

PAZHAKULAM SOCIAL SERVICE SOCIETY - PASSS

REPORT ON THE PROJECT

**RURAL WATER SUPPLY PROGRAMME
THROUGH DEVELOPMENT OF NATURAL SPRINGS**

TECHNICAL
INTERNATIONAL REFERENCE CENTRE
FOR COMMUNITY WATER SUPPLY AND
SANITATION (IRC)

January 1993

Pazhakulam P.O., Adur - 691 527
Kerala State, India



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PAZHAKULAM SOCIAL SERVICE SOCIETY - PASSS

RURAL WATER SUPPLY PROGRAMME
THROUGH DEVELOPMENT OF NATURAL SPRINGS

FINAL REPORT

I. INTRODUCTION

This is the Final Report of the Programme on development of seventy seven natural springs as sources of safe drinking water, supported by the Dutch Government through the Co-ordinating office of the Kerala Socio- Economic Units, Trivandrum and executed by the Pazhakulam Social Service Society - PASSS, in the hilly and remote areas of the Pathanamthitta and Quilon districts of Kerala State during 1991-92.

I.1. The Background

This Programme of development of natural springs for supply of safe drinking water to remote and isolated communities is the first major attempt of its kind in Kerala. PASSS got the idea of developing natural springs as sources of safe drinking water (and as alternative/complementary to other sources like wells, piped water, etc.) in late 1980s through its interaction with the communities in the hilly and remote areas of the above districts. To materialise the idea, PASSS



approached the Socio-Economic Units (SEU) of the Kerala Water Authority, Trivandrum, in 1988 for support in developing a few natural springs as sources of safe drinking on experimental basis.

As both the SEU and PASSS were pre-occupied with many other activities at their hands the Programme could not be taken up for some time. Meanwhile, interest in the Programme was revived in 1989-90 and PASSS wrote to the Commissioner and Secretary (Irrigation and Water Supply) of the Government of Kerala, on the need for, and potential of, development of natural springs for drinking water. He had requested the SEU to communicate with the Royal Netherlands Embassy for financial support to the Programme. The Royal Netherlands Embassy agreed to support the Programme, through the SEU, and activities in the Programme were initiated from the middle of 1991.

I.2. Contents of the Report

This Report, in addition to this Introductory part, is divided into the following sections.

Section II tries to find out relevance of this attempt of development of natural springs in the context of the situation in Kerala. Section III presents the Programme, listing out the objectives, methods of implementation and processes, activities, costs, number of users, changes/ innovations/improvements attempted, and follow-up activities planned and completed. This is followed by self-evaluation of the Programme by PASSS, in section IV, presenting

the lessons learned, challenges to be met to sustain the activities, and suggestions for improvement. The Report concludes with section V, after summarising the Programme and raising the question on how the experiment can be diffused among large number of needy communities.

II. RELEVANCE OF THE EXPERIMENT IN KERALA CONTEXT

In Kerala, even with its well-known advances made in areas of public health and education, it is estimated that 40 percent of the urban and 60 percent of the rural population do not have adequate supply of safe drinking water. Importance of providing safe drinking water is well-known and, therefore, need no detailed explanation.

I.1. Difficulties/Constraints in Providing Safe Drinking Water

Even though the importance of providing clean water, and the hazards caused by the absence of providing the same, are well-known, many areas are experiencing difficulties/constraints in providing clean water to the needy population. Main difficulties/constraints in providing safe drinking water in Kerala may be noted in the following sub-sections.

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II.1.1. Scarcity of Water

General scarcity of water due to natural reasons - drought caused by lack of rains or wide fluctuation in rainfall, in relation to the requirements of the population, is frequently observed in many parts of Kerala. This can be overcome to a large extent, by introducing more locally appropriate/environmentally sound and sustainable methods of conservation and use of water.

II.1.2. Pollution of Drinking Water Sources

Pollution of drinking water sources make water unsafe for drinking purposes in many parts of Kerala, even when/where water is available. Major sources of pollution are industrial and farm wastes, indiscriminate use of pesticides and chemicals in farms, unhygienic methods handling, storage and use of water, etc. These can be overcome, to a large extent, by creating awareness among the public and authorities, and ensuring that they take appropriate steps and protective measures.

II.1.3. Financial/Technological Constraints

Lack of financial resources is one of the main constraints in distribution of safe drinking water to needy areas/population in Kerala. However, it can be argued that financial constraints can be overcome to a large extent by developing and disseminating efficient and low cost technologies in water supply, especially in rural areas.

