latrine being used? No. of Months \_\_\_\_\_

2.0 Do all the family members use the Latrine? Yes \_\_\_\_\_ No \_\_\_\_\_

2.1 If yes, fill in the following table:

Sex	Age	No.	How may time per day	Water used/head/day
M	1- 4			
A	5-10			
L	11-15			
E	Adult			
	1- 4			
F				
E	5-10			
M				
A	11-15			
L				
E	Adult			

2.2 If no, fill in the following table:

Sex	Age	No.	Reasons for not using	Where do they go
M	1- 4			
A	5-10			
L	11-15			
E	Adult			
	1- 4			
F				
E	5-10			
M				
A	11-15			
L				
E	Adult			

3.0 If we arrange some social gathering for female, would you attend?

(a) Yes \_\_\_\_\_, (b) No \_\_\_\_\_, (c) Don't know \_\_\_\_\_

APPENDIX B

BROCHURE AND ILLUSTRATIVE MATERIAL

\_\_\_\_\_

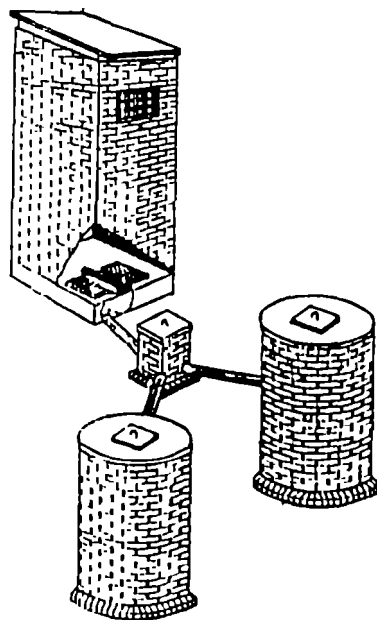


The excreta is dumped in the open, in the drain, on road sides and around garbage depots. In the project area most roads are poorly shaped and have no side drains. The waste water discharge from the houses flows in the middle of the streets. This flow also carries excreta with it and thus many germs thereby increasing the risk to the public.

#### EXPLANATION OF PFL SYSTEM

PFL units comprise a toilet building with a toilet pan, pipe, junction box and two leaching pits. A small quantity of water is used to flush the excreta down the pipe which connects the pan through the junction box to a leaching pit. There are two leaching pits but only one is in use at any one time. After two years the first pit is full and the second pit is placed in service. When the second pit is nearly full, again after

approximately two years, the material in the first pit has turned to odourless compost. It can then be taken out safely and the pit used again.



#### COST RECOVERY PLAN

The initial cost of constructing the latrine will be borne by WASA. WASA receives the necessary funds from the Government of Pakistan and The Netherlands. Once the latrine has been installed the householder will be charged on a monthly basis to recover the cost of the installation over a number of years. Currently it is estimated that this charge will be in the order of Rs 30 per month.

WATER AND SANITATION AUTHORITY  
QUETTA

L O G O

QUETTA SEWERAGE AND SANITATION  
PROJECT

Address:

Water and Sanitation Authority (WASA)  
New Al Gilani Road  
Quetta

Phone

22230 and 74809

## INTRODUCTION

The Governments of Pakistan and The Netherlands are jointly sponsoring a project called the "Quetta Sewerage and Sanitation Project". The sanitation component will provide thousands of individual latrines, about 14,000 in all. These latrines are to be installed in five regions of Quetta over a period of five years.

## QUETTA SEWERAGE AND SANITATION PROJECT

The name, "Quetta Sewerage and Sanitation Project", already indicates the objective of the project. It aims to provide a comprehensive control of excreta waste throughout the entire project area. Total excreta management is very important in a community because of the close link between excreta and ill health. Previously, most of the projects were concerned with the construction of either sewers or individual latrines. This project aims to utilise both systems in a coordinated way so that total excreta management can be realised within the project area. The type of excreta disposal units to be installed for individual buildings without sewer services is generally the pour-flush latrine (PFL). The PFL is the lowest cost system which positively protects public health.

## AIMS OF THE PROJECT

- (a) To improve the overall sanitary conditions in the City of Quetta.
- (b) To provide Low-cost latrines to those areas which cannot be served as yet by the piped sewerage system.
- (c) To re-utilise the waste water in irrigation schemes after the water has been treated in the Sewage Treatment Plant.

## BENEFICIARIES OF THE PROJECT

- (a) The low income groups living in the suburbs of Quetta City.
- (b) The community living in the central city area, the population of Quetta at large which makes use of central city area.
- (c) The farming community through the availability of safe irrigation water.

## HUMAN EXCRETA AND DISEASES

Exposure to excreta is a social problem, particularly in Baluchistan. Human excreta are encountered in many open and public places because of poverty, low level of income and lack of proper facilities.

With poor sanitary conditions the people are more exposed to endemic diseases, such as typhoid, dysentery, cholera, etc. The diseases are transmitted in a number of ways of which direct contact and flies are the most important. These diseases are responsible for many deaths and illnesses.

This project aims to provide a better and healthier environment to the community.

## BENEFITS OF A LATRINE

Having a latrine in your home will have many benefits for your family in terms of cleanliness and better health, and in particular:-

- a) The latrine will provide privacy.
- b) The latrine is available when needed.
- c) The risk of contact with excreta is reduced.
- d) The latrine eliminates the smells from excreta.
- e) The chance of becoming ill is reduced.
- f) Personal cleanliness can be improved.
- g) The general cleanliness in the yard can be improved.
- h) The latrine uses little water.
- i) Only a small monthly contribution is needed to obtain a latrine.

## PROJECT AREA

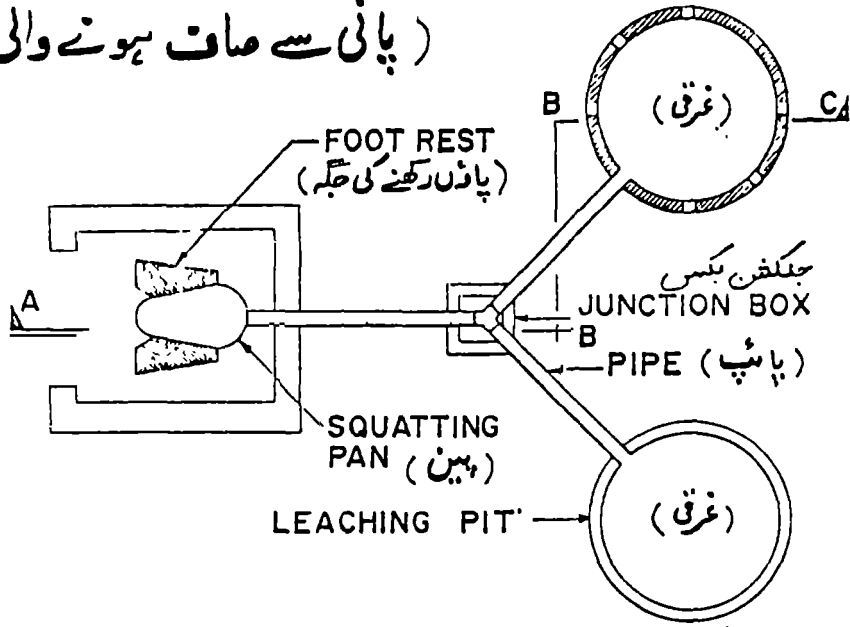
In this five year period the following areas will benefit from the project:

- (1) Harriabad
- (2) Pashtoonabad
- (3) City Centre
- (4) Baluch, Kaker, Achakzai and Braich Colonies
- (5) Hudde, Deba, Shaikhan, Almo and Ismail

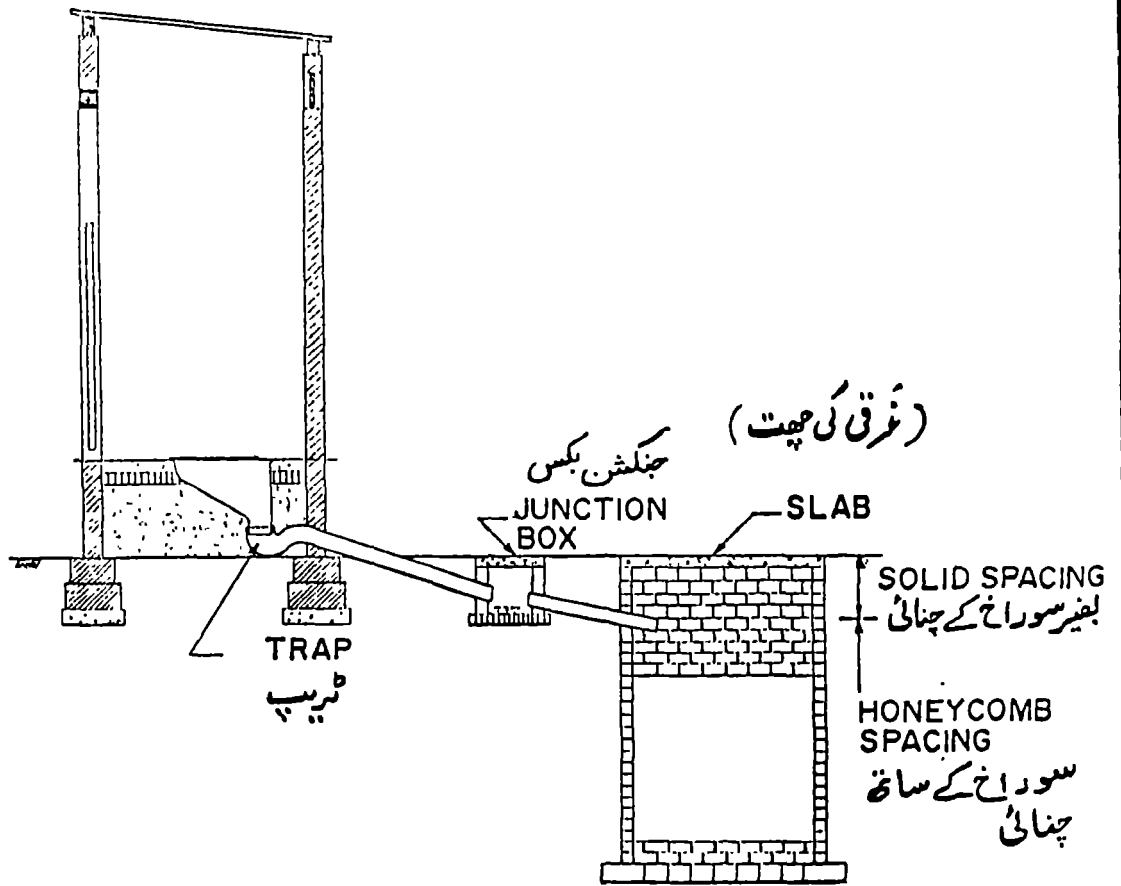
The existing situation with regard to excreta management is very poor in the project area. Most houses have dry pit latrines while some have a dry buck system or no facility at all.

# POUR FLUSH LATRINE

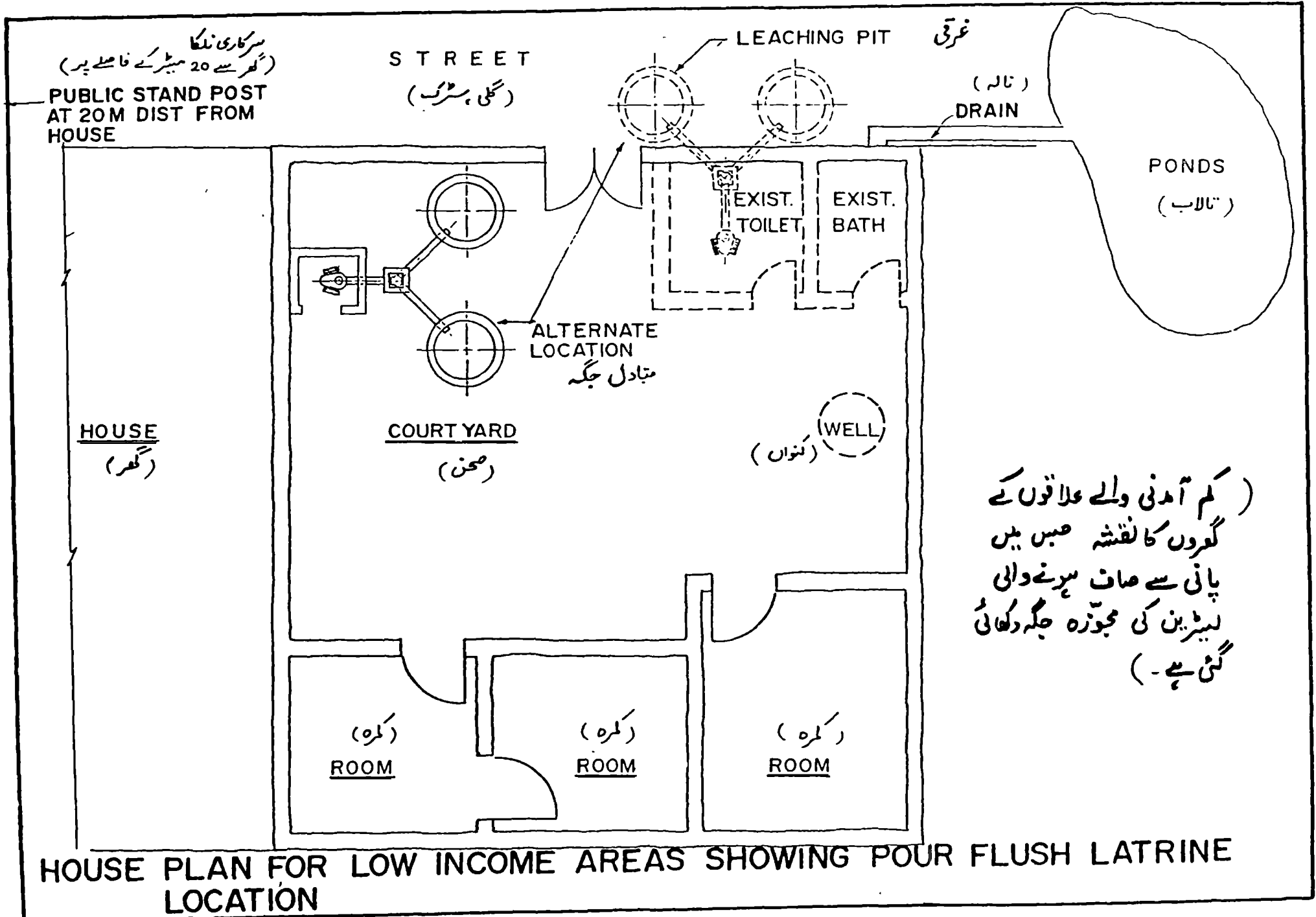
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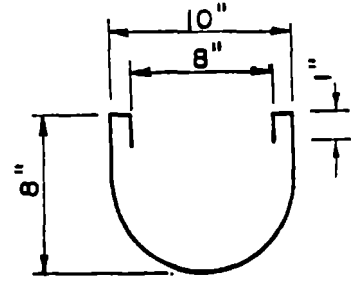
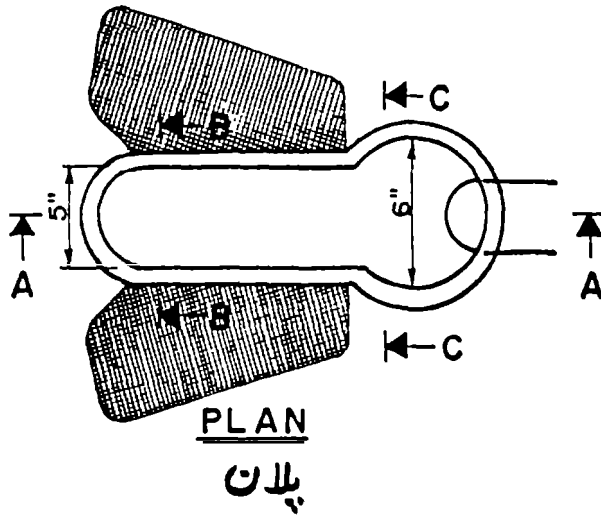
PLAN ( پلان )



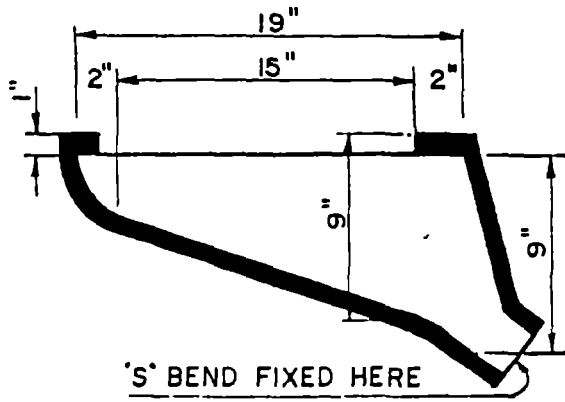
SECTION AB-BC ( کراس سیکشن )



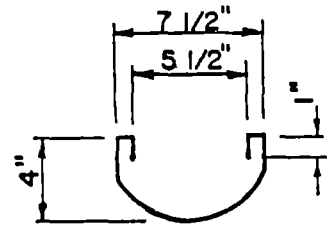




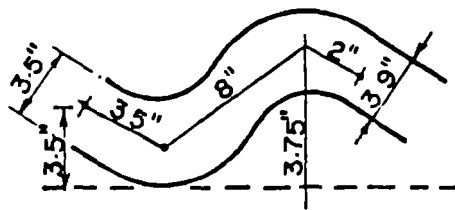
SECTION - CC  
کراس سیکشن - CC



'S' BEND FIXED HERE  
SECTION - AA  
کراس سیکشن - AA



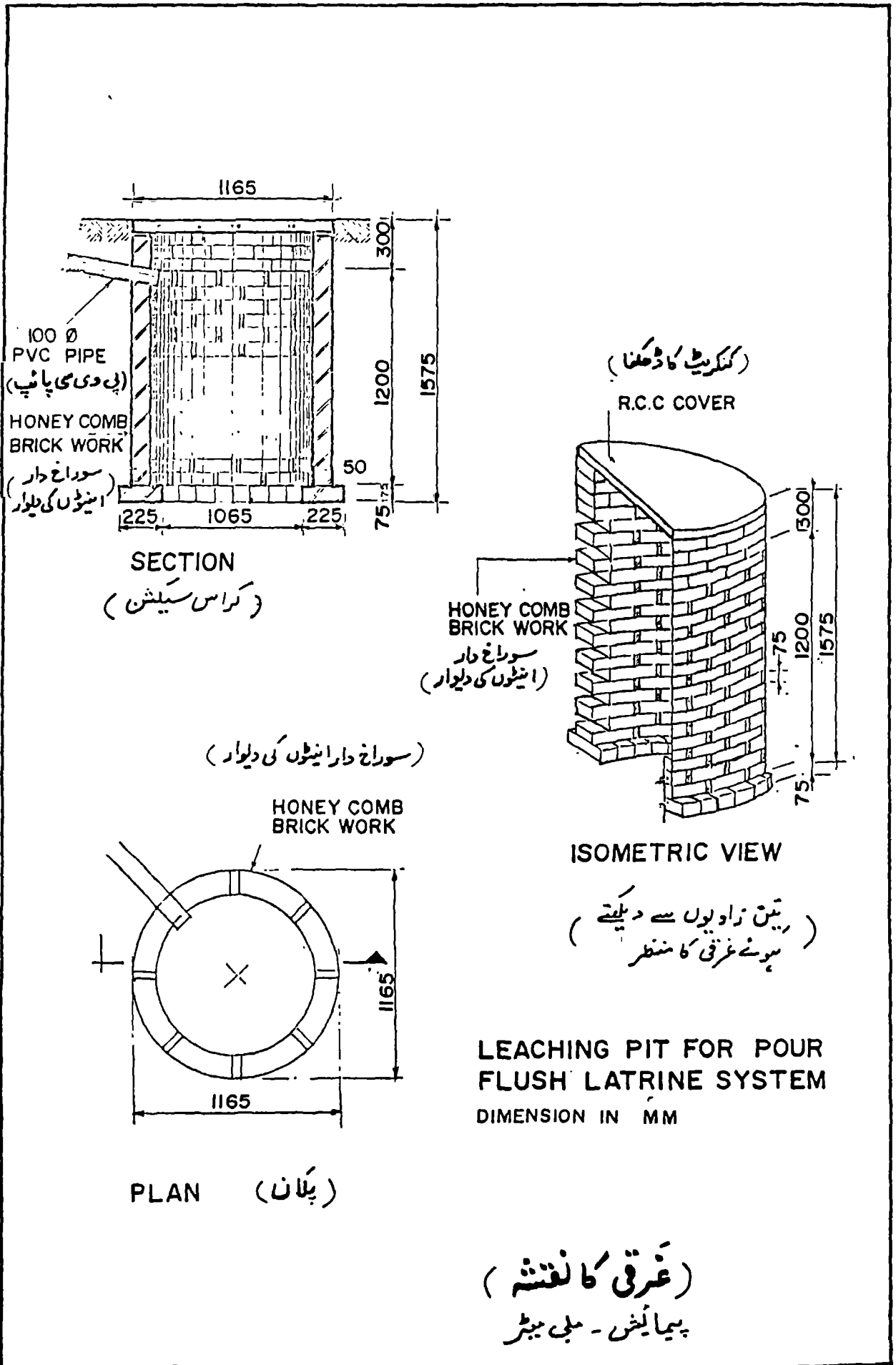
SECTION - BB  
کراس سیکشن - BB

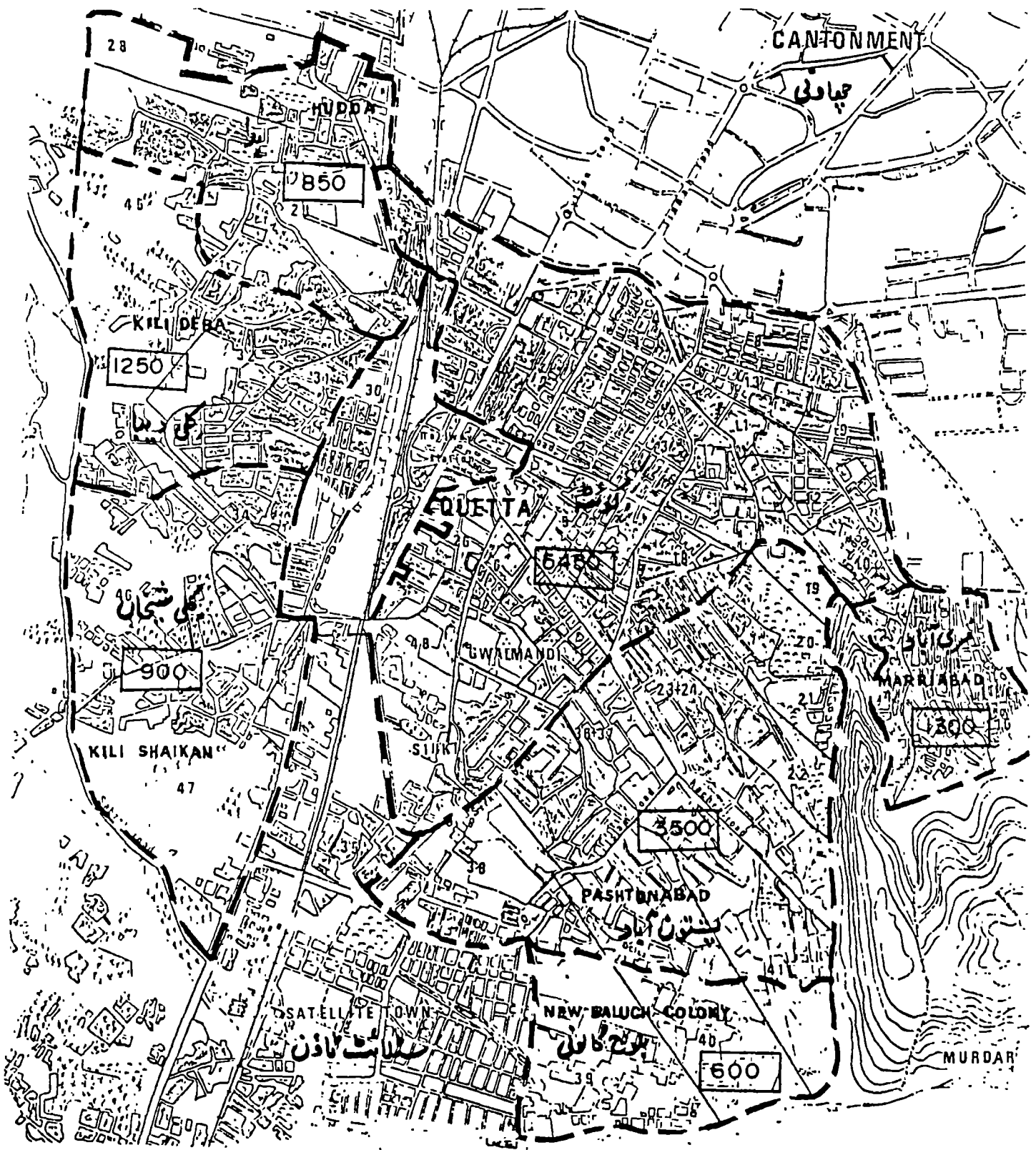


'S' BEND  
شکل 'S' پائپ

DRAWING SHOWING PAN  
AND 'S' BEND FOR POUR  
FLUSH LATRINE

پانی سے صاف ہونے والی بیٹرین کے لئے  
پین اور 'S' شکل کے پائپ کی ڈرائیگ





چارٹ نمبر

اشارات

## LEGEND

850 NUMBER OF POUR FLUSH  
LATRINES TO BE INSTALLED  
DURING PHASE I (1988-1992)

پانی سے صاف ہونے والی لیٹرینوں  
کی تعداد جو کہ پہلے مرحلے میں مکمل  
کرنی جائیں گی۔

850

REGIONS TO BE FURNISHED  
WITH POUR FLUSH LATRINES  
IN INDIVIDUAL HOMES

وہ علاقے جہاں گھر گھر میں پانی سے  
صاف ہونے والی لیٹرین لگائی  
جائے گی۔

## فصلہ کی ناقص منتظمی کی وجہ سے پھیلنے والی بیماریاں

## COMMUNICABLE DISEASES RELATED TO INADEQUATE EXCRETA MANAGEMENT

DISEASE	SPECIFIC AGENT	RESERVOIR	COMMON VEHICLE	SYMPTOMS IN BRIEF
Salmonellosis فود پوائزن	<i>Salmonella typhi-</i> <i>murium</i> , <i>S. new-</i> <i>port</i> , <i>S. enteritidis</i> , <i>S. montevideo</i> , other.	Hogs, cattle, and other livestock, poultry, pets, eggs, carriers, powdered eggs.	Contaminated sliced cooked meat, salads, infected meats, warmed over foods, milk, milk products.	Abdominal pain, diarrhea, chills, fever; vomiting and nausea. Diarrhea usually persists several days.
Typhoid fever میجادی تیار	Typhoid bacillus, <i>Salmonella</i> <i>typhosa</i> .	Feces and urine of typhoid carrier or patient.	Contaminated water, milk and milk prod- ucts, shellfish, and foods. Fly.	General infection characterized by continued fever, usually rose spots on the trunk, diarrheal disturbances.
Paratyphoid fever میجادی تیار	<i>Salmonella para-</i> <i>typhi</i> A, <i>S. schott-</i> <i>mulleri</i> B, <i>S.</i> <i>hirschfeldii</i> C.	Feces and urine of carrier or patient.	Contaminated water, milk and milk prod- ucts, shellfish, and foods. Fly.	General infection characterized by continued fever, diarrheal disturbances, sometimes rose spots on trunk, other symptoms.
Shigellosis پیش	Genus, <i>Shigella</i> , i.e., Flexner, Sonne, Shiga, and others.	Bowel discharges of carriers and infected persons.	Contaminated water or foods, milk and milk products. Fly.	Acute onset with diarrhea, fever, tenesmus, and frequent stools containing blood and mucus.
Cholera پیشہ	<i>Cholera vibrio</i> , <i>Vibrio comma</i> .	Bowel discharges, vomitus; carriers.	Contaminated water, raw foods. Fly.	Diarrhea, rice-water stools, vomiting, thirst, pain, coma.
Infectious hepatitis برقان	Yusues unknown.	Discharges of infected persons.	Water, food, milk, oysters. Contacts.	Fever, nausea, loss of appetite; possibly vomiting, fatigue, headache, jaundice.
Amebiasis پیش	<i>Endamoeba</i> <i>histolytica</i> .	Bowel discharges of carrier, and infected person, possibly also rat.	Cysts, contaminated water, foods, raw vegetables and fruits. Flies, cockroaches.	Insidious and undetermined on- set, diarrhea or constipation, or neither; loss of appetite, abdomi- nal discomfort; blood, mucus in stool.
Schistosomiasis پیش	<i>Schistosoma</i> <i>haematobium</i> , <i>S.</i> <i>mansoni</i> , <i>S.</i> <i>japonicum</i> .	Venous circula- tion of man; urine, feces.	Cercariae infested drinking and bath- ing water.	Dysentery, pulmonary, and abdominal symptoms. Rigors, itching on skin, dermatitis.
Oxyuriasis پیش کے کڑے	<i>Oxyuris vermi-</i> <i>cularis</i> , or <i>Enter-</i> <i>obius vermicularis</i> .	Large intestine of man, particularly children.	Fingers. Ova-laden dust. Contaminated food, water; sewage. Clothing, bedding.	Nasal itching, anal itching, diarrhea.

## پانی سے صاف ہونے والی لیٹرین کے استعمال اور اسکی دیکھ بھال کے متعلق گھر کے افراد کیلئے ہدایات

### 1۔ روزانہ استعمال کے لئے ہدایات

1-1 اچھی کارکردگی کے لئے کافی پانی ہونا چاہیے۔

1-2 تاہم اتنا پانی استعمال کرنا چاہیے جتنی ضرورت ہو۔

1-2-1 لیٹرین میں فضلہ کو پائپ میں باندھنے کیلئے (بہت زیادہ پانی استعمال کرنے سے غرق  
پرلو جو زیادہ بھی ہو سکتا ہے اور اس صورت میں وہ ٹھیک طور پر کام نہیں کرے گی)

1-2-2 لیٹرین کو صاف ستر رکھنے کے لئے (اگر توڑا سا فضلہ بھی پائپ میں پھنسے رہ جائے  
تو اس پر نمیوں بیٹھیں گی اور وہ بیماریوں کے جراثیم لگانے کی اشیاء اور باقی مکان  
میں پھینکا میں گی)۔

1-3 لیٹرین کو صرف دفع حاجت کے لئے استعمال کرنا چاہیے اور اس میں کوئی اور چیز  
نہیں پھینکنی چاہیے۔ (صفحہ 2.2 دیکھئے)

### 2۔ مستقل دیکھ بھال کیلئے ہدایات

2.1 عام طور پر دو سال کیلئے لیٹرین کے گندے پانی کو صرف ایک غرق میں پھینکا جاتا ہے۔  
2.1.1 گندے پانی کا رخ موڑ دینا (جیکشن باکس کی مدد سے) اس طرح تمام گندا پانی دو سال  
کے لئے دوسری غرق میں جاتے گا۔

2.1.2 اسی کے دفتر سے غرق صاف کرنے کو کہیں اور دو سال کیلئے اس غرق کو بند رکھیں۔

2.2 کسی بھی پائپ کے بند ہونے کی صورت میں پلمبر سٹیک استعمال کریں یا پلمبر کو بلا  
کر اس سے پائپ صاف کرائیں۔

3 اگر غرق دو سال کے عرصے سے بند ہو جائے تو پانی کا بہاؤ دوسری غرق کی  
طرف موڑ دیں اور پہلی غرق کو صاف کرائیں۔

جہاں پر زمین کی حالت ٹٹی یا پانی کی وجہ سے صحیح نہ ہو تو غرق کا استعمال کا وقفہ  
دو سال سے کم بھی ہو سکتا ہے۔ ان حالات میں غرق کا استعمال کم مدت کے لئے  
کرنا چاہیے۔

## GUIDELINES TO HOUSEHOLDERS ON USE AND MAINTENANCE OF PFL SYSTM

### 1. GUIDELINES FOR DAILY USE

1.1 HAVE SUFFICIENT WATER AVAILABLE FOR CLEAN OPERATIONS.

1.2 HOWEVER, USE ONLY ENOUGH WATER AS REQUIRED:

1:2.1 FOR FLUSHING THE EXCRETA DOWN THE DRAIN (USE OF EXCESS WATER MAY  
OVERLOAD THE LEACHING PIT SO IT CANNOT FUNCTION PROPERLY)

1:2.2 FOR MAINTAINING CLEANLINESS IN TOILET (ANY EXCRETA MATERIALS REMAIN-  
ING IN TOILET ROOM AND NOT FLUSHED DOWN THE DRAIN CAN BE CONTACT-  
ED BY FLIES AND THUS TRANSMIT DISEASE ORGANISMS ON TO FOOD AND  
ELSEWHERE IN THE HOME)

1.3 USE TOILET FOR EXCRETA DISPOSAL ONLY. DO NOT THROW ANY OTHER MATERIALS  
INTO IT (SEE 2.2 BELOW).

### 2. GUIDELINES FOR PERIODIC MAINTENANCE

2.1 ALL FLOW FROM THE TOILET IS TO BE FLUSHED INTO ONLY ONE PIT FOR A  
PERIOD GENERALLY OF 2 YEARS.

AT THAT TIME:

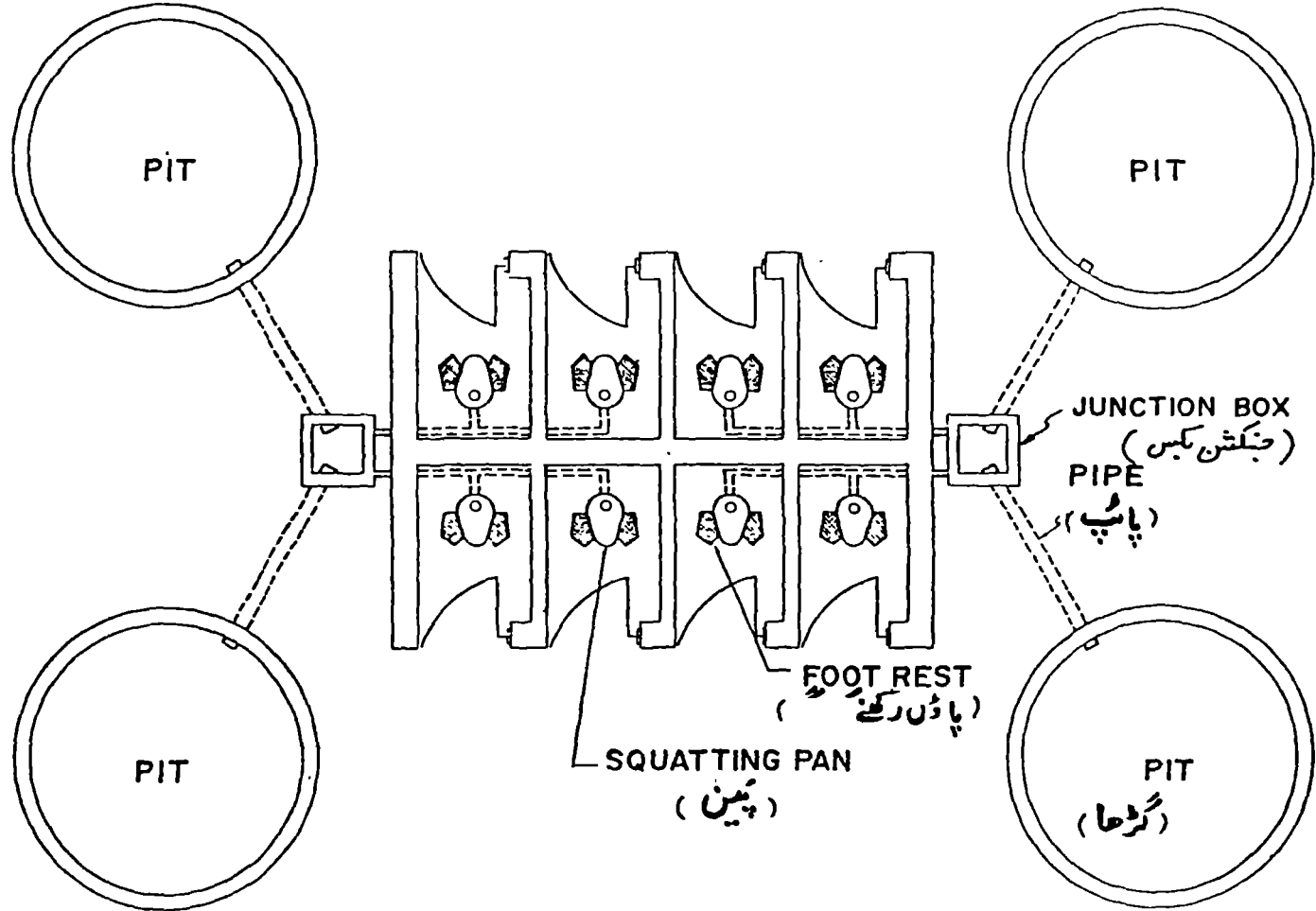
2.1.1 CHANGE FLOW DIRECTION (USE JUNCTION BOX) SO ALL WASTE WILL FLOW  
INTO SECOND PIT FOR 2 YEARS.

2.1.2 ALLOW PIT TO "REST" FOR 2 YEARS. THEN CALL QWASA OFFICE TO ARRANGE  
FOR REMOVING COMPOST MATERIALS FROM PIT.

2.2 IF PIPE CONNECTING TOILET PAN TO JUNCTION BOX OR FROM JUNCTION BOX  
TO PIT BECOMES CLOGGED, USE A PLUMBER'S "SNAKE" TO CLEAR THE PIPE  
(OR CALL FOR A PLUMBER TO DO THIS).

2.3 IF THE PIT BEING USED OVERFLOWS BEFORE THE 2 YEAR PERIOD IS UP,  
DISCONTINUE USE OF THIS PIT AND SEND FLOW TO THE OTHER PIT. WHERE SOIL  
AND/OR GROUND WATER CONDITIONS ARE NOT FAVOURABLE, THE PIT USE  
PERIOD MAY BE REDUCED TO LESS THAN 2 YEARS.