II.1.4. People's Participation

Participation of the community, at all stages, is very much essential not only for improving effective use and maintenance of the drinking water programmes but also for ensuring sustainability of the programmes in the long run. However, the technologies and approaches adopted in water supply programmes of the Governmental agencies do not have adequate scope for ensuring active participation of people. Also, the top-down approaches followed by the Governmental agencies can adversely influence the effectiveness and sustainability of the programmes.

One of the main reasons preventing participation of people in drinking water programmes of the Governmental agencies are the excessive involvement and control exercised by the bureaucrats/technologists/politicians at all stages and levels of the programmes.

The situation is gradually changing, hopefully, for the better, in many developing countries with the realisation that people's participation is essential in making the drinking water programmes successful and sustainable. This in turn leads to introduction of not only measures/approaches for initiating/maintaining active participation of the user-communities in planning, implementation, monitoring and management, but also in developing lowcost/improved/appropriate technologies in water supply programmes, without sacrificing the managerial and technical effectiveness of the programmes.

I.2. Drinking Water Availability/Supply in Kerala

Major sources of drinking water in Kerala are discussed below.

I.2.1. Piped Water

In Kerala, only about 65 percent of the urban and 35 percent of the rural population have access to piped water. However, wide seasonal fluctuations in availability of water in the pipes are observed in many parts of Kerala. Therefore, users of piped water in those areas also maintain/use complementary/alternate sources like open wells, ponds etc, for ensuring uninterrupted and continuous supply of drinking water throughout the year.

Another important constraint in increasing coverage of area/people in piped water supply is the topography of Kerala. The undulated topography makes supply of water through pipes difficult and costly. Remote and hilly areas are, therefore, often left out on cost considerations. Also, the density of population in the hilly areas are lowest compared to other parts of Kerala, resulting greater per capita expenditure in supply of piped water. (However, even in these hilly/remote areas there are pockets, especially of the socially and economically weaker sections, with high density of population).

II.2.2. Bore-Wells

Introduction of borewells for tapping ground water for drinking is a new development in Kerala. However, there are widespread doubts/complaints and debates on the long term viability and effectiveness of borewells in Kerala. Some of the important points raised by the sceptics are:

- Wells do not give adequate quantity of water, especially in summer months.
- Quality of water not upto the standard in many wells.
- Bore wells lead to unregulated, indiscriminate and unplanned exploitation of ground water through, without ensuring proper recharging.
- There is no system of proper/timely management and maintenance of the borewells; etc.

Therefore, long term feasibility and effectiveness of borewells as safe and sustainable sources of drinking water in Kerala is yet to be established.

I.2.3. Traditional Sources:

'Traditional' sources of drinking water - open dug out wells, ponds and springs - are still the most important in Kerala in terms of number of users and coverage of area.

Of the traditional sources, openwells are the most important, in terms of coverage of area/population, in Kerala. It can stated that Kerala has one of the highest densities in number of open wells in the world, with high density of population and widespread use of well water in the rural areas.

More than half the rural population of Kerala depend on wells as their only source of drinking water. Most of the wells in Kerala are owned/operated by individual families. Common wells, used/managed by more than 5 families, are rare. It is observed that most of these wells dry up, fully or partially, in summer months of January to May, especially in the hilly areas, resulting in acute shortage of water.

Pollution of well water is also observed widely. Main reasons for pollution are - use of chemicals in farming, allowing flow of wastes and waste-water into the wells, absence of proper sanitation facilities in the area, location of latrines close to the wells, unhygienic methods of drawing, handling, storage and use of water. Quality of drinking water in the wells can be improved through proper awareness creation and protective measures.

Also, activities related to development and maintenance of the wells like locating the well sites, digging, testing of water quality, protection, periodical cleaning, water treatment etc. are left completely to the user families, who act mostly on individual preferences/choices based on traditional knowledge and experience acquired. These families often lack guidance on improved technologies and practices on essential aspects of development and management of the wells. Therefore, there is need for initiating/implementing activities aimed at:

- protecting the wells from pollution;
- creating awareness among the users/public for proper management of the wells and use of well water; and

- making available services of experts and facilities in villages to help locating, digging, testing and treating/improving water quality, protecting and maintaining the wells.

Activities presented above can be facilitated, first of all, by organising an extensive and scientific study on wells in Kerala. It should cover not only the prevailing technical and socio-economic factors affecting development, use and maintenance of the wells, but also assess the potential of improving wells as viable sources to meet the increasing demand in future.