WATER SUPPLY  
( پانی کی فراہمی )



COMMUNAL LATRINE

( بیٹرین برائے عوام )

CONSTRUCTION PROGRAM FOR INSTALLING POUR FLUSH LATRINES

( AND RELATED MONITORING )

پانی سے صاف ہونے والی لیٹرینوں کی تعمیر کا پروگرام ( اور اس سے منسلک امور نگرانی )

CONSTRUCTION

تعمیر

MONITORING

نگران امور

	1987	1988	1989	1990	1991	1992
100 DEMONSTRATION UNITS	APPROX. 1,000 UNITS	APPROX. 3,250 UNITS	APPROX. 3,250 UNITS	APPROX. 3,250 UNITS	APPROX. 3,250 UNITS	APPROX. 3,250 UNITS
	100 مشاہداتی یونٹ	تقریباً 1000 یونٹ	تقریباً 3250 یونٹ	تقریباً 3250 یونٹ	تقریباً 3250 یونٹ	تقریباً 3250 یونٹ
	PERIODIC MONITORING OF FULL SCALE SYSTEM					

MONITORING OF DEMONSTRATION UNITS FROM ABOUT 1 AUGUST 1987 (FOR ONE YEAR) TO OBTAIN FEED-BACK INFORMATION FOR USE IN IMPROVING DESIGN AND OPERATION AND MAINTENANCE.

مشاہداتی یونٹوں کی نگرانی کی معمولات کو یکم اگست سے ایک سال کے لئے اکٹھا کرنا تاکہ وہ ڈیزائن کی مزید بہتری اسکے استعمال اور دیکھ بال کے لئے استعمال ہو۔

TO ENSURE OPTIMAL USE OF OVERALL POUR FLUSH LATRINE SANITATION SYSTEM.

پانی سے صاف ہونے والی لیٹرینوں کے حوظانِ صحت کے منصوبہ کے مکمل استعمال کے تعین کے لئے

## PLAN FOR PILOT DEMONSTRATION PROGRAM

("PDP")

### SUCCESSIVE STEPS IN PLAN

- 1 PREPARATION OF INFORMATION MATERIALS FOR USE IN MEETINGS WITH COUNCILLORS, ZAKAT OFFICIALS, AND TEACHERS (APRIL-MAY 1987) INITIAL MEETINGS (INCLUDING DISTRIBUTION OF INFORMATION MATERIALS) IN MAY 1987
  - 1-1 MAYOR AND COUNCILLORS: TO GAIN PROGRAM ENDORSEMENT.
  - 1-2 ZAKAT OFFICIALS: ASSISTANCE THROUGHOUT PDP, BEGINNING WITH SELECTION OF STUDENTS HOMES IN 5 REGIONS AND WITH ARRANGING FOR MEETINGS WITH TEACHERS (TWO MEETINGS REQUIRED)
  - 1-3 TEACHERS: AS ARRANGED BY ZAKAT LEADERS
- 2 SELECTION AND BRIEFING OF CONTRACTORS FOR BUILDING 100 UNITS (MAY 1987)
- 3 PREPARATION OF CONTRACT DOCUMENTS (MAY 1987)
- 4 IMPLEMENTATION OF CONTRACTS / CONSTRUCTION OF 100 DEMONSTRATION UNITS (MID-JUNE TO MID-JULY 1987)
- 5 SELECTION AND TRAINING OF MONITORING OFFICER (JUNE-JULY 1987)
- 6 PREPARATION OF INFORMATION BROCHURE FOR HOUSEHOLDER (JUNE - JULY 1987)
- 7 IMPLEMENTATION OF MONITORING PROGRAM (START 1 AUG. 1987)
- 8 COLLATION AND EVALUATION OF MONITORING RESULTS (AUG-NOV 1987)
- 9 FOLLOW-UP MEETINGS WITH COUNCILLORS, ZAKAT OFFICIALS, AND TEACHERS (SEPT-NOV 1987)
- 10 REVISION/UPGRADING OF PLANS / DESIGNS FOR FULL-SCALE PROGRAM BASED ON ITEMS 8 AND 9 (NOV-DEC 1987)

### SUMMERIZED SCHEDULE

⊙ MEETING

	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

## پروگرام برائے مشاہداتی منصوبہ

(پی۔ ڈی۔ پی)

چارٹ نمبر 13

اس منصوبہ میں شامل تمام اقدام ترتیب وار اس طرح ہیں۔

1. کونسلرز، زکوٰۃ کمیٹی کے ارکان اور اساتذہ کے ساتھ ملاقاتوں کے لئے فروری معلوماتی مواد تیار کرنا۔ (اپریل جی 1987ء) ابتدائی ملاقاتیں جن میں ضروری معلومات کی فراہمی بھی شامل ہے۔ (مئی 1987ء)
  - 1-1 میئر اور کونسلرز - پروگرام کی تصدیق حاصل کرنا۔
  - 1-2 زکوٰۃ کمیٹی کے ارکان - پورے پروگرام میں تعاون حاصل کرنا۔ پانچ علاقوں میں طلباء و طالبات والے پانچ گروں کا انتخاب اور اساتذہ سے ملاقاتوں کا انتظام۔
  - 1-3 اساتذہ - جس طرح زکوٰۃ ریڈر انتظام کریں۔
- 2 - 100 یونٹ بنانے کیلئے ٹیکنیکل اوروں کا انتخاب اور انکو ہدایات دینا۔ (مئی 1987ء)
- 3 - کنٹریکٹ ڈاکومنٹ (دستاویز) کی تیاری (مئی 1987ء)
- 4 - کنٹریکٹ ڈاکومنٹ پر عمل درآمد اور 100 مشاہداتی یونٹوں کی تعمیر (دسمبر 1987ء)
- 5 - نگران افسر کا انتخاب و ترتیب (جون - جولائی 1987ء)
- 6 - گھر کے افراد کے لئے معلومات پر مشتمل تعارفی کتابچہ کی تیاری۔
- 7 - نگران پروگرام پر عمل درآمد (اپریل 1987ء سے شروع)
- 8 - نگران پروگرام سے اثرات کو اکٹھا کرنا اور انکے نتائج معلوم کرنا۔ (اکتوبر 1987ء)
- 9 - ان نتائج کی روشنی میں کونسلرز، زکوٰۃ افسران اور اساتذہ سے ملاقاتیں (ستمبر - نومبر 1987ء)
- 10 - مئی 8 اور 9 کی بنیاد پر مکمل پروگرام کے نقشوں یا ڈیزائن کو خرید بہتر بنانا۔ (نومبر - دسمبر 1987ء)



## DEMONSTRATION MONITORING PROGRAM ("DMP")

## مشاہداتی نگرانی کا پروگرام

### 1. SUCCESSIVE STEPS AS FOLLOWS (SEE SCHEDULE ON CHART 13)

- 1-1 SELECTION AND TRAINING OF MONITORING OFFICER (JUNE - JULY 1987)
- 1-2 PREPARE INFORMATION BROCHURE FOR HOUSEHOLDER
- 1-3 IMPLEMENTATION / CONDUCTING MONITORING PROGRAM (1 AUG - 31 DEC 1987)
- 1-3-1 INTRODUCTORY VISITS ARRANGED BY ZAKAT OFFICIALS. FURNISH EACH HOUSE - HOLDER WITH INFORMATION BROCHURE.
- 1-3-2 CONTINUING COLLATION / EVALUATION OF MONITORING DATA
- 1-3-3 FEED-BACK INFORMATION FROM "DMP" PARTICIPANTS
 

2-3-1 COUNCILLORS	MEETINGS IN MID-SEPTEMBER
2-3-2 ZAKAT OFFICIALS	AND MID-NOVEMBER SEPARATELY OR
2-3-3 TEACHERS	JOINTLY
- 1-3-4 CONCLUSIONS AND RECOMMENDATIONS FOR IMPROVING/UPGRADING PLANNING / DESIGN OF FULL-SCALE PROGRAM.

### 2. INFORMATION TO BE OBTAINED BY MONITORING OFFICER (ALL DETECTIVE STYLE WORK) (TYPICAL QUESTIONS)

- 2-1 DO ALL FAMILY MEMBERS USE "PFL" SYSTEM / WHICH ONES DO AND DO NOT AND WHY
- 2-2 WHAT IS FAMILY'S OVERALL OPINION ON VALUE OF PFL SYSTEM TO HOME AND HOW DOES IT COMPARE WITH DRY PIT LATRINE IN THEIR OPINION.
- 2-3 WHAT ARE FAMILY'S RECOMMENDATION ON HOW PFL SYSTEM COULD BE IMPROVED TO BE MORE USEFUL TO THEM.
- 2-4 WHAT IS SOURCE OF WATER IN TOILET / MANUALLY CARRIED IN OR TAP
- 2-5 HOW MUCH WATER IS USED TOTAL PER DAY, ESTIMATED NUMBER OF USES, AND WATER USE PER TOILET USE.
- 2-6 ANY PROBLEM WITH THE PFL SYSTEM'S PHYSICAL OPERATION / CLOGGING OF CONNECTING PIPE BACK-FLOW, PIT OVERFLOW, PIT CAVE-IN, FAILURE OF JUNCTION BOX, ETC. DESCRIBE AND EXPLAIN HOW PROBLEM WERE OVERCOME.
- 2-7 IS TOILET LOCATION OK OR WOULD FAMILY PREFER TO HAVE IT CHANGED AND WHY.
- 2-8 OBSERVATIONS OF NEIGHBOURS ON POINTS ABOVE
- 2-9 HAS THE INFORMATION BROCHURE GIVEN TO THE FAMILY BEEN OF ANY VALUE AND WHY.
- 2-10 HAVE ANY OF THE FAMILY FRIENDS AND ACQUAINTANCES WHO HAVE VISITED THE HOME USED THE PFL AND IF SO WHAT IS THEIR EVALUATION OF IT
- 2-11 OTHER PARTINENT COMMENTS.
- 2-12 MAKE LEACHING TEST AT SITE.

FREQUENCY OF VISITS . MONTHLY.

FORMAT FOR RECORDING DATA : ABOVE QUESTION SHOULD BE PUT INTO A STANDARD FORMAT (IN ENGLISH AND URDU) INCLUDING SPACE FOR ANSWERS

1. اس میں شامل اقدامات مرحلہ وار اس طرح ہیں (چارٹ نمبر 13 میں سٹیڈول دیکھیں)
- 1.1 نگران افسر کا انتخاب اور اس کی تربیت - (جون - جولائی 1987ء)
- 1.2 نگران کے افراد کے لئے معلوماتی کتابچہ
- 1.3 نگران پروگرام پر عمل درآمد (یکم اگست تا 31 دسمبر 1987ء)
- 1.3.1 نگرانی افسروں کی طرف سے بنائے گئے تعارفی دورے۔ ہر گھرانے کو معلوماتی کتابچہ کی فراہمی۔
- 1.3.2 نگران کی معلومات کو اکٹھا کرنا اور ان سے مطابقت سے متعلق تنازع اخذ کرنا
- 1.3.3 نگران پروگرام میں شریک لوگوں سے حاصل کردہ معلومات اکٹھا کرنا۔

- |       |              |
|-------|--------------|
| 2-3-1 | سولڈرز       |
| 2-3-2 | زکوٰۃ افسران |
| 2-3-3 | اساتذہ       |
- 1.3.4 حاصل کردہ معلومات سے تنازع اخذ کرنا اور نگران پروگرام کے ڈیزائن اور پلاننگ میں بہتری کیلئے مشاہدات پیش کرنا۔

2. نگران افسران سے معلومات اکٹھی کرنا۔
- 2.1 کیا نگران کے تمام افراد پانی سے صاف ہونے والی لیٹرین استعمال کرتے ہیں؟ کون کون کرتا ہے اور کون نہیں کرتا اور کیوں؟
- 2.2 پانی سے صاف ہونے والی لیٹرین کے سسٹم کے بارے میں مشترکہ رائے کیا ہے اور اگلے خیال میں مختلف فرق کی لیٹرین کے مقابلے میں یہ کیسی ہے؟
- 2.3 گھرانے کے خیال میں اس لیٹرین کو مزید فائدہ مند بنانے کے لئے اور کیا کیا کرنا چاہیے؟
- 2.4 لیٹرین میں استعمال ہونے والا پانی کس طرح سے آتا ہے ٹوٹی ہوئی کا انتظام ہے یا نگران کے افراد خود کسی چیز میں ڈال کر لگتے ہیں؟
- 2.5 آب و ہوا میں کئی مشا پانی استعمال ہوتا ہے، اندازاً لیٹرین کسی دفعہ استعمال ہوتی ہے اور اس طرح کیلئے استعمال کرنے پر کتنے پانی کی ضرورت ہوتی ہے؟
- 2.6 صاف پانی میں سے کسی جگہ کوئی بوقت ہوئی ہو تو اس کی تعین اور اسے کس طرح صاف کیا گیا۔
  - پائپ کا بند ہونا۔
  - پائپ میں پانی کا واپس آنا۔
  - غرق ہو جانے کے بعد پانی باہر بننا۔
  - غرق کی دیواروں کا گر جانا۔
  - جکشن باکس کا ٹھیک کام نہ کرنا۔
  - کوئی اور وقت
- 2.7 کیا لیٹرین کی جگہ صاف ہے یا نگران کے افراد اسے دوسری جگہ منتقل کرنا چاہتے ہیں اور کیوں؟
- 2.8 اور یہاں کتنے نفاذ کے بارے میں مسالوں کے تاثرات۔
- 2.9 کیا نگران کے معلوماتی کتابچے کی کوئی قیمت لی گئی ہے اور کیوں؟
- 2.10 کیا نگران کے لئے والے دوستوں اور سہیلوں نے یہ لیٹرین استعمال کی ہے اور ان کا اس کے بارے میں کیا اندازہ ہے؟
- 2.11 ان کے علاوہ کوئی اور تاثرات؟
- 2.12 موقع پر ہیجٹ ٹیسٹ کرنا۔

دورہ (VISIT) کا وقفہ : ہفتہ وار

سوالنامہ فارم - اوپر بیان کیے گئے سوالات کو اردو اور انگریزی کے فارموں کی شکل میں ہونا چاہیے اور اس میں جوابات کے لئے جگہ ہونی چاہیے۔

AGREEMENT

AN AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_ 198 between:  
Baluchistan Water and Sanitation Authority (hereinafter referred to as BWASA) which expression shall include its successors, assignees or authorised representatives, wherever the context or meaning so require or permit on the first part;

and

Mr. \_\_\_\_\_ S/o \_\_\_\_\_ resident of \_\_\_\_\_  
(hereinafter referred to as Householder) which expression shall include his legal heirs, successors, assignees, or authorised representatives wherever the context or meaning so require or permit on the second part.

WHEREAS BWASA has launched a project of constructing Pour Flush Latrines or Ventilated Improved Pit Latrines (hereinafter referred to as Latrine) in private houses, and

WHEREAS the Householder is desirous of having a latrine being constructed in his house No. \_\_\_\_\_ Street \_\_\_\_\_ Locality \_\_\_\_\_.

NOW THEREFORE, it is hereby agreed to between the parties as under:-

1. That BWASA will construct a latrine in his house, according to the design approved by the BWASA.
2. That the construction will be carried out by the Mistries duly licensed by BWASA, under the supervision of \_\_\_\_\_.
3. That the cost of materials used in the construction of the latrine, together with labour and all other charges incurred in connection with the construction of the latrine will be Rs \_\_\_\_\_.
4. That the cost referred to in para 3 above will be incurred by BWASA in the first instance.
5. That the cost of Rs \_\_\_\_\_ incurred by BWASA will be treated as loan given by BWASA to the Householder, to be paid in \_\_\_\_\_ instalments.
6. That the instalments of loan will be repaid by the Householder to BWASA in the manner to be notified to the Householder from time to time, till the full recovery of the loan is effected.
7. That the Householder will permit without let or hinderance the authorised representative of BWASA to inspect the Latrine and guide the Householder in its proper use.
8. That the Householder will follow the guidelines on use and maintenance of the latrines, as may be provided to him from time to time.
9. That in case, the house is sold/leased out, the unpaid balance of the aforesaid loan will be repaid to BWASA, by the Householder before the Purchase/Lease deed is finalised.

IN WITNESS WHEREOF the parties have signed the deed on the day, month and year as aforesaid mentioned.