Ponds are part of the Kerala landscape. Ponds were widely used as sources of water for drinking and other domestic purposes, in the past, in many parts of Kerala. Ponds helped maintain the ecological balance - as reservoirs of surplus (run-off) rain water and collection points of underground springs, thereby recharging ground water levels. Ponds also were sources of irrigation and home for fresh water lives.

However, ponds are getting steadily destroyed in Kerala - filled up for farming, commercial and residential purposes, by both private and public agencies, ignoring the important roles it could play. Also, many of the existing ponds are left uncleaned, in most cases used as garbage pits, allowing slow and sure death. Thus, importance of ponds as sources of clean water gets declined steadily in Kerala.

Natural springs are abundant in Kerala, especially in the hilly areas. While most of them are perennial (of course with reduced flow of water in summer), some dry up completely in the summer months.

People use water from these undeveloped springs for many domestic purposes - drinking, washing clothes, bathing, cleaning etc. In many remote/isolated communities in the hilly areas, springs are the only sources of drinking water.

Even though springs are important as (and in some areas the only) sources of drinking water, there were no attempts on the part of the Government and Non-Government Agencies to develop them as viable sources of drinking water. And the Programme under Report is the first major attempt to do so.

Development of natural springs as sources of drinking water is important in Kerala for the following reasons:

- Cost of supply of water is very low. Per capita costs of developing and maintaining the springs are low, compared to even wells. Labour/materials required for developing it are locally available. Supply of water from the springs does not require any electrical energy.
- Participation of the user-community can be ensured in planning, designing, developing and maintaining water supply from the springs, as the springs are located closer to the communities and the technology/methods used are less sophisticated.
- Springs are found abundantly in the hilly and remote areas, where it is difficult to introduce piped water supply system in the foreseeable future.
- Also, potential users of the developed springs will often be the remote and isolated communities. Development of springs can initiate and improve their participation in other development activities.

It is surprising why there were no major attempts by development agencies for developing the springs as sources of clean drinking water so far. Main reasons for this lack of interest were the following:

- Most of the needy communities (potential users) of the springs were in the remote and isolated areas, left out of the mainstream of development activities/areas.
- Technology/Methods of developing the springs were unknown. Also not sure of the viability and results. Agencies are generally reluctant to undertake activities which are not sure to succeed.
- Support/encouragement/guidance for undertaking the activity were also not forthcoming either from within and outside the country. Partners often required guaranteed success.

Thus, for wider diffusion of the technologies/methods of development of natural springs, the following general conditions are necessary:

- Participation of the user-communities. This would involve interaction of these communities with development agencies and willingness of both to work together.
- Diffusion of the technologies/methods in effective/proper forms among the development agencies.
- Interaction with the funding/supporting organisations and drawing their attention to the need and scope for supporting the programme.
- Technical and financial back-up support of other agencies
 - Government and/or Non-Government, Native and/or Foreign.

III. ACHIEVEMENTS OF THE NATURAL SPRINGS DEVELOPMENT PROGRAMME

III.1.Objectives of the Programme

Objectives of the present programme were the following:

- to overcome scarcity of drinking water in dry months (January to June) in isolated/remote/hilly regions of Kerala through development of the perennial natural springs as alternate/complementary, low cost and environmentally sound sources of safe drinking water;
- to improve health and sanitation standards of the participant families with increased availability of water and health education;
- to reduce workload of family members, especially women, in fetching water from long distances by developing the nearby springs;
- to ensure participation of user-families at all stages of the programme and enable them shoulder the responsibility of managing and maintaining the developed springs;
- to learn from the experience, and develop the methods/`technology` of development of natural springs, so as to help wider diffusion of the same among other needy areas and communities, by NGOs and Governmental Agencies;

and

- to plan/programmes to reach more and more needy areas/communities, on the basis of lessons learnt, level of `success` and participation of the user communities.

The Programme is reviewed in the following pages of this section, in the light of the objectives presented above.

III.2. Methods of Implementation and Processes Involved

The following methods were adopted, and processes involved, in development of the seventy seven natural springs under review.

(Schedule of activities completed are given in appendix.6.)