Signed by \_\_\_\_\_

For and on behalf of B-WASA

Signed by \_\_\_\_\_

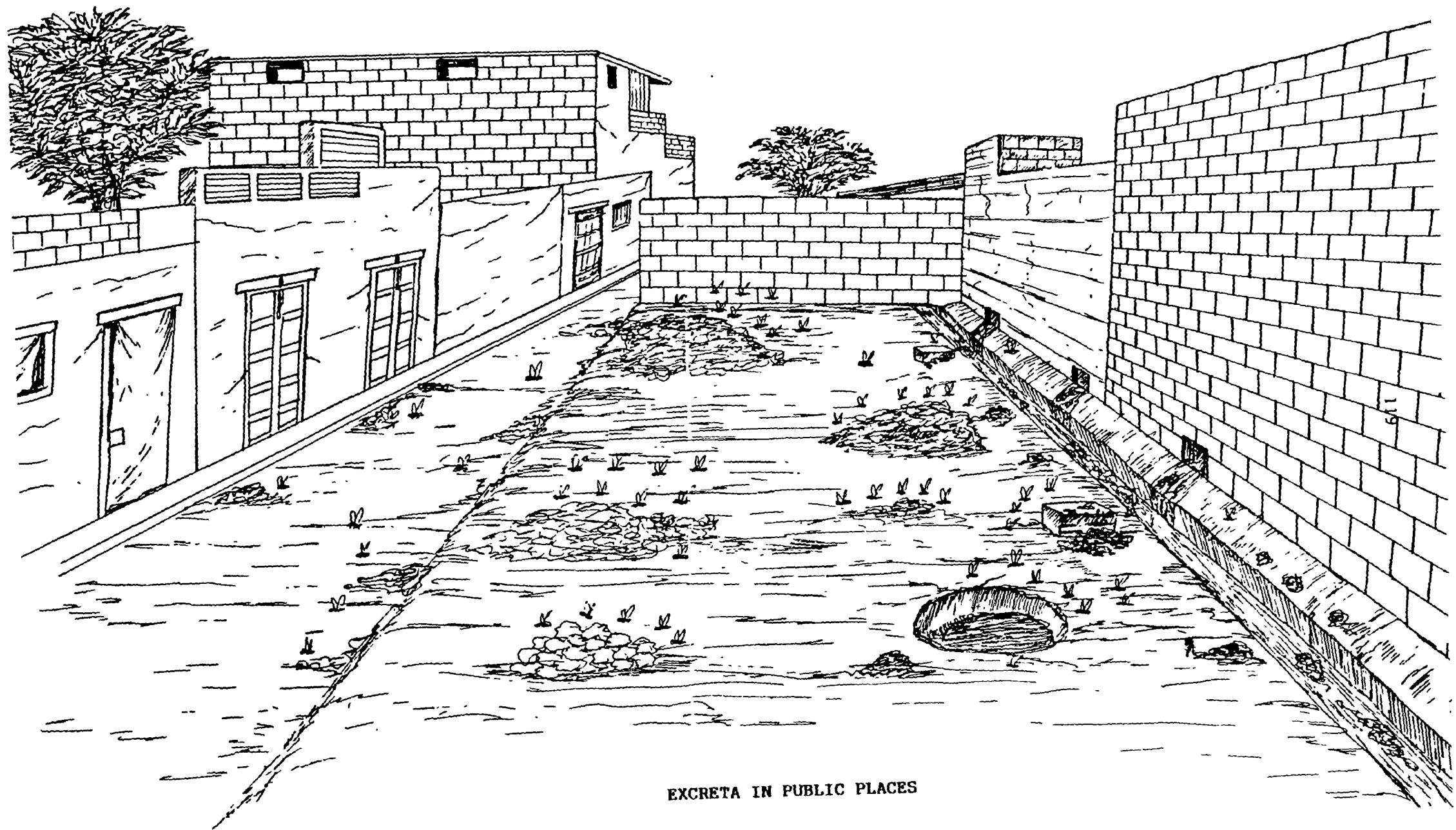
Mr. \_\_\_\_\_

S/o \_\_\_\_\_

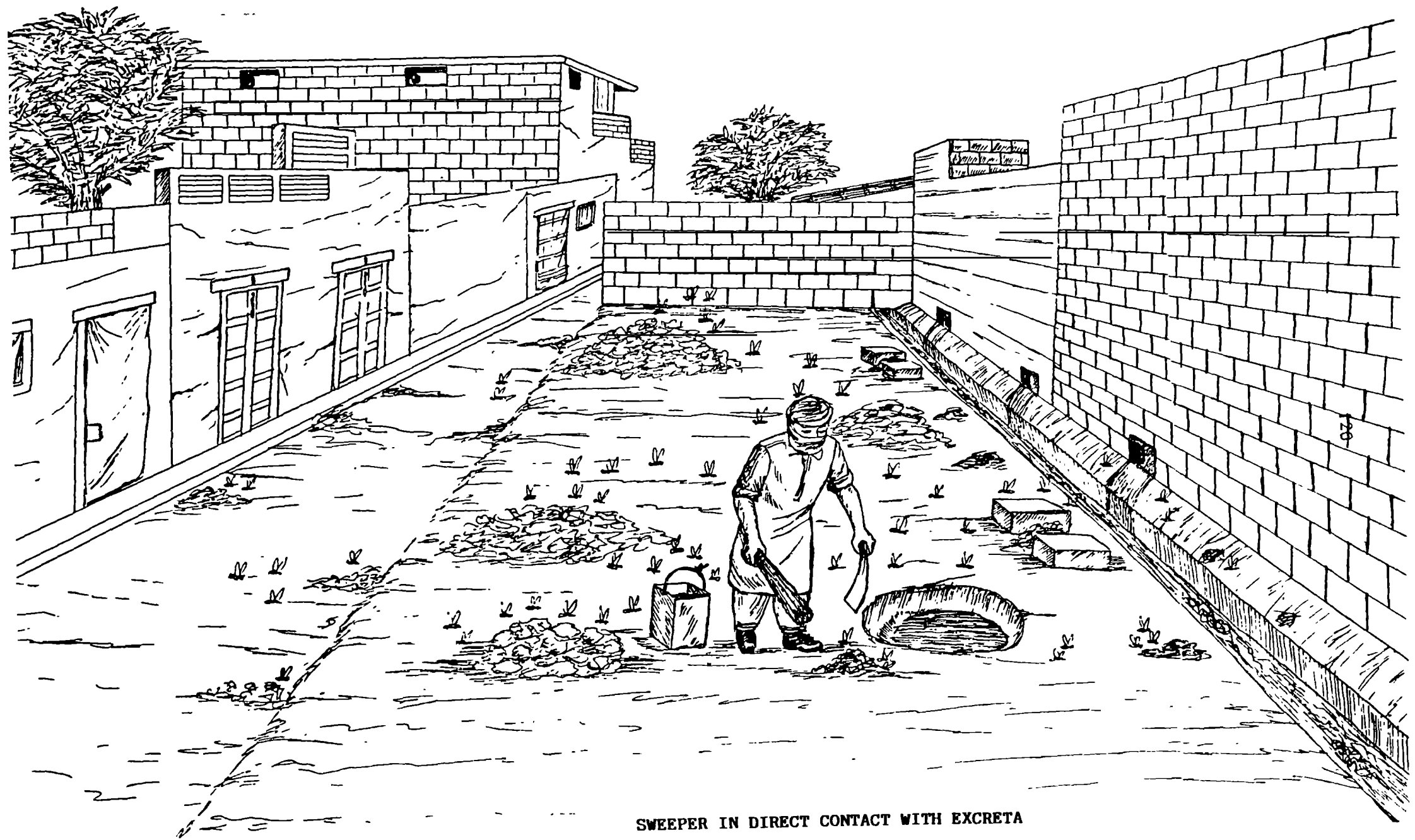
Witness \_\_\_\_\_

Witness \_\_\_\_\_

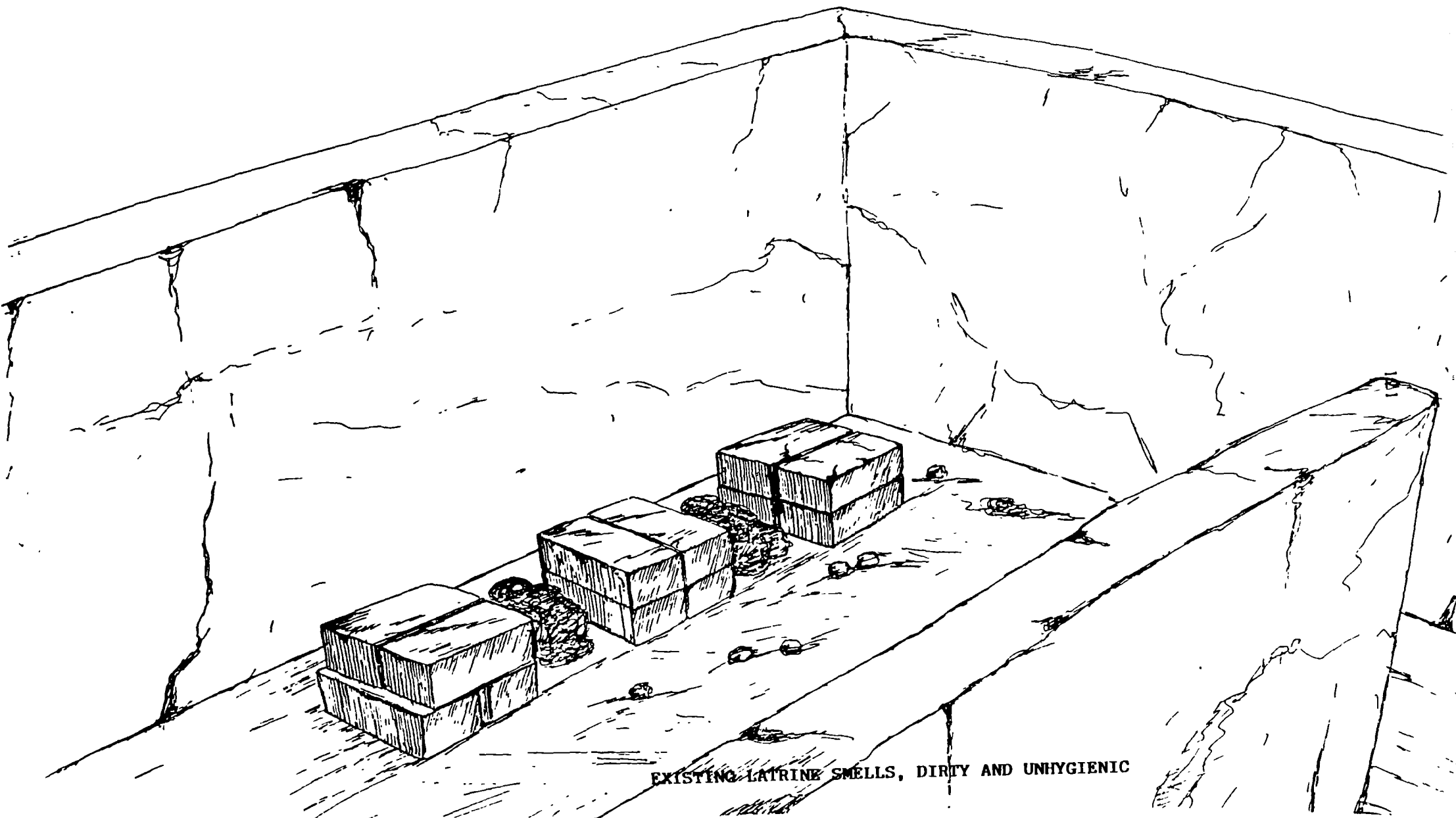
(C.B.O.)



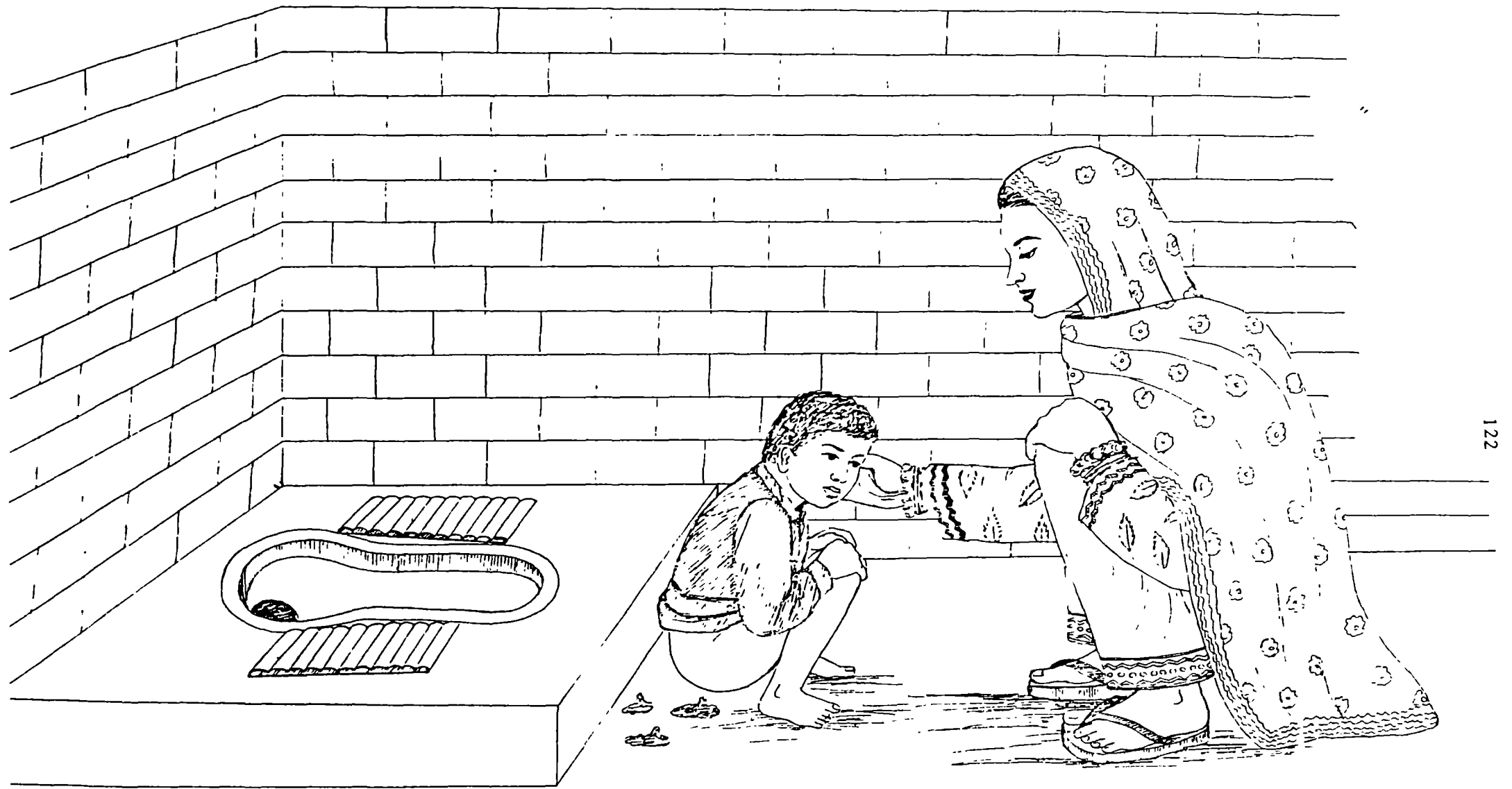
EXCRETA IN PUBLIC PLACES



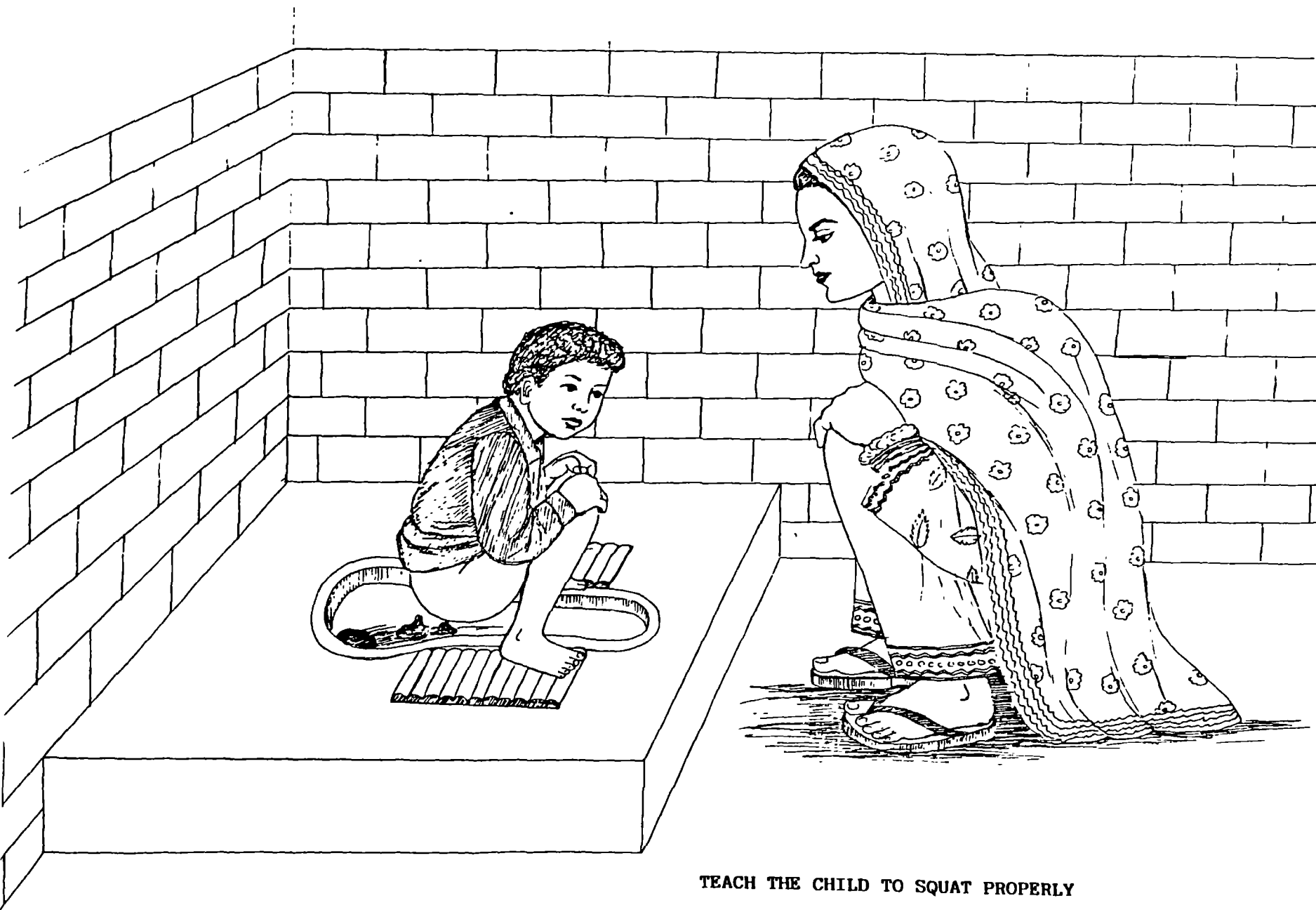
SWEEPER IN DIRECT CONTACT WITH EXCRETA



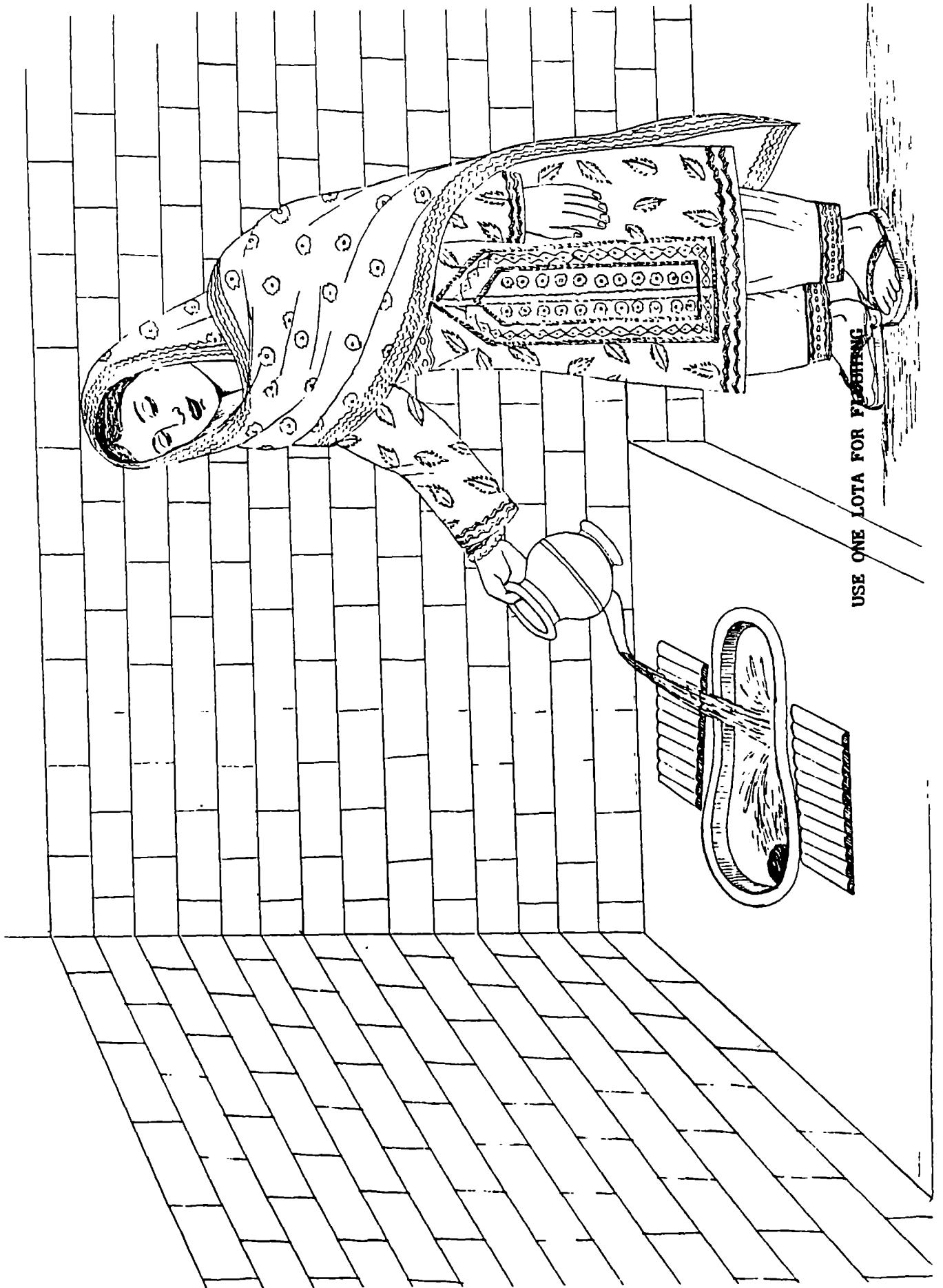
EXISTING LATRINE SMELLS, DIRTY AND UNHYGIENIC