- a) Preliminary identification of the springs in collaboration with local groups, Panchayats and local offices of the Rural Development and Agricultural Departments of the Government of Kerala.
- b) Potential study of the springs, initially by the Geological Investigation Team of the Action for Food Production (AFPRO), Coimbatore, and later by the technical team of PASSS itself.
- c) Appointment of field level workers and establishment of rapport with local groups, local offices of the Government etc.
- d) Organisation of the potential users/participants for preliminary awareness on the Programme including ways of sharing the costs.
- e) Final selection of the springs on the basis of feasibility study, participation of the potential users, local bodies and consent of the owner of the spring site (local bodies and individuals).
- f) Finalisation of the designs on development of the springs and water distribution system by the technical team on the basis of discussion with the users.
- g) Formation of water committees from among the potential users, for ensure/facilitate active participation of the potential users at all stages of development of the springs and also for future/continuous management/maintenance of the springs after development.
- h) Completion of construction (civil) works relating to development of the springs - clearing and deepening of the springs source (site), construction of protection wall, etc. in collaboration with the potential users. Contribution of the community of users included mostly own labour and locally available materials.
- i) Identification and installation of the water drawing systems - handpump, tap (for gravity flow), bucket and pulley etc. Generally, drawing of water using bucket and pulley is discouraged to prevent pollution of the water.
- j) Training/Awareness creation among the beneficiaries on aspects like proper use, management and maintenance of the springs, conservation and proper storage/use of water etc.

- k) Integration of the group of users with other activities of the Project Implementing Organisation (PASSS) for sustaining the 'group dynamics' in socio-economic programmes.
- l) Follow up - awareness classes by the team of social/field workers of PASSS, with the help of the Water Committees of the users.

Methods of implementation and processes involved presented above, are reviewed along with the original objectives presented earlier, in the following sub-sections. (Please see photographs attached as appendix. 8...).

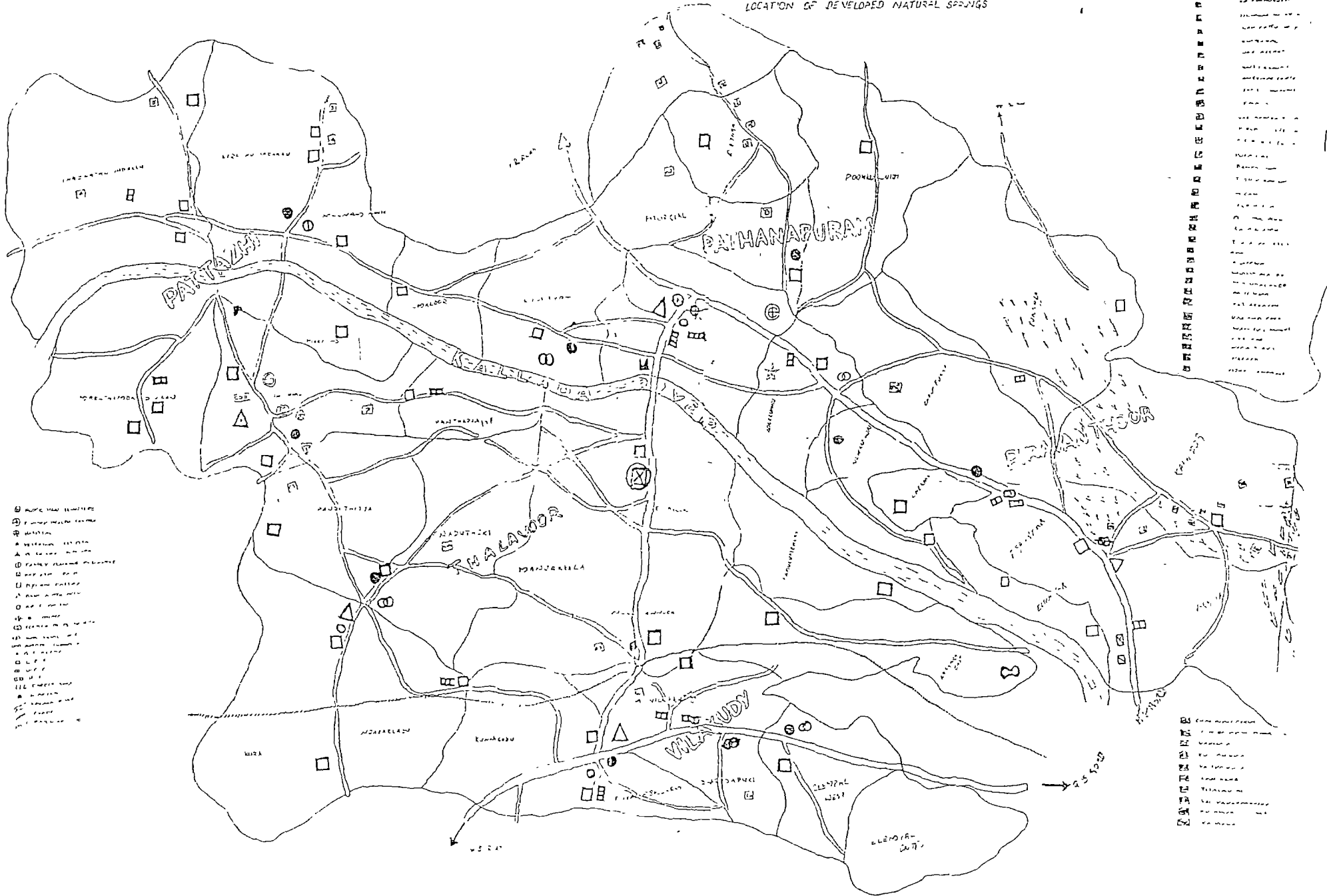
III.2.1. Preliminary Identification of the Springs

PASSS has been approached by individuals, groups, representatives of local bodies (panchayats, cooperatives etc.), regularly, requesting its involvement in improving water supply in the remote/hilly/isolated communities of Pathanamthitta and Quilon districts in Kerala. Because, PASSS has been actively involved in many other development activities for the socially and economically weaker sections at the village/community level in the districts. (Please refer to the summary of activities of PASSS presented as appendix .1...).

Thus, it was possible for PASSS to get the required cooperation of the individuals, groups, representatives of local bodies and local offices of the Government departments of Rural Development and Agriculture in preparing a preliminary list of springs. Often local bodies like Panchayats suggested/helped location of the springs officially through passing resolutions to the effect. Simultaneously,

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LOCATION OF DEVELOPED NATURAL SPRINGS



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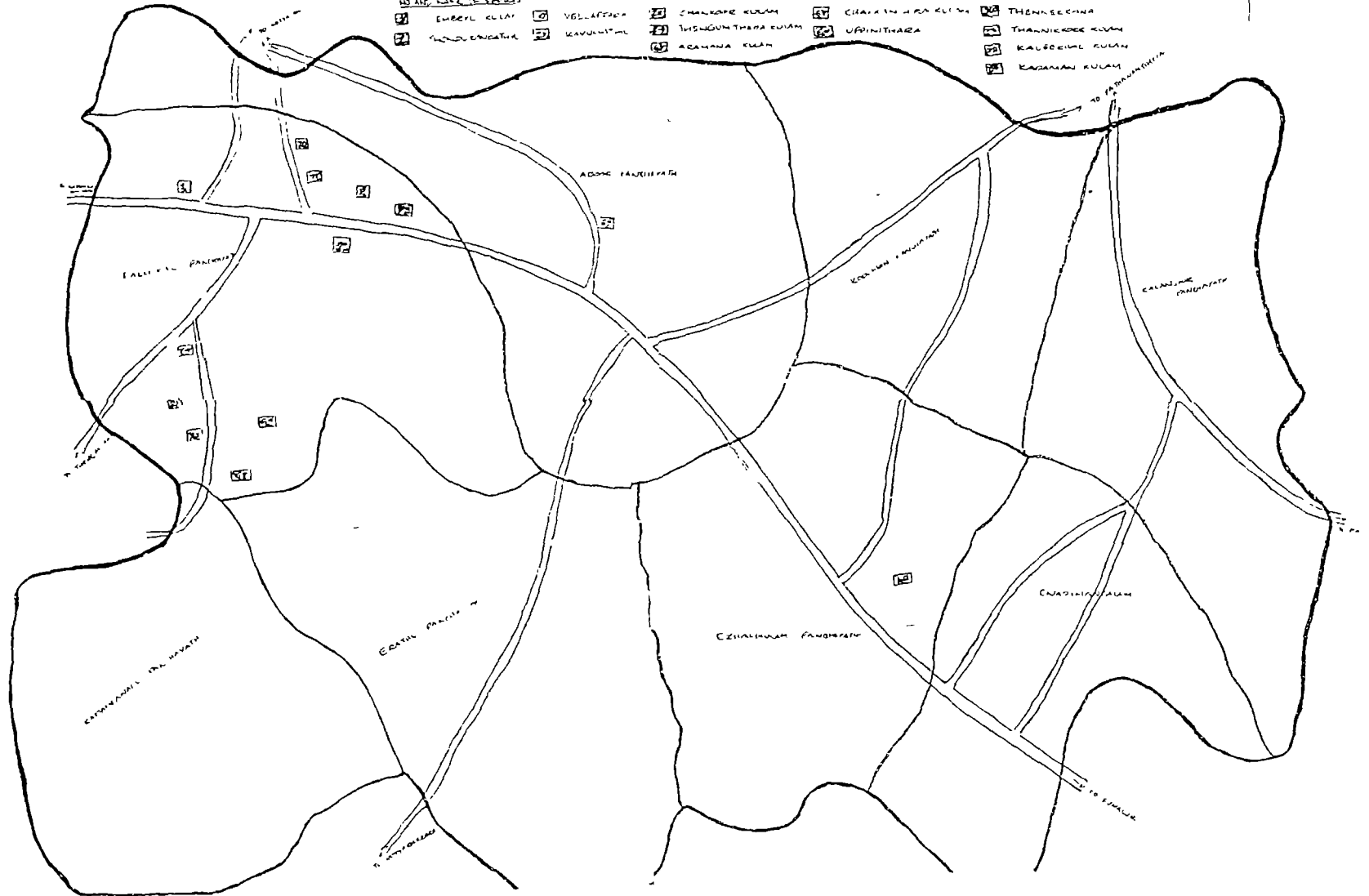
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LOCATION OF DEVELOPED SPRINGS