WRONG PLACE TO SQUAT

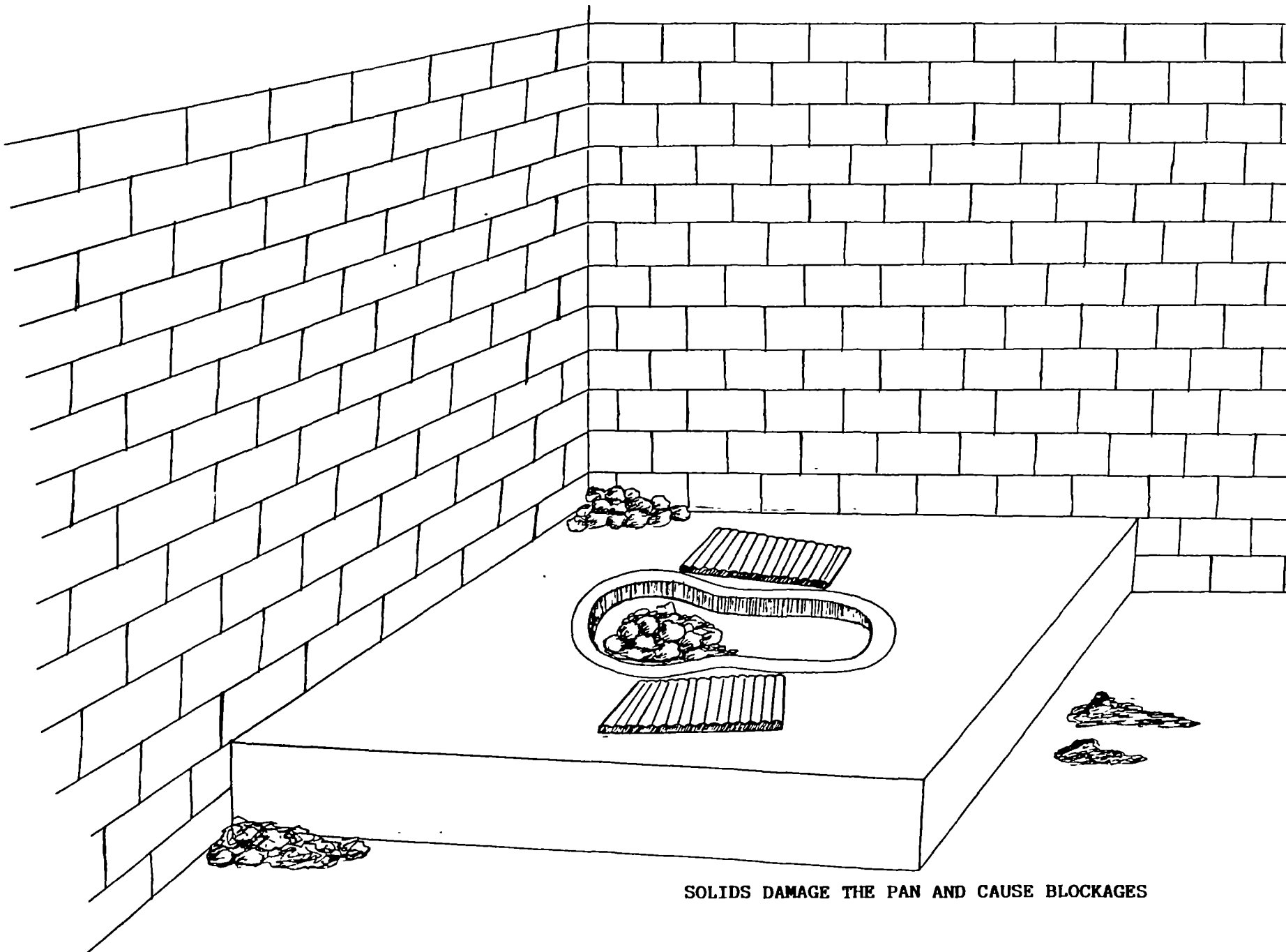


TEACH THE CHILD TO SQUAT PROPERLY

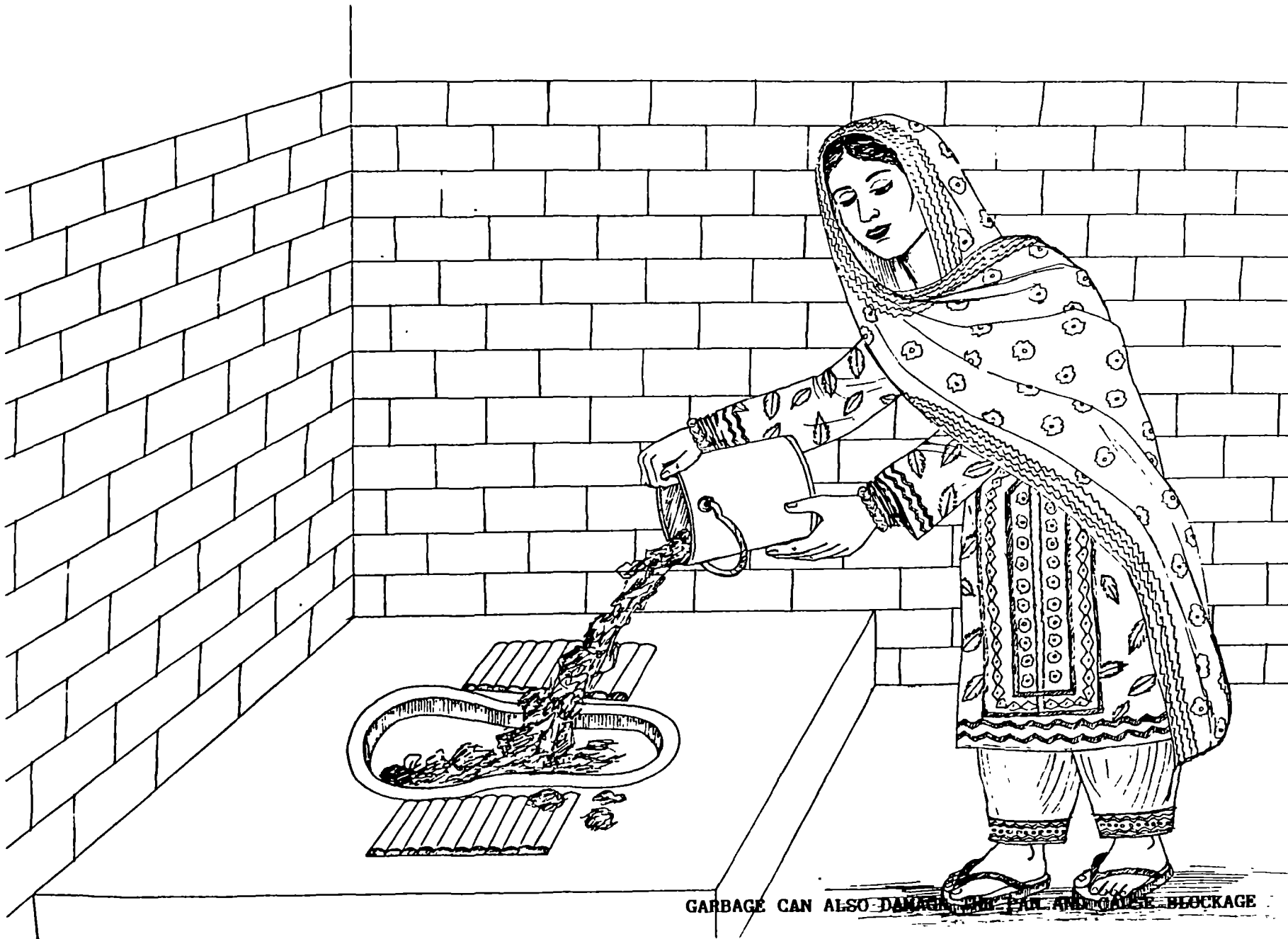


USE ONE LOTA FOR POURING

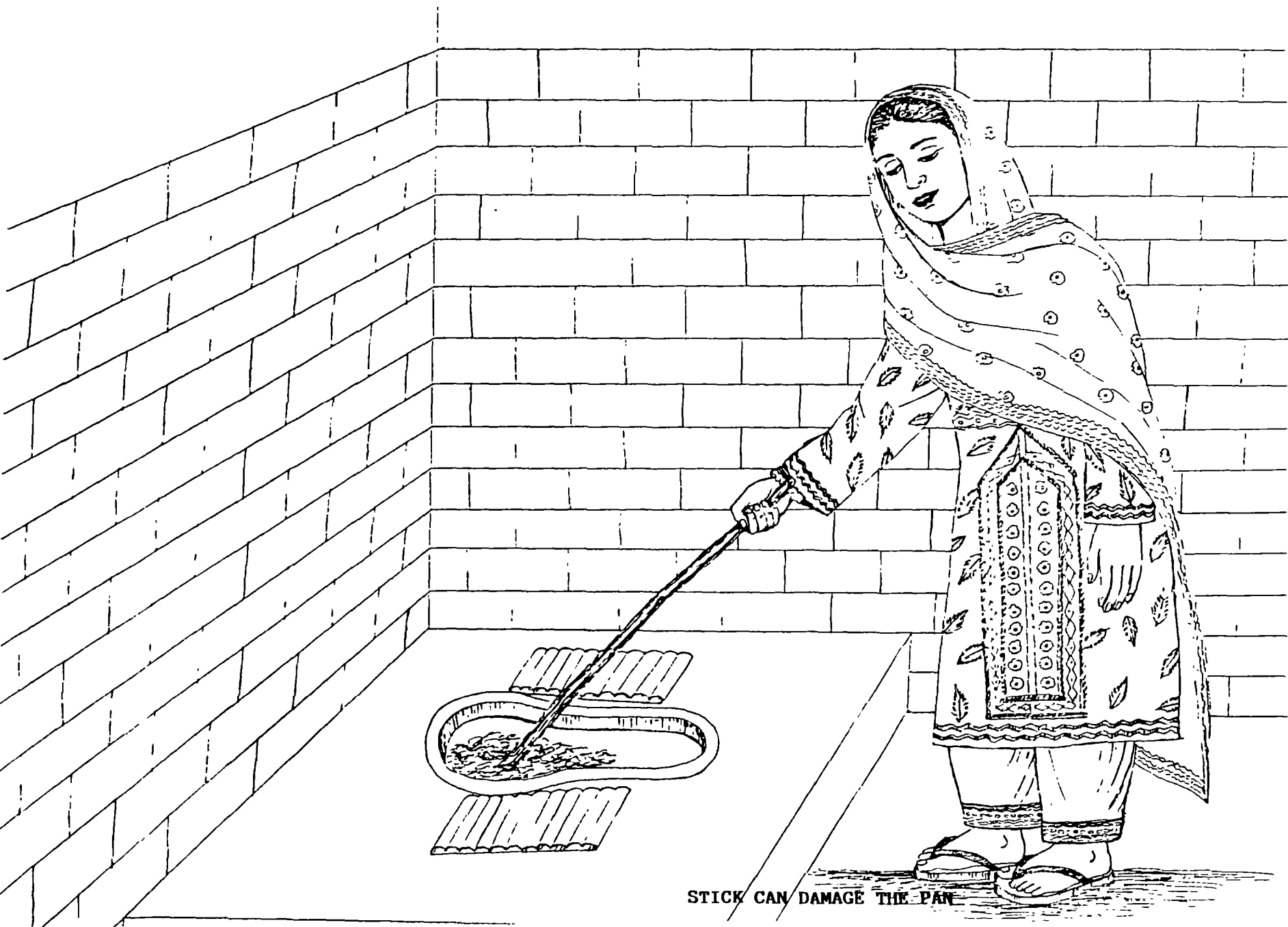




SOLIDS DAMAGE THE PAN AND CAUSE BLOCKAGES



GARBAGE CAN ALSO DAMAGE THE PIPES AND CAUSE BLOCKAGE



STICK CAN DAMAGE THE PAN

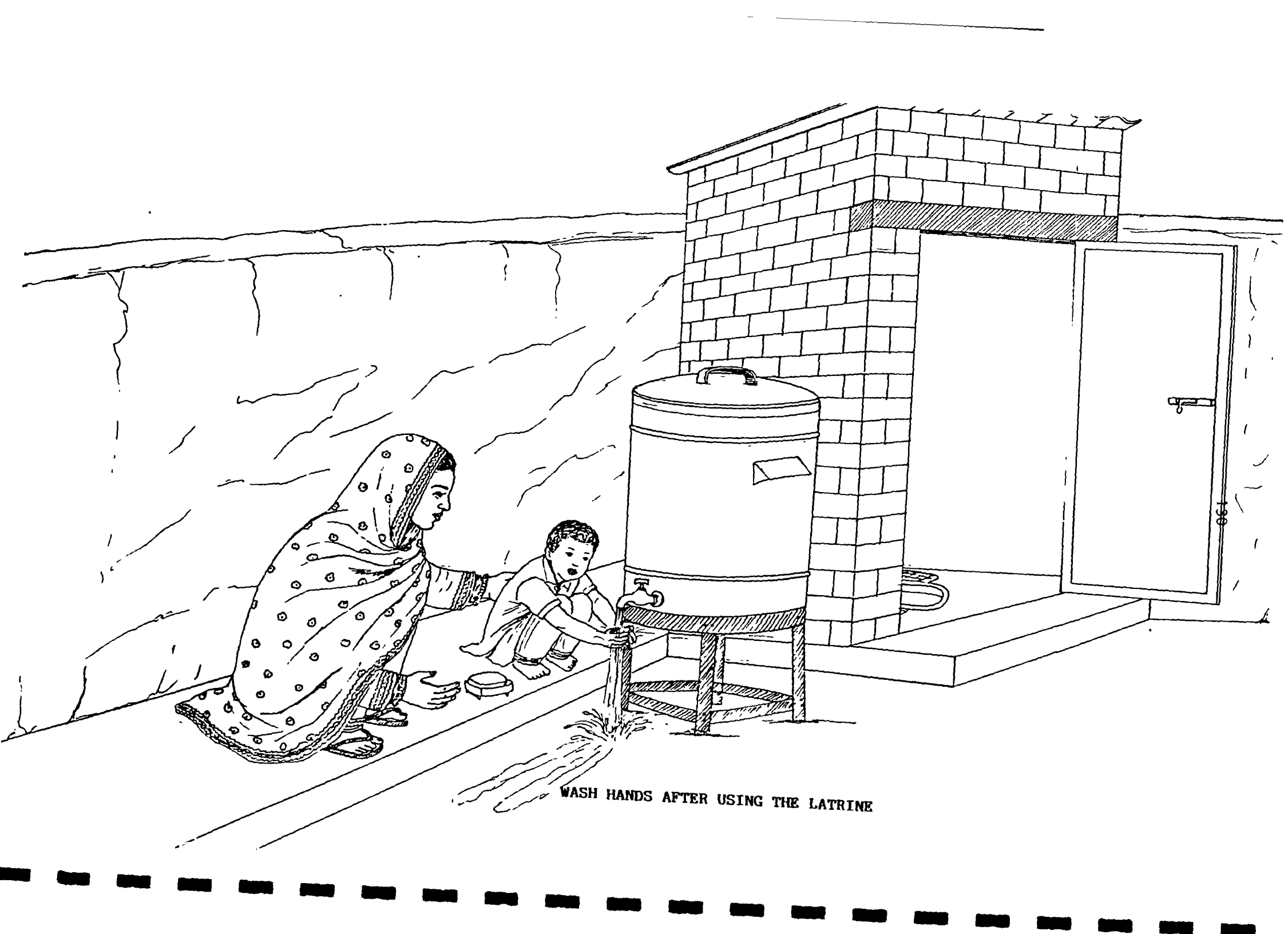
لوکل ریفرنس سنٹر  
(واسا)

دفتر شکایات

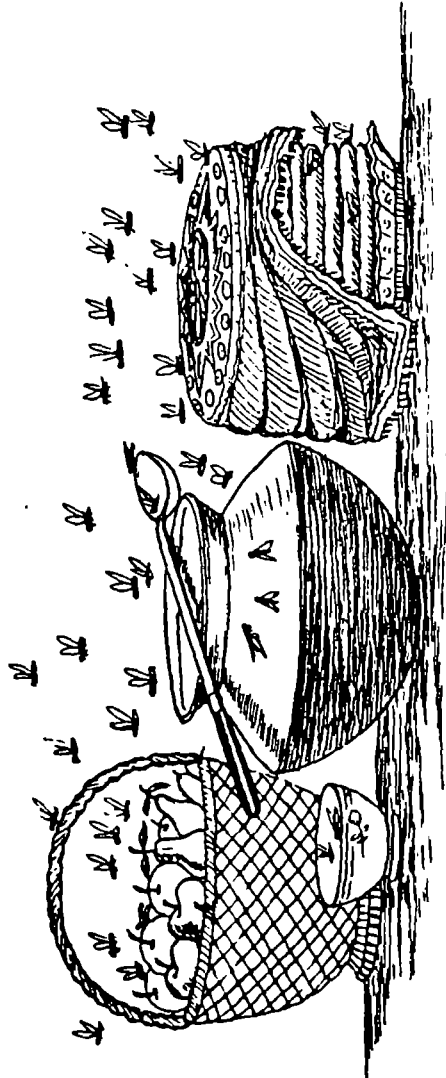
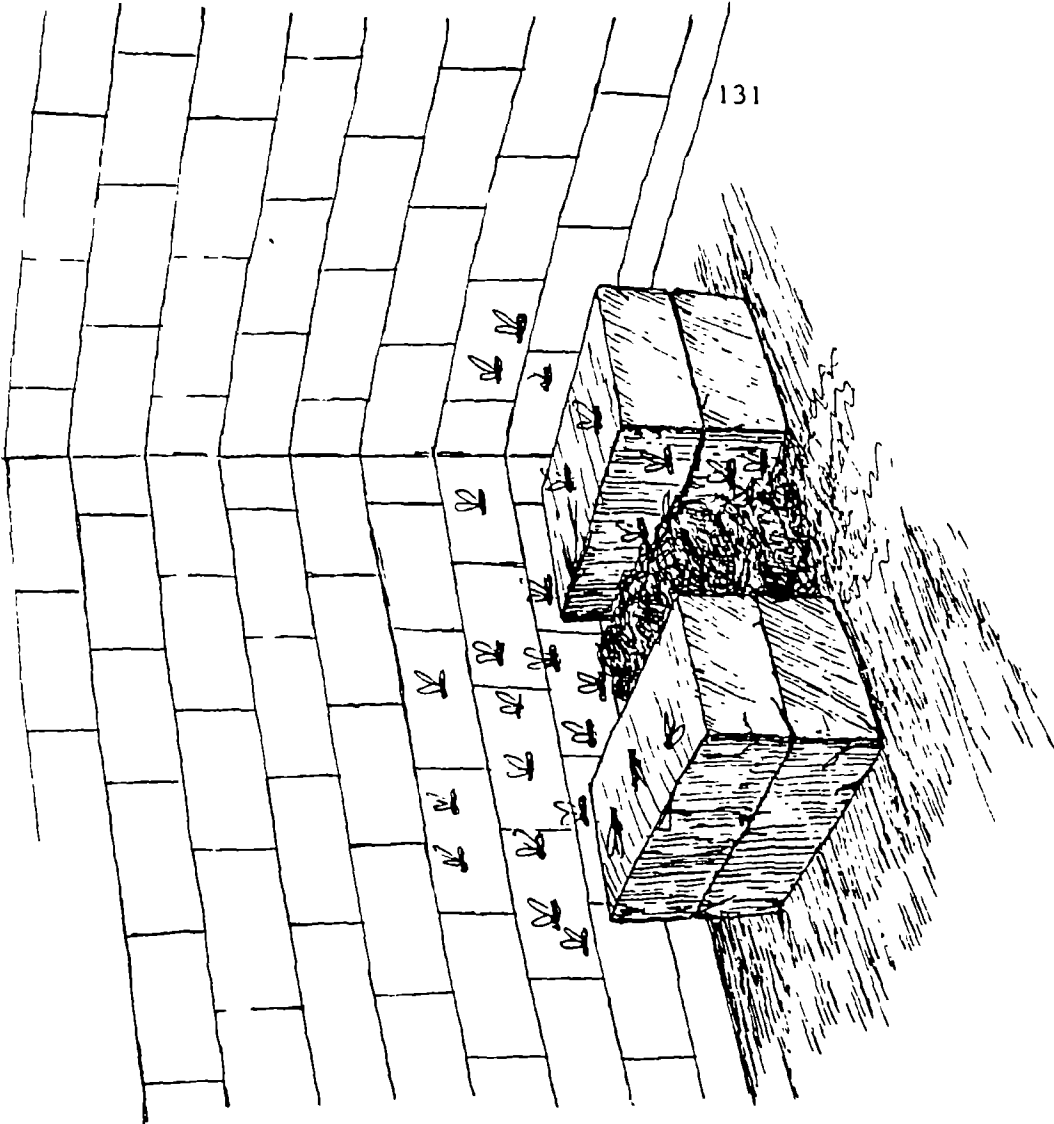
APPROACH LOCAL REFERENCE CENTRE IF SOMETHING IS WRONG