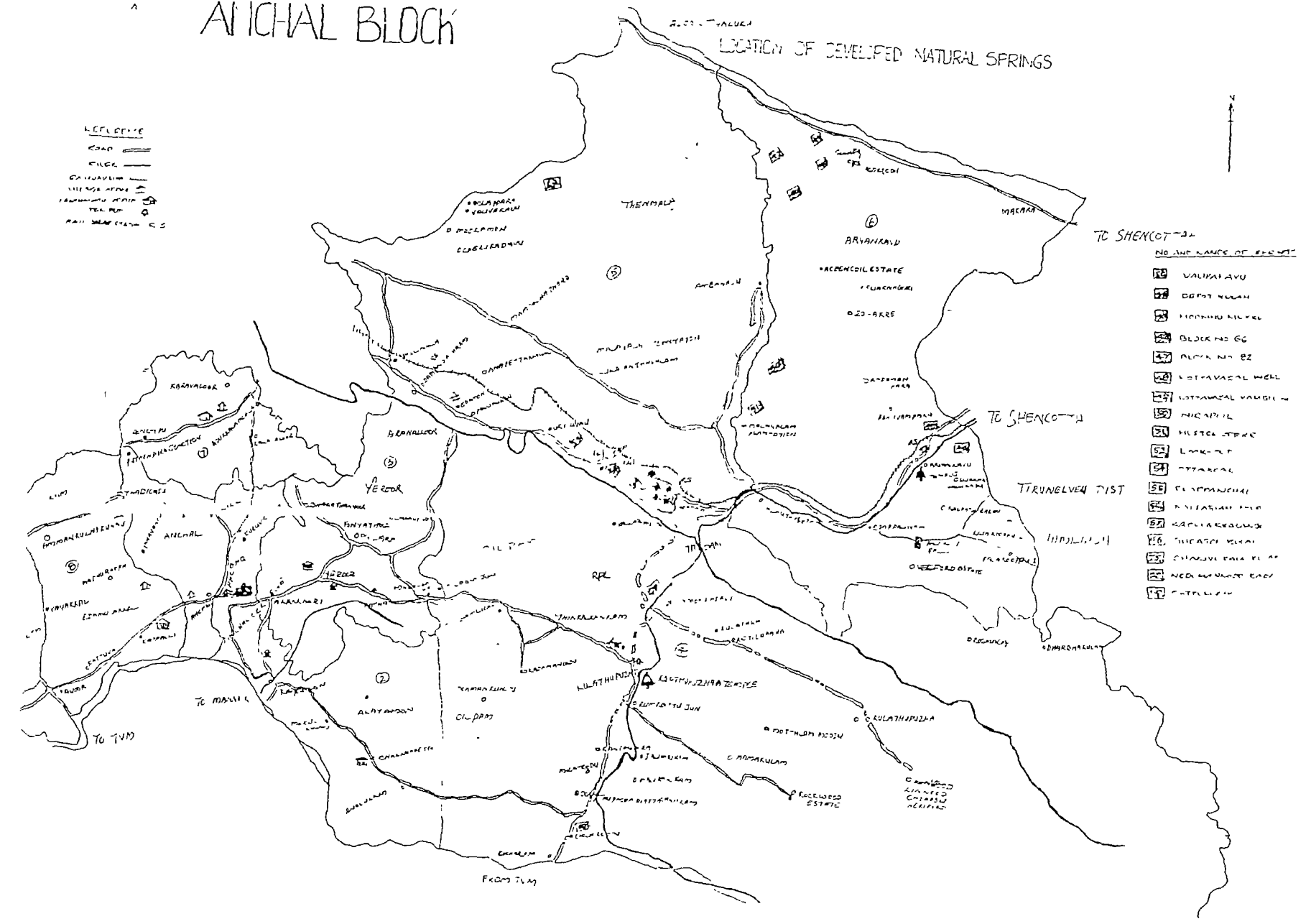
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| 2 | KUNDUENKATHA | 7 | KAVUNTHAL | 12 | THENGUNTHARA KULAM | 17 | UPPINITHARA | 22 | THANNIEDEE KULAM |
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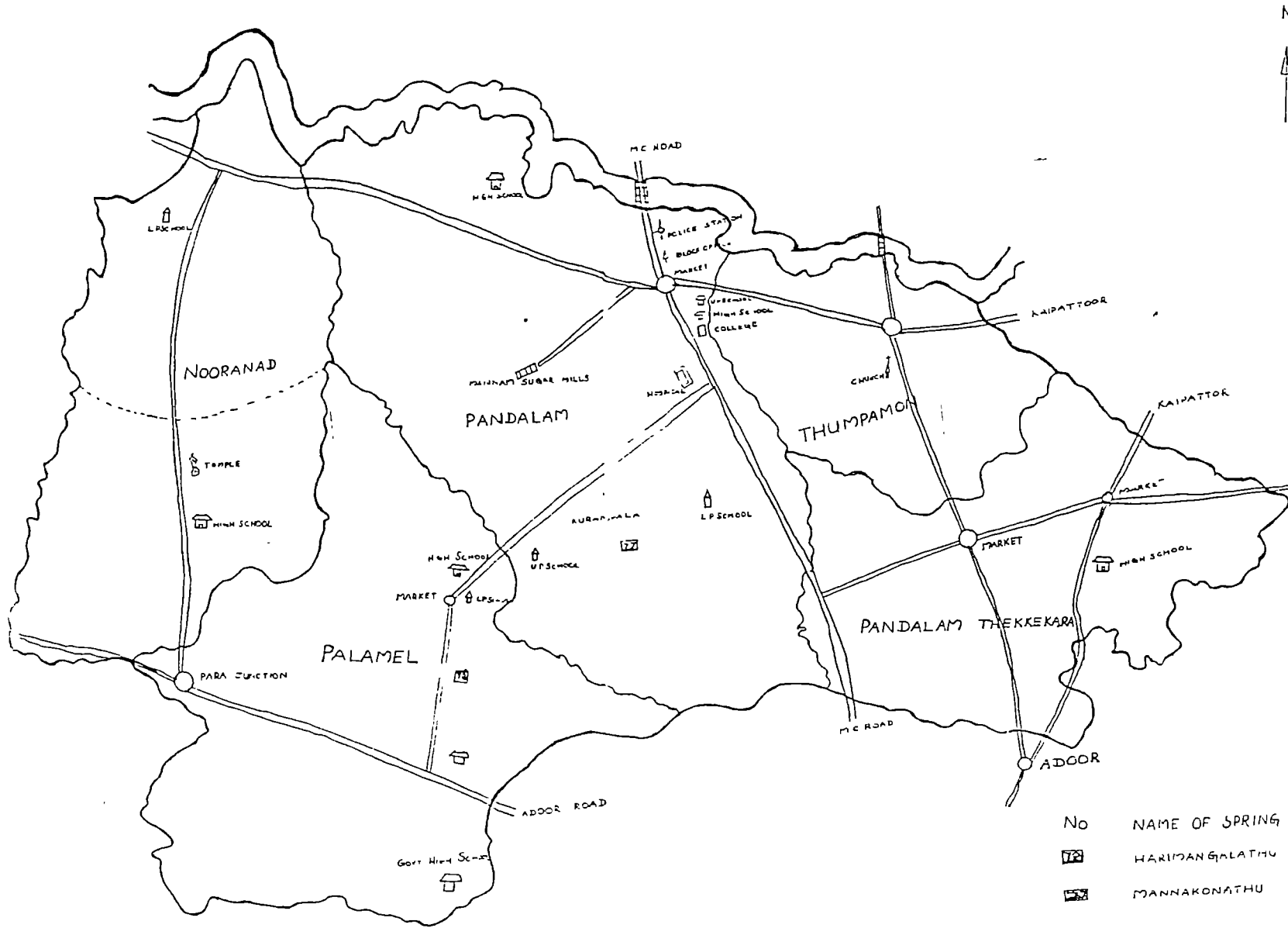
ANICHAL BLOCK