CLEAN THE CHILD WITH WATER



WASH HANDS AFTER USING THE LATRINE



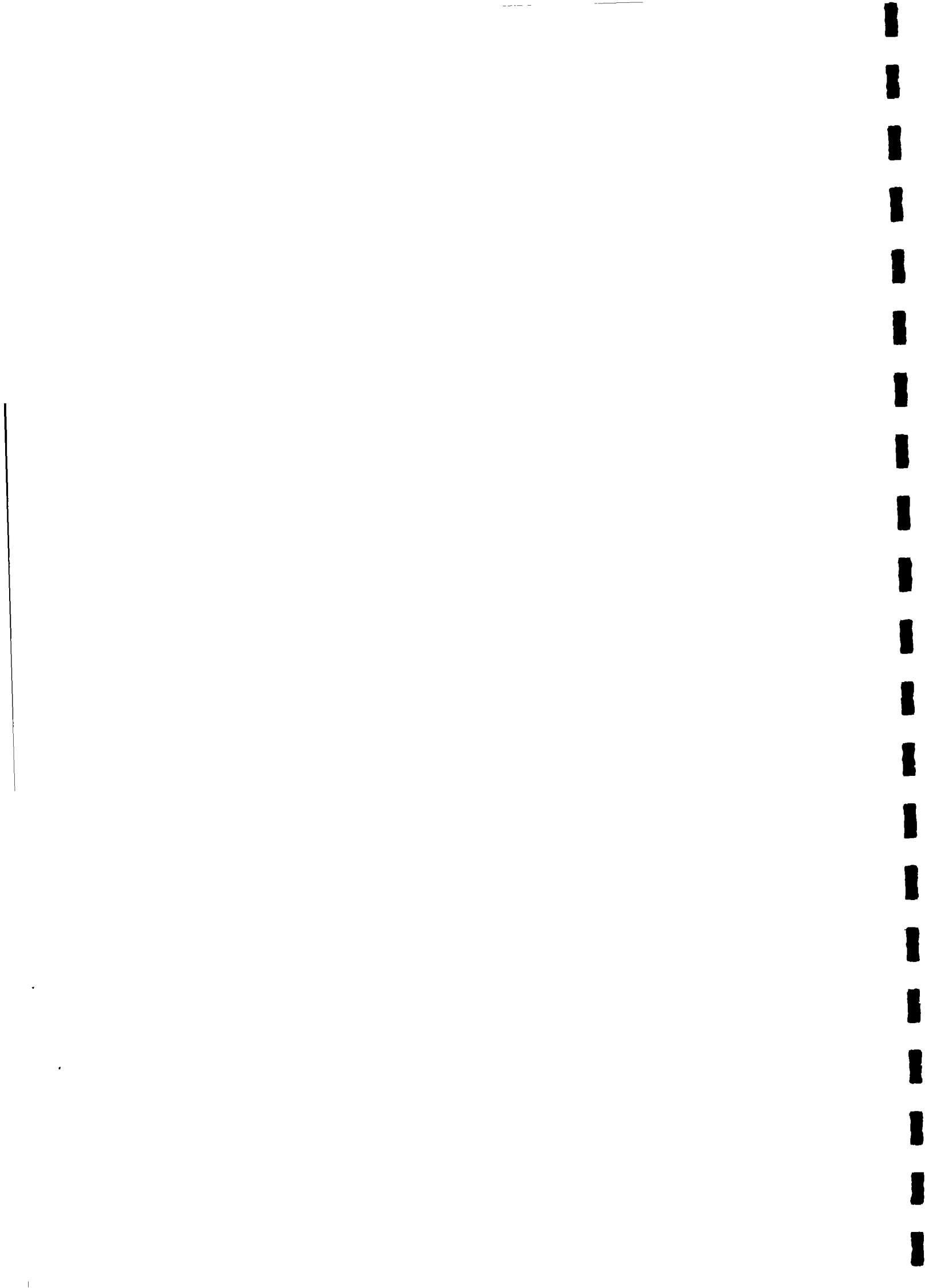
FLIES SPREADING DISEASES





APPENDIX C

UNIT RATES AND COST ESTIMATES



. POUR FLUSH PITS (10 USERS)

ITEM	DESCRIPTION	UNIT	RATE	LINED		UNLINED	
				QUANTITY	AMOUNT	QUANTITY	AMOUNT
					(Rs)		(Rs)
1	Earthwork in excavation including refilling and disposal of earth to a distance of up to 0.25 Km.	Cu.m	31	5.73	178	4.80	150
2	Extra over item 1 for disposal of earth and unserviceable material to a distance of up to 5 Km (if ordered by the Engineer).	m3/Km	Rate only				
3	Provide and lay first class burnt brick masonry in 1:6 cement sand mortar.						
a)	Pits and Junction Box	Cu.m	940	0.33	310	0.33	310
b)	Honeycomb brickwork	Cu.m	800	0.78	624	-	-
4	Precasting 1:2:4 reinforced cement concrete Cover Slabs and installing after curing:						
a)	Concrete	Cu.m	1275	0.16	204	0.16	204
b)	Reinforcement	Kg	18	7.62	137	7.62	137
5	Provide and lay 100 mm dia PVC pipe.	m	65	2.00	130	2.00	130
			TOTAL		1453		931
			SAY		1460		935

POUR FLUSH PITS (15 USERS)

ITEM	DESCRIPTION	UNIT	RATE	LINED		UNLINED	
				QUANTITY	AMOUNT	QUANTITY	AMOUNT
					(Rs)		(Rs)
1	Earthwork in excavation including refilling and disposal of earth to a distance of up to 0.25 Km.	Cu.m	31	7.72	240	6.31	196
2	Extra over item 1 for disposal of earth and unserviceable material to a distance of up to 5 Km (if ordered by the Engineer).	m <sup>3</sup> /Km	Rate only				
3	Provide and lay first class burnt brick masonry in 1:6 cement sand mortar.						
	a) Pits and Junction Box	Cu.m	940	0.38	357	0.38	357
	b) Honeycomb brickwork	Cu.m	800	1.00	800	-	-
4	Precasting 1:2:4 reinforced cement concrete Cover Slabs and installing after curing:						
	a) Concrete	Cu.m	1275	0.24	306	0.24	306
	b) Reinforcement	Kg	18	16.51	297	16.51	297
5	Provide and lay 100 mm dia PVC pipe.	m	65	2.00	130	2.00	130
				TOTAL	2130		1286
				SAY	2130		1290

## LATRINE (SUB-STRUCTURE)

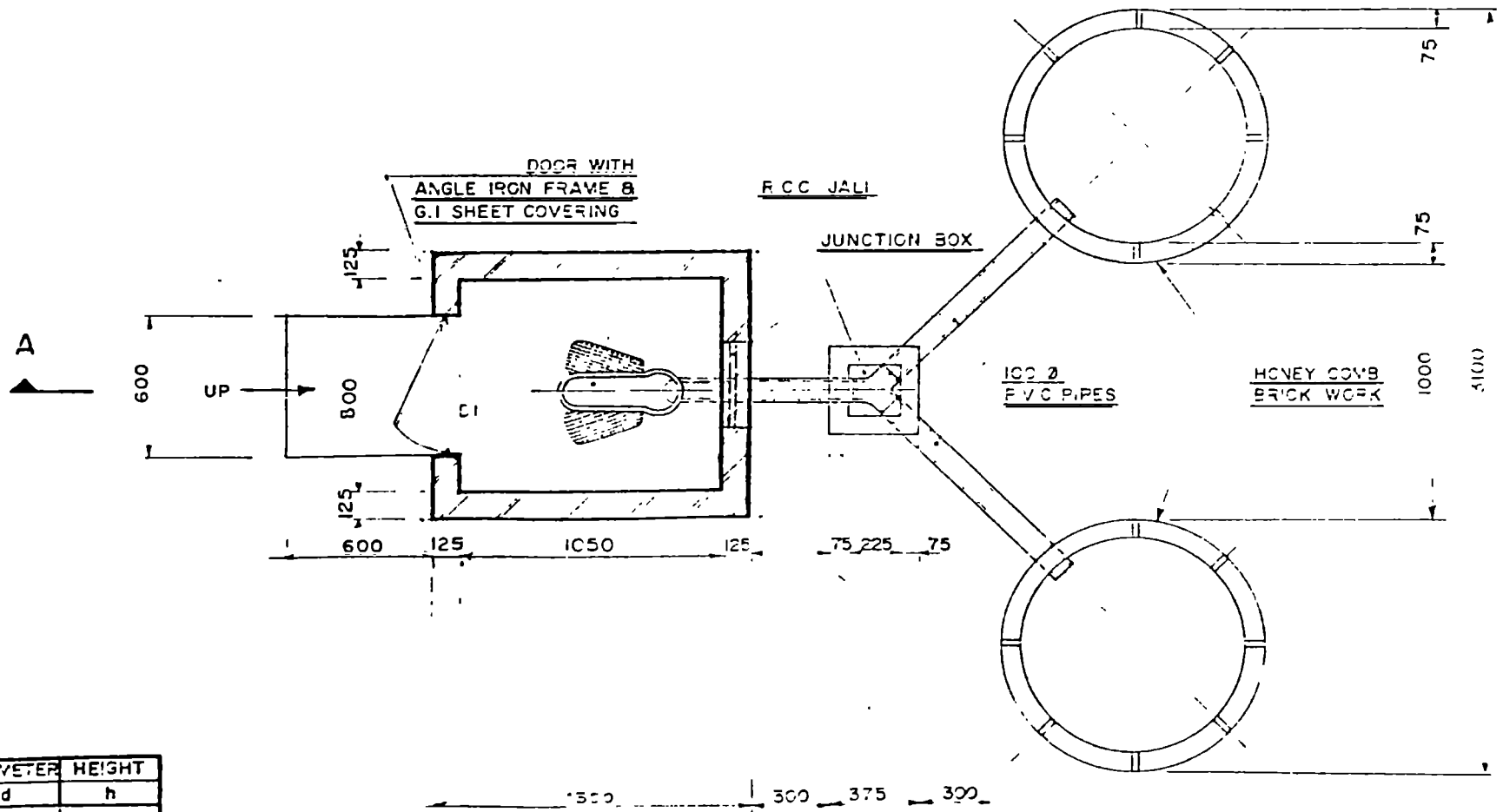
ITEM	DESCRIPTION	UNIT	RATE	QUANTITY	AMOUNT
					(Rs)
1	Earthwork in excavation including refilling and disposal of earth to a distance of up to 0.25 Km.	Cu.m	31	0.60	19
2	Provide and lay cement concrete 1:3:6 in foundation	Cu.m	1140	0.11	125
3	Provide and lay first class burnt brick masonry in 1:6 cement sand mortar.	Cu.m	1040	0.23	240
4	Installing squatting pan and trap with 20 mm water seal including sand filling as shown in the Drawings.	No	100	1.00	100
5	Provide and lay 100 mm dia PVC pipe.	m	65	2.00	130
6	Flooring: 22 mm thick cement concrete 1:2:4 over and including 75 mm thick cement concrete 1:6:12 including 3 mm thick top layer consisting of 4 parts of cement and 1 part of marble dust or coarse sand, and rendering the surface smooth.	Sq.m	150	0.84	126
7	Step: 25 mm thick cement concrete 1:2:4 over and including 150 mm thick brickwork and rendering the surface smooth.	Sq.m	185	0.36	67
8	Provide and fix ceramic footrests of size 250 x 125 x 20 mm as shown in the Drawings.	Pair	100	1.00	100
9	Supply of Pan and S-bend through WASA	No	125	1.00	125
			TOTAL		1032
			SAY		1035

## VIP LATRINE (10 USERS)

ITEM	DESCRIPTION	UNIT	RATE	QUANTITY	AMOUNT
					(Rs)
1	Earthwork in excavation including refilling and disposal of earth to a distance of up to 0.25 Km.	Cu.m	31	7.00 <sup>1</sup>	217
2	Extra over item 1 for disposal of earth to a distance of up to 5 Km (if ordered by the Engineer).	m <sup>3</sup> /Km	Rate Only		
3	Provide and lay first class burnt brick masonry in 1:6 cement sand mortar and 1:2:4 cement concrete cover slab for pits:				
	a) Solid brickwork	Cu.m	1040	0.17	177
	b) Concrete Cover slab	Cu.m	1275	0.20	255
	c) Reinforcement	Kg	18	14.00	252
4	Fixing squatting pan as shown on the Drawings.	No	100	1	100
5	Provide and fix 150 mm dia asbestos cement vent pipe end covered with wire gauze of openings not exceeding 1.5 x 1.5 mm.	m	90	2.90	361
6	Flooring: 22 mm thick cement concrete 1:2:4 over and including 75 mm thick cement concrete 1:6:12 including 3 mm thick top layer consisting of 4 parts of cement and 1 part of marble dust or coarse sand, and rendering the surface smooth.	Sq.m	150	0.48	72
7	Flooring: 22 mm thick cement concrete 1:2:4 over concrete slab including 3 mm thick top layer consisting of 4 parts of cement and 1 part of marble dust or coarse sand, and rendering the surface smooth.	Sq.m	53	0.36	19
8	Step - 25 mm thick cement concrete 1:2:4 over and including 150 mm thick brickwork and rendering the surface smooth.	Sq.m	180	0.36	65
9	Provide and fix ceramic footrests of size 250 x 125 x 20 mm as shown in the Drawings.	Pair	100	1	100
10	Supply of Pan	No	100	1	100
			TOTAL		1718
			SAY		1720

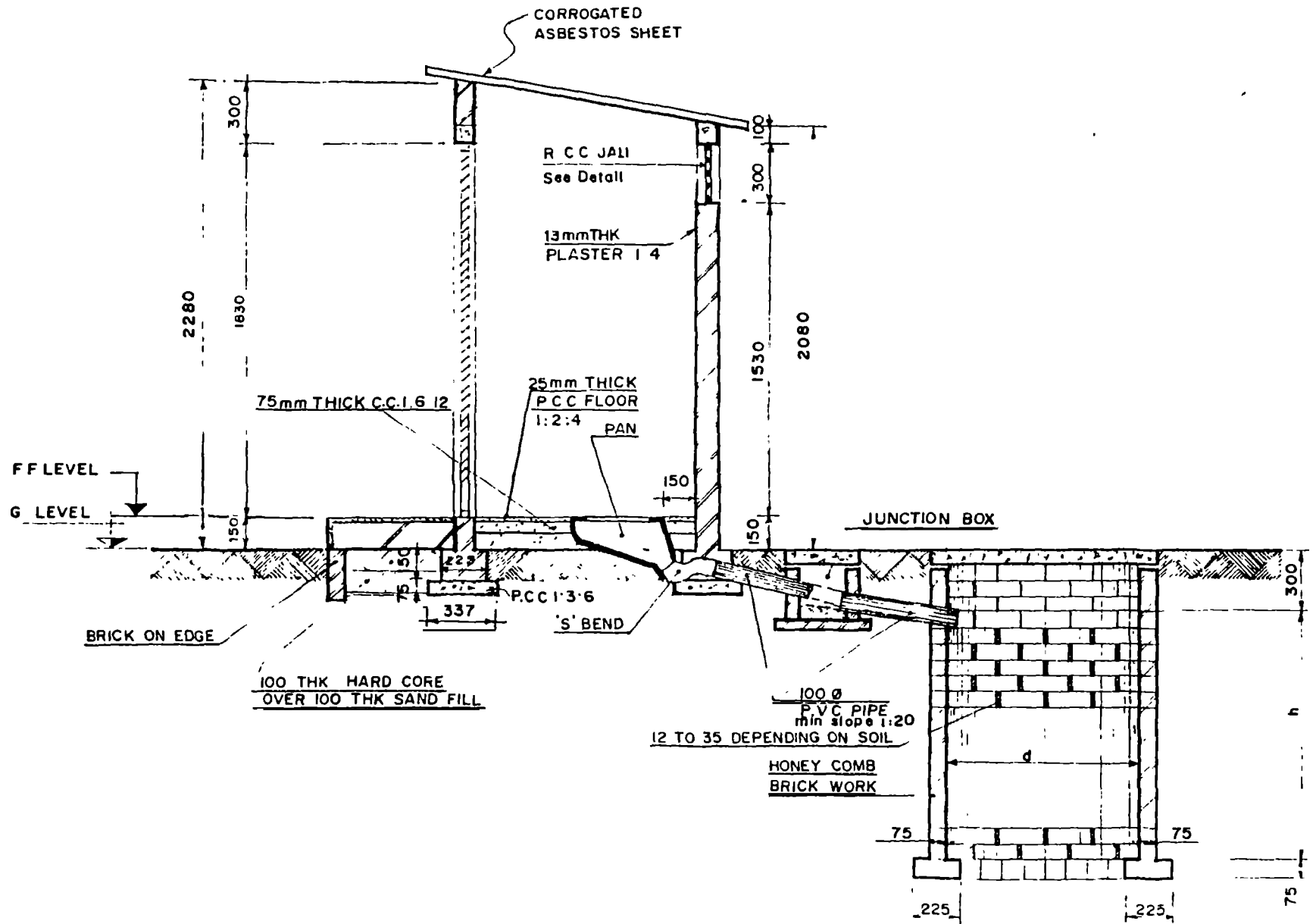
## NOTE:

- <sup>1</sup> For 15 user latrine this quantity becomes 9.73 m<sup>3</sup> and total cost therefore Rs 1802.



JSERS	DIAMETER	HEIGHT
	d	h
10	1100	1400
15	1250	1600

**PLAN**  
SCALE 1/20

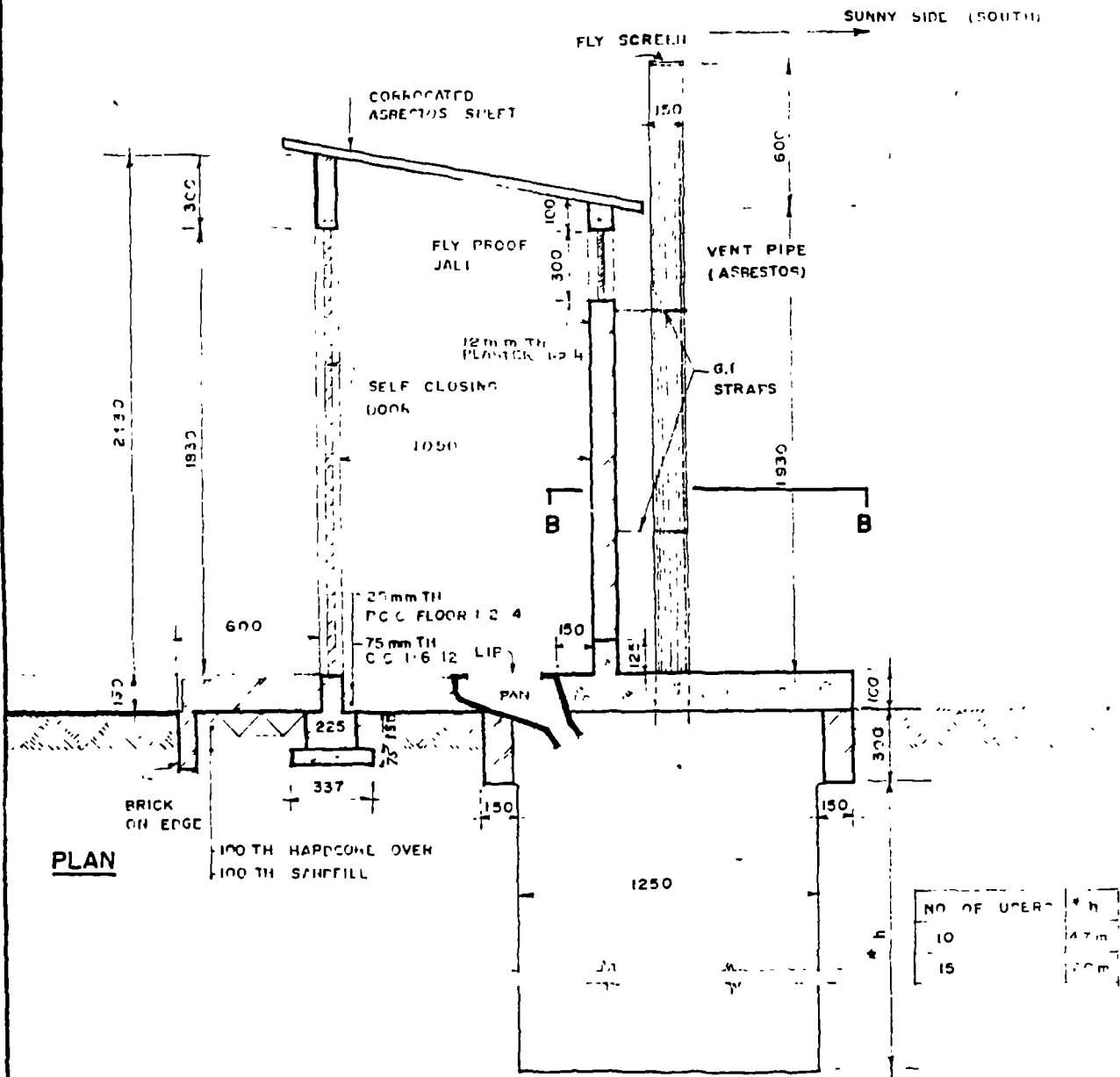


**SECTION A-A**

SCALE • 1/20



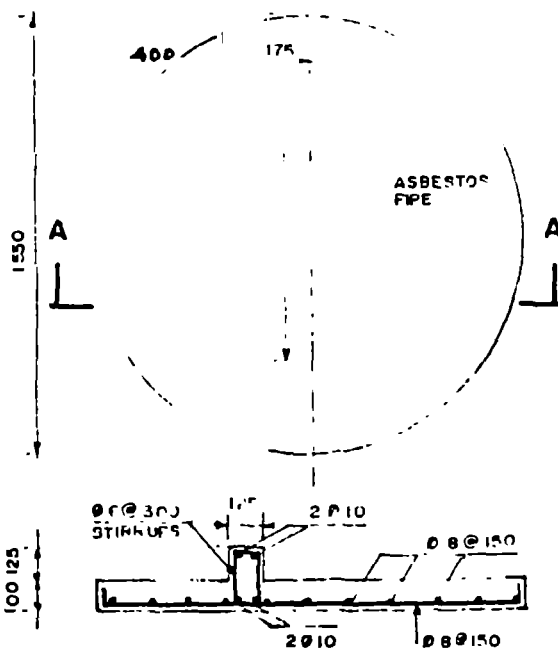
V. I. P. LATRINE



PLAN

NO. OF USER	* h
10	4.7 m
15	5.0 m

VIEW B-B

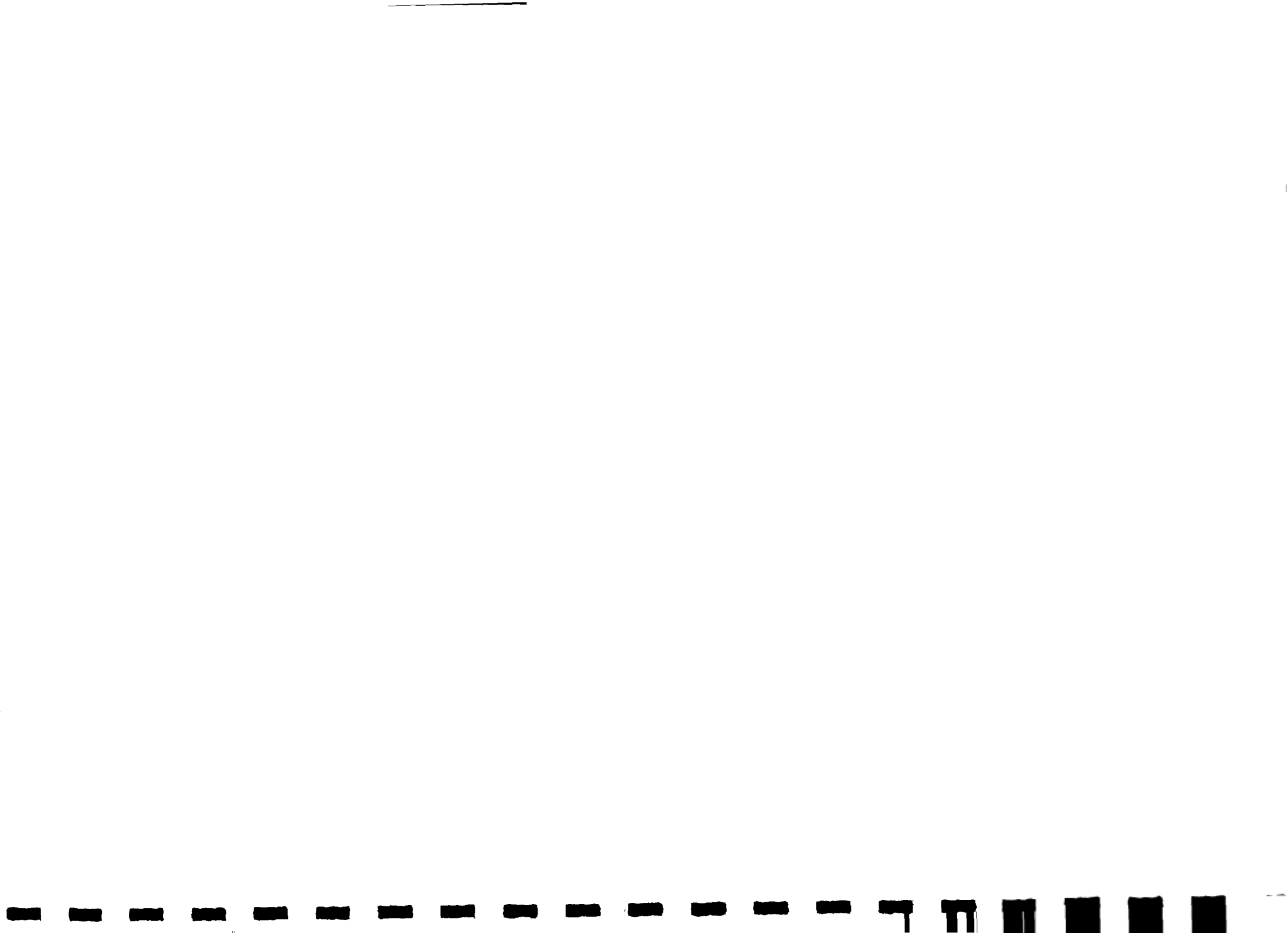


SECTION A-A



APPENDIX D

CBO PROFILES



## CBO PROFILE - PASHTUNABAD

Mohalla Ismail Colony  
 Name of CBO Anjuman-e-Falah Bebood new Ismail Colony  
 Date of Registration 1984

## Need for Formal Registration

To work in the community as a formal organization.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- To improve the living conditions of the community i.e. health and sanitation, education, water supply, better employment.
- Efforts to eradicate drug addiction.

## Success at Meeting Objectives

- The Tanzeem installed 300 meters of main water supply pipe with the help of community members.
- The Tanzeem provided tools to two plumbers to earn their livelihood.
- Municipal corporation has constructed roads and drains with the assistance of the of Tanzeem.
- The zakat department provided a sewing machine for widows.
- A body building club is operating under the Tanzeem.
- Received approval of 40 electricity poles from WAPDA.
- The Tanzeem exerted pressure on the councillor in the area to erect a wall around the graveyard.
- Tanjum has helped 7 orphans receive admission into schools.

Percentage of Community Supporting CBO 100%

Number of Committee Members? 200

Representing How Many Families? 500

Membership Fee -

How Much Per Member Per Year -

Bank Account Rs. 5000

Amount of Funds Managed Last Year Rs. 4000

Office and Furniture, Describe Single room, a table and 4 chairs.

Interest in Low Cost Sanitation, Describe Interested.

## CBO PROFILE - NEW BALUCH COLONY

Mohalla Kakar Colony  
 Name of CBO Anjuman-e-Islah Committee  
 Date of Registration July 27, 1983

## Need for Formal Registration

To attend the various training programmes for CBOs.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- To raise the standard of living including water, drains and electricity.
- Women's welfare.
- Children's welfare and education.

## Success at Meeting Objectives

- Collected Rs. 45000 from community members for the installation of a water pump.
- Since 1984, 40 children per year are given primary education through the Tanzeem.
- Installation of electricity in the area.
- Constructed drains.

Percentage of Community Supporting CBO 30%

Number of Committee Members?

Representing How Many Families? 1500

Membership Fee Rs. 10 (to join)

How Much Per Member Per Year Rs. 60/yr

Bank Account Rs. 20,000

Amount of Funds Managed Last Year Rs. 11,000

Office and Furniture, Describe Single mud room, steel cupboard, chairs.

Interest in Low Cost Sanitation, Describe Very interested.

## CBO PROFILE - NEW BALUCH COLONY

Mohalla Braich Colony  
 Name of CBO Youth welfare organization.  
 Date of Registration July 24, 1988

## Need for Formal Registration

To get financial aid from donor agencies.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- Children's welfare.
- Women's welfare.
- Education.

## Success at Meeting Objectives

- With a few exceptions, all the houses now have gas connection as a result of the CBOs work.
- Nearly all the area has electricity, again through the Tanzeem's assistance.
- The CBO itself is running a school teaching 45 primary students every year.
- 300 students have managed to graduate and enter government schools.
- The skill of making fruit crates has been introduced to 300 of the community's youth.
- Assisted in the vaccination of all the children in the community.
- Constructed new drains along the main street of community.

Percentage of Community Supporting CBO 45%

Number of Committee Members? 65

Representing How Many Families? 2000

Membership Fee Rs. 5

How Much Per Member Per Year -

Bank Account Rs. 5000

Amount of Funds Managed Last Year Rs. 3000

Office and Furniture, Describe Single room, a table, small cupboard, 12 chairs.

Interest in Low Cost Sanitation, Describe Very interested.

## CBO PROFILE - NEW BALUCH COLONY

Mohalla Muslim Itehad Colony  
 Name of CBO Anjuman-Islah Committee  
 Date of Registration September 24, 1988

## Need for Formal Registration

To procure regular financial aid from the Social Welfare Department.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- To work for basic facilities, such as water supply, electricity, gas and dispensary.
- Women's welfare.
- Children's welfare.

## Success at Meeting Objectives

- 10,000 square feet of land was allocated by the community for a water supply tank through the work of the anjuman.
- Received approval for an electricity transformer from WAPDA.
- Through the CBO's efforts, the health department has placed male and female doctors in the community.
- 6 sewing machines were distributed among poor families.

Percentage of Community Supporting CBO 80%

Number of Committee Members? 17

Representing How Many Families? 450

Membership Fee -

How Much Per Member Per Year -

Bank Account Rs. 500

Amount of Funds Managed Last Year -

Office and Furniture, Describe Single room, with a small yard, tables, chairs.

Interest in Low Cost Sanitation, Describe Very interested.



## CBO PROFILE - HUDDA

Mohalla Killi Baranzai  
Name of CBO Tanzeem-e-Ithad Nowjawamar Barangai  
Date of Registration 1988

## Need for Formal Registration

To fulfil the legal requirements.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- Water supply.
- Social welfare.
- Sports.

## Success at Meeting Objectives

- An embroidery centre has been established under the Tanzeem.
- Received a donation of 210 sets of primary books from the Education Department and distributed them among the children.
- Got sanctioned Rs. 150,000 from ODA to construct a pucca road.

Percentage of Community Supporting CBO 100%

Number of Committee Members? 287

Representing How Many Families? 700

Membership Fee Rs. 5

How Much Per Member Per Year 5 x 60 = 300 (only 60 members are paying regularly).

Bank Account Rs. 250

Amount of Funds Managed Last Year

Office and Furniture, Describe Single room, a table and two chairs.

Interest in Low Cost Sanitation, Describe Very interested.

## CBO PROFILE - DEBA

Mohalla Deba  
 Colony Deba  
 Name of CBO Tanzeem-e-Etehad now Jawaman, Killi Deba

Date of Registration 1981 - 1982

## Need for Formal Registration

To attract the formal attention of and deal with the government.

## Other Formal or Informal Organization in Area

None

## Objectives of CBO

- Liaise with post office, bank and public call office.
- Improve the existing sanitation systems of the community.

## Success at Meeting Objectives

- Tanzeem rented a shop for a dispensary and engaged a doctor who offered his services voluntarily. However, the dispensary could not maintain its service due to lack of financial help from community.
- Three streets now have street lights through the work of the CBO.

Percentage of Community Supporting CBO 60%

Number of Committee Members? 14

Representing How Many Families? 4000

## Membership Fee

How Much Per Member Per Year

## Bank Account

Amount of Funds Managed Last Year Rs. 5000

Office and Furniture, Describe Single room, without any furniture.

Interest in Low Cost Sanitation, Describe Interested.

## CBO PROFILE - SHAIKHAN

Mohalla Killi Shaikhan  
 Name of CBO Anjuman-e-Flah, Behbood Killi Shaikhan  
 Date of Registration 1982

## Need for Formal Registration

Councillor of the area was not taking interest in the development of Killi Shaikhan, the CBO therefore become formally registered.

## Other Formal or Informal Organization in Area

Two other informal organizations are working in the area which are not yet registered.

## Objectives of CBO

- Provide medical care.
- Adult education.
- Children's education.

## Success at Meeting Objectives

- By their efforts the health department has approved a dispensary.
- Every year the CBO distributes text books and uniforms to needy students.
- Distributed 12 sewing machines to widows.
- Rehabilitated two heroin addicts.

Percentage of Community Supporting CBO 70%

Number of Committee Members? 250

Representing How Many Families? 2150

Membership Fee -

How Much Per Member Per Year There are no fees after registration.

Bank Account Rs. 8000

Amount of Funds Managed Last Year Rs. 5000

Office and Furniture, Describe Single room, a table and 2 chairs.

Interest in Low Cost Sanitation, Describe Very interested.

## CBO PROFILE - SHAIKHAN

Mohalla Killi Shaikhan  
 Name of CBO Tanzeem Itehad now Jawanan Killi Shaikhan  
 Date of Registration Not registered.

## Need for Formal Registration

Not registered.

## Other Formal or Informal Organization in Area

Two organizations are working in the area:

- Anjuman Flah-bebood Undabad Killi Shaikhan - not registered.
- Anjuman Flah-bebood Raisari Load Killi Shaikhan - registered.

## Objectives of CBO

- Cleanliness.
- Education.
- Water supply, electricity and gas.

## Success at Meeting Objectives

- EhdI Trust has opened a free dispensary in the area and Tanzeem has provided the space.
- Previously the water supply pipe was of 1 inch diameter. The CBO lobbied for and received a 6" main.
- A tubewell belonging to municipal corporation was repaired by the Tanzeem.

Percentage of Community Supporting CBO 65%

Number of Committee Members? 12

Representing How Many Families? 250

Membership Fee -

How Much Per Member Per Year Rs. 25 Each household is requested to make contributions whenever there is a specific function or project.

Bank Account -

Amount of Funds Managed Last Year Rs. 1000

Office and Furniture, Describe -

Interest in Low Cost Sanitation, Describe -

APPENDIX E

TERMS OF REFERENCE  
FOR  
SANITATION CO-ORDINATOR



LOW-COST SANITATION  
IMPLEMENTATION OF THE MAIN PROGRAMME  
PROGRESS REPORT AT 18 MAY 1989

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## 2.1 INTRODUCTION

The low-cost Sanitation (LCS) Programme for Quetta City is being implemented for the Baluchistan Water and Sanitation Authority (BWASA) as part of the Quetta Sewerage and Sanitation Project (QS&SP). The feasibility study in 1984 concluded that low-cost on-site sanitation using double pit pour-flush (DPPF) household latrines was the appropriate intermediate solution for sanitation improvement in the peri-urban areas of Quetta City. The major objective of the Programme is to improve the sanitary conditions of households and the sanitary habits and personal hygiene of household members. Apart from technical issues, the need for effective community communication and household sanitation education were recognised as essential components of the Programme.

In 1987-88 a pilot project was implemented to test the use of DPPF latrines with the installation of 100 latrines free of charge. The project was implemented using contractors for latrine construction with subsequent sociological monitoring of acceptance and use of installed latrines. The principal conclusions of the pilot project were:

- the community acceptance of PF latrines, their acceptable use and the ability to discuss sanitation issues publically was established.
- while latrine use education was reasonably successful, general sanitation hygiene education was less successful, especially with male household members.
- constraints with latrine size, location and orientation were identified together with difficulties using contractors.
- latrine design, which included provision of superstructures, together with the use of contractors, proved excessively costly.
- difficulties were experienced with project implementation management.

## 2.2 PROGRAMME EVALUATION

An independent evaluation of the LCS Programme in October 1988 assessed pilot project findings and concluded by recommending a new implementation strategy based on the following two principal recommendations:

- That community based organisations (CBOs) were better suited for promoting and implementing the LCS Programme in their communities than government organisations such as BWASA with their limited ability and experience with socially orientated activities. Selected community members, with access to households could be trained and paid to work full-time for this purpose.





- That local mistryies could be trained by the Programme to construct latrines in a manner more effective and acceptable to the community than contractors.

The new strategy was adopted and since February 1989 is being implemented as the main Programme.

### 2.3 MAIN PROGRAMME

The new strategy outlined in reference provides the broad guidelines for implementing the main programme, while the detail of the Programme continues to be developed in the field. This is an integrated process involving interpretation of the new strategy, review of pilot plant phase material, experience with the generation of new and revised material and, where necessary, the generation of new material. The whole process is a creative one drawing on day-to-day field experience and in particular, that from communication with community groups.

A summary of the form of the main programme (Programme Implementation, May 1989, sections 4.1, 4.2, 4.3) is given in appendix ???. This outlines the concept of the Programme, its structure and the implementation procedure.

### 2.4 IMPLEMENTATION PROGRESS

The Programme is at a stage of partial establishment with most activities in the process of preparation but still to be completed. It was early recognised that programme credibility within the Quetta community required active latrine implementation as soon as practicable. Accordingly, those activities needed for early support of latrine implementatin have been given priority, while other activities have been purposefully delayed for later completion. To do this, emphasis has been placed on the establishment the first CBO agreement and reference centre in Kakar Colony. The delayed activities will be completed during the consolidation of this first reference centre, so that the complete implementation process and supporting materials will be available when establishment of the second CBO/RC combination in west Quetta is initiated.

The early stage of programme implementation is a creation phase for the first time implementation of a new sanitation model with practical interpretation and application of the new implementation concept.

#### 2.4.1 Operational Activities

##### RC/CBO establishment

The initial programme objectives are almost complete. A series of meetings with Kakar Colony CBO committee and community has resulted in a Memorandum of Understanding (copy appended) being agreed and signed in April. This understanding has a basis of social honesty and trust. As such it is a relatively delicate arrangement, especially during the first few months. It embodies the intended programme concept and so establishes the basis of future programme implementation. It identifies agreed policy



issues, implementation details and the responsibilities of all parties involved. Key policy issues are:

- the householder will provide the latrine superstructure,
- only family latrines will be provided by the programme; guest latrines are not included,
- a deposit of RS 200 will be paid by the householder on application for a latrine,
- BWASA will give the householder a loan covering cost of materials, transport and mistry fee less the amount of the deposit,
- monthly loan repayments will be Rs 35,
- mistrys will be self employed,
- the mistry and householder will negotiate a lump sum amount for the mistry's fee with the CBO/BWASA able to advise the householder on what is a fair price. The alternative view was that BWASA should fix the mistry's fee. This issue will be closely monitored during initial implementation.
- the Sanpro and Saned will be employed by the CBO but funded by the project.
- the householder will be responsible for the continuing maintenance of his latrine but with the guidance of CBO/BWASA staff.

Establishment of the first RC follows and although programmed for initial occupation 27 May, this is dependent on approval of proposed establishment procedures with associated budgets presently being considered by BWASA management (Appendix ??). A streamlined system of RC establishment has been proposed to meet the particular needs of the LCS programme, especially during this early establishment phase. If standard procedures must be followed, the programme will be delayed by several weeks and possibly two or more months with serious adverse effect in terms of programme credibility within the Quetta community, and particularly in Kakar Colony.

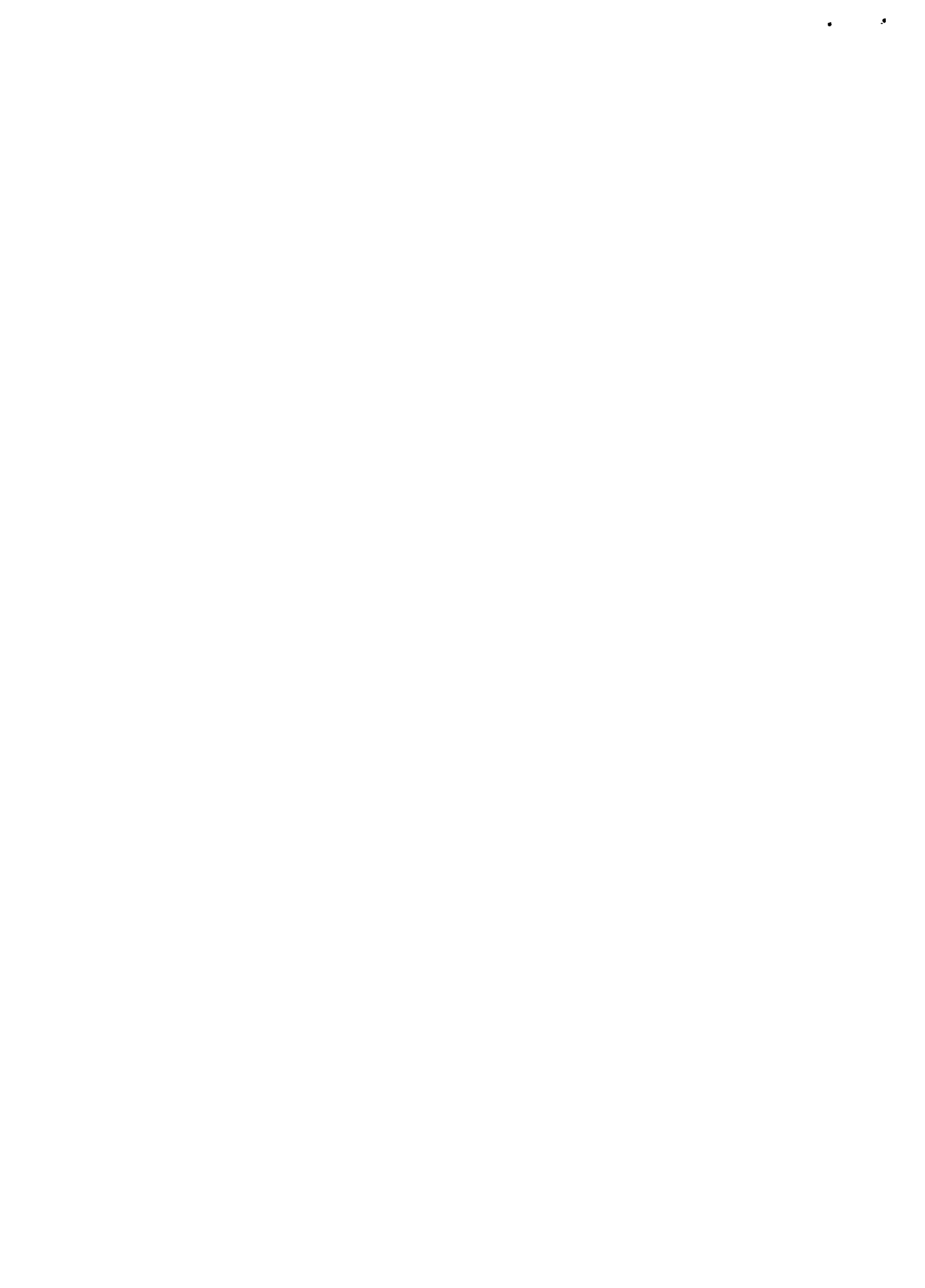
Operational establishment of the RC will continue through June/July. The RC will provide promotional, technical and administrative support to the CBOs in it's area and also serve as a base for the storage and distribution of latrine building materials.

#### Implementation methodology

Resolution of programme implementation methodology was a major component of discussions with Kakar CBO, starting from the householders application, through construction to completion and repayment. The methodology is now completed in draft but can not be proven untill put to the physical test of latrine implementation in the household. The sequence of implementation methodology is outlined in Appendix ?? (section 4.3).

The details of working procedures and forms required are presently being finalised. A particular requirement is the agreement between each householder and BWASA. A draft agreement (Appendix ??) is presently before BWASA management for approval.

#### Technology



The basic DPPF technology used in the pilot project study - latrine floor with UNICEF S-bend pan, junction box and two alternating soakage pits - has not changed. Design detail has however been reviewed, particularly in terms of sociological acceptability and structural design.

The latrine floor has been enlarged and the pan slightly offset for the convenience of mothers assisting children using the latrine. The structural design has been substantially simplified. Junction box construction, benching, finish and discharge sealing have been assessed with a view to better quality and more appropriate installation. Rough stone lining of soakage pits was tried and rejected because of the building time required. Similarly, the use of unlined pits was assessed and rejected because of the uncertainty of future pit stability. Reinforced concrete pit covers will be precast in two halves for handling and pit access convenience. It has also been demonstrated that convex ferrocement covers are both strong enough and economic.

The direct use of existing deep pits with a gooseneck type latrine pan has been rejected because of lack of confidence in the performance and structural integrity of this type of pan. It has not been possible to establish whether existing deep pits can be safely used in the long term with a direct pour flush liquid discharge and accordingly this option is not favoured, although this option is still open for longer term investigation. The placement of a S-bend pan in a new reinforced floor over existing deep pits with a side discharge to two new soakage pits has been designed and demonstrated to be technically acceptable. It has the significant cost advantage of using the existing superstructure, which will be used wherever site conditions allow.

Use of the VIP latrine will be avoided where possible. This is because the superstructure is an essential element for VIP latrine function but is not compatible with the principal of the householder providing the superstructure and would also substantially add to the cost of the latrine loan.

Work to complete this technology review is revision of latrine drawings, establish quantities of materials and finally confirm latrine costs using market place prices.

#### Information and education material

A review of the requirements for this material has been made for the five areas of programme implementation, community promotion of the programme, community/household motivation, household education and staff training. A tabulated summary of this and present status is appended together with some examples of updated material. This is an area requiring careful consideration of objectives and the nature of target groups when designing and preparing material. That prepared for the pilot project is of mixed value.

The order of priority given to each area has been determined by the sequence of need. Since there is a significant residual degree of household motivation following the pilot study, initial emphasis was placed on latrine use and care education. It has been necessary to prepare new material for this. First editions will be available early June in time for the intended start of latrine construction. Health



related education has been given a lower priority in view of programme objectives and the mostly illiterate target population. The second priority area is staff training for which some initial preparation is in hand.

Programme promotion is being purposefully held back at this stage but will be given increasing emphasis as programme delivery capacity increases through the course of the next twelve months. There will be an earlier need for community and household motivation material. There is still much work to be done in the preparation of information and education material.

#### Operational manuals

A range of manuals are required for the ongoing implementation and management of the programme. These are in the process of being drafted as the requirements of each section of the programme are identified. The general format adopted is to describe the need/purpose of the operation/position, the actions involved in doing the work, administrative considerations and any materials required. A list of the manuals required and an outline of the contents envisaged has been prepared.

#### Materials procurement

The establishment of a suitable system of procurement was considered a priority need to ensure there would be a ready supply of materials for initial latrine construction. Although actioned in good time, this work is only partially done with the concerned staff now shifted to another section. As this work is not proceeding presently, it is apparent that an interim arrangement of direct purchase of building materials by the project will be necessary.

The procurement system involves the purchase of building materials, delivery to RCs, their storage and redistribution to houses for latrine construction. A stores management system needs to be devised.

#### Finance and accounting

The overall finance management system has been described within the draft accounting manual prepared for BWASA. For sanitation, a banking arrangement is in the process of being established for the first reference centre. Passbooks and deposit forms are being designed and need to be prepared now. The accounting system will initially be a simple manual operation that may in time be computerised.

### 2.4.2 Programme Management

#### Community contacts

The programme is under pressure to perform to meet the existing demand for new latrines generated from pilot project activities but more importantly, to maintain programme credibility within the Quetta community. People are "asking when are they going to be able to have a new latrine". Others are saying they think the BWASA latrine programme





is a failure since "nothing has happened since the pilot project". Apart from the direct community activity with Kakar Colony, there has been updating dialogue with several of the more active CBOs. We have simply told them the truth; that the programme is being implemented and that we will "be with them" as soon as we have the resources to do so.

### Implementation

This has been dependent on the initial establishment rate of the Programme and the first LRC. Principal restrictions are completion of programme implementation details, preparation of programme manuals and training and education materials and the establishment of supporting administrative systems required. A further constraint will be the rate at which CBOs can be mobilised and staff trained.

Of necessity, ongoing programme implementation will be a gradual process, speeding up as programme details are proven, implementation experience gained and numbers of trained staff increase. The first LRC serving Kakar Colony will be functional by the end of June with initial latrine construction planned to commence early June. The mobilisation of other CBOs and the establishment of LRCs will continue through this year into mid to late 1990.

### Staff recruitment

Initial efforts have concentrated on building up the capacity of the BWASA head office team.

- Sanitation Coordinator
- Two senior sociologists; one male and one female
- One senior technologist
- Two female monitors
- One mistry trainer

Although all positions are presently filled, there is still a serious weakness in technical support to the team with much time lost while attempting to satisfactorily meet this need. The two positions of senior technologist and mistry trainer are additional to the orriginal staffing concept. They have been included on the basis of in-field reassessment.

The staffing requirement for RCs has also been increased with addition of a storeman and two labourers to handle building materials storage and distribution to householders.

Recruitment of social organisers for the first RC has proven to be difficult. A suitable male candidate has been found who needs to be appointed now, to enable the first RC to be activated. However, to do this, the RC establishment proposal presently before BWASA management (Appendix A3) needs approval.

A component of this proposal is the establishment of professional staff salaries compatible with their qualifications and experience and the levels of responsibility expected of them. Satisfied staff together with good performance will be essential for the success of RC operation, especially considering the field location and the circumstances of restricted supervision.



To meet the general needs of RC staff recruitment it is proposed that the placement of local advertisements for professional staff be placed now in anticipation of need for the second RC in say late August. The process will take in excess of two months.

A specific issue is the proposal of the Dutch Government that an ex[atriate sociologist be appointed to the LCS programme. This should have been introduced much sooner. It is considered a desirable appointment as it is a means of providing an independent guiding view of the household education and monitoring programme. To do this the person must be female and have work experience in an Islamic country. The appointment needs to be actioned with urgency. Proposed draft terms of reference are given in Appendix A5.

#### Staff training

This is firstly dependent on determination of programme implementation details. Material prepared prior to the start of the main programme is now being reviewed together with the preparation of new training material. Initially, much training will take place on-the-job. All levels of programme staff will be expected to become familiar with the construction and operation of DPPF latrines based on first hand in-field observation and for male staff, personal participation.

#### Field trips

Two field trips have been made to other sanitation programmes; one to the Baldia project in Karachi and the other to the Biad project in Kachhi District in Baluchistan. Useful firsthand experience of the nature of the general nature of sanitation issues and greater confidence in dealing with the problems of the Quetta programme were obtained.

#### Programme administration

As the sanitation programme more recently moved into active establishment there have been significant administrative delays experienced while seeking approvals for proposals from BWASA management. A contributing factor here has been the re-establishment of BWASA's top management during the same period.

A further important consideration is that the LCS programme is very different to the usual type of BWASA engineering activity. Unlike engineering programmes, performance at community level determines the needed rate of implementation progress rather than engineering administration. Programme promises at community level must be met if the LCS programme is to be accepted by Quetta communities and hence succeed. For these reasons the LCS programme is particularly sensitive to avoidable delays, particularly during this initial programme establishment period.

There is need for management and administrative flexibility to accommodate the new and demanding requirements of the LCS programme, including the adoption of more streamlined alternative administrative procedures, where appropriate.

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Project transport has been and continues to be a difficulty. The pressure for transport to be available to the programme for daily project work will increase as implementation activity expands. Direct programme control of vehicles allocated to the programme, in collaboration with the transport officer for vehicle running, servicing and driver management is desirable, with this extended to RC vehicles also in due course.

#### Programme timetable

An initial establishment timetable was prepared and later revised. These represented targets to be realised but in general, did not allow for the variety of unforeseen difficulties and staffing limitations that have arisen. Promises to the community, which have to be made, make it essential to minimise delays if continued programme acceptance and in turn progress, is to be maintained.

### 2.5 IMPLEMENTATION ISSUES

- (1) The proposal for the establishment and maintenance of reference centres needs to be urgently finalised to permit the Kakar and following Reference Centre to be made operational.
- (2) As part of (1) particular attention needs to be addressed to the method of recruitment and salaries for reference centre personnel taking full consideration of their community based working circumstances. Payments for CBO staff also need to be finalised.
- (3) Because the sanitation programme is primarily community driven there is need for implementation flexibility together with administrative adaptability. Recognition of this need is essential if the sanitation programme is to meet its implementation objectives.
- (4) The technical capacity of the head office sanitation team needs immediate improvement.
- (5) Early resolution on the engagement of a specialist sociologist is required.
- (6) The activity of other development organisations operating in Quetta need to be encouraged to coordinate their community based activities with those of BWASA, and for sanitation it must be established that there can be only one method of implementation within Quetta.



TERMS OF REFERENCE FOR SANITATION CO-ORDINATOR

Funded by the Governments of the Netherlands and Pakistan, the first phase of the Quetta Sewerage and Sanitation Project commenced in February 1987. It aims to serve over 240,000 inhabitants of Quetta through the Baluchistan Water and Sewerage Authority (WASA) by installing amongst others 14,000 low-cost on-site latrines by end 1993 in areas which cannot yet be served by sewer systems. These terms of reference refer to this low-cost sanitation component of the first phase.

A pilot project succeeded in installing one hundred latrines in Quetta between April 1987 and November 1988. It served to standardize technologies and provide considerable information on the methodology of introduction and installation of latrines.

A review of the pilot project findings and study of implementation strategies and cost recovery during November/December 1988 concluded that community-based organizations (CBOs) would be the principal entry points to the communities as means of marketing, management at the community level, supervision of construction by local masons, hygiene education and reinforcement of cost recovery and household-based maintenance. Reference centres (as WASA's field offices) would be established in each major low-income settlement staffed by WASA sociologists and technologists. They will be responsible for carrying out WASA's low-cost sanitation project in the field by coordinating, training and monitoring the community-based organizations and their staff. After training, staff of the CBOs will play a lead role in gaining applications for sanitation units, arranging for masons (trained at WASA's reference centres), monitoring and inspection and provision of continuing advice on operation and maintenance. Sanitation education is a key element in the program leading to long-term sustainability of the latrines on the basis of household operation and maintenance. Sanitation education will be provided through trained community-based organization staff (men and women).

In this light, the Sanitation Coordinator will work within the sanitation unit of WASA, be responsible to the Sewerage and Sanitation Project Manager and assisted/advised by the Low-cost Sanitation Expert. He will be responsible for the management and proper operation of the programme and its staff, which will comprise sociologists at central WASA, social organizers and technologists in each of seven reference centres along with support staff such as drivers and clerks.

In particular the sanitation coordinator will be responsible for:

- a) establishing a programme within WASA which will provide about 14,000 latrines by end 1993 to the low-income families of Quetta in a manner which will ensure their sustained service and continues maintenance over the ten to twenty year time horizon.
- b) complete survey of community-based organizations, prepare audio-visuals for use in the community, establish minimum standards for sanitation technologies, prepare protocols and instruments for field use such as agreements between WASA, the CBO's and households, mason's contracts, latrine warrantees, and procurement/inspection/certification documentation.

- c) detail field methodology based on the above principals and prepare a manual/guidelines booklet to provide full and consistent information to all participants in the project.
- d) establish on-the-job practical training programmes and courses for sanitation promoters and educators, and local masons and sociologists/social organizers in latrine construction and delivery.
- e) design, establish and implement the project's sanitation education programme to be implemented through the community-based organization's sanitation promoters and educator.
- f) detail all aspects of cost recovery including unit costs of construction, repayment formulae, mechanisms for collection, financial management/accounting, billing and action in case of default.
- g) establish and set into operation the seven reference centres by early 1990 having trained their staff, CBO personnel and local masons.
- h) operationalize and manage project implementation including setting up demonstration/training activities at the reference centres, selecting and strengthening the community-based organizations, their staff and masons, marketing sanitation, carrying out on-site inspection surveys, designing latrines appropriate to the sites, licensing trained masons, establishing mechanisms for approvals and contracting licensed masons, supervision of construction, certification of units, monitoring their use, setting up mechanisms for cost recovery, and implementing sanitation education within the community.
- i) set up project management systems including detailed targets, work timing, resources availability and requirements, baseline workplan, tracking work progress, tracking actual costs, comparing progress and costs to the baseline workplan, monitoring and evaluating performance.