LOCATION OF DEVELOPED NATURAL SPRINGS

LEGEND
 ROAD ———
 RIVER ———
 CANAL ———
 TEMPLE ———
 TOWER ———
 RAIL ———



PANDALAM BLOCK LOCATION OF DEVELOPED SPRINGS



- No NAME OF SPRING
- ☒ HARIDANGALATHU
- ☑ MANNAKONATHU

however, PASSS has also been making its own observations/enquiries/assessments, informally, on the interest and need of the communities in developing the natural springs as sources of safe drinking water.

More and more requests for improvements of springs keep coming in after beginning of the present programme and seeing its benefits and functioning, from different isolated/remote parts and communities in Kerala. These requests are kept for action in future, as planned target in the present Programme is achieved.

III.2.2. Study on Potential of the Springs

Existence of a natural spring and interest of the community of potential users of it, were, however, not enough for selecting the spring for development as a source of safe drinking water. A potential/feasibility study on each spring was conducted, before selecting it for development, to find out:

- Location of the spring.
- Capacity and viability of the spring to support the potential/needful users - flow rate of water in the spring in the summer, and scope for constructing storage of water. Springs with stronger flow rate and greater capacity of storage are preferred.
- Quality of water in the spring, and if it is not upto the standard, methods of improving it at low cost and expertise. Springs with very low and harmful water quality, which cannot be improved with low costs and expertise, are not selected.
- Number of potential users of the spring. More the number the better. Springs with potential users of less than 15 are generally not selected.

- Nature/extent of activities required for development of the spring. Springs involving very high costs, in relation to the number of potential users, are not selected.
- Availability of developed spring for community use. Most of the spring sites are located in land owned by individuals. In such cases, the individual owners have to agree in writing to release the site for development, and continuous use of the community. She/he also have to agree not to do anything to destroy/adversely affect the functioning of the spring in future.

Studies on the potential and feasibility of the first 25 springs were conducted by the Geological Investigation Team (GIT) of the Action for Food Production (AFPRO), Coimbatore in the beginning. Subsequently, PASSS recruited two engineers, who were approved by AFPRO as capable for conducting the potential/feasibility studies. Thus, studies on the potential and technical feasibility of the last 52 springs were conducted by them. This team remain with PASSS at present and hope to extend their services in future.

Testing quality of water was done by an approved agency, at their laboratory situated more 200 km.s away from most of the springs. It is found that quality of water in some of the springs in the preliminary list was low and harmful, and therefore such springs were not selected. (However, the community still use the same water of these undeveloped springs, and therefore, exclusion of them from the Programme is not the end in itself for preventing people from using polluted water. PASSS, in collaboration with the concerned communities and governmental agencies, will have to workout solutions/alternatives to ensure supply of clean/safe water to these communities).

Selection of the location of the spring was important for the following reasons:

- Springs located at the slope of terrains or in valleys amidst rubber estates allow contamination of chemicals/pesticides through seepage.
- Springs located very near, and especially on the downstream of paddy fields may also get contaminated by pesticides/chemicals used in the paddy fields.
- Springs located near latrines can be contaminated. The team suggested a minimum distance of 5-7 metres, depending on the type of soil and chances of seepage, for springs from latrines. Also, it is preferable to have the springs on a higher ground than the latrine pits.
- Springs located away from the user-communities may cause greater physical exertion for women and requirement of time for collection. Moreover, the user-communities will not be able to maintain close supervision/watch for proper maintenance of the springs.

Springs located at public lands were given preference. However, only less than 10 percent of the springs of the preliminary list were located in public lands. As such, springs located in land owned by individuals had to be selected for development and use. In such cases, however, the individual owners of the spring sites were required to agree to the community of potential users, in writing the following:

- The community of users will be allowed to manage, maintain and use the springs in future.
- No actions will be taken to affect the flow rate and quality of water in the springs.
- No actions will be taken to cause damage to the springs and the structure protecting it.

No incidences of conflicts were observed between the owners and potential users so far. (It may also be because, culturally, Keralites owning drinking water sources, especially in the rural areas, think it improper to deny accessibility to those without their own sources).

III.2.3. Organisation of Potential Users and Final Section of the Springs

Potential users (of the shortlisted springs on the basis of the preliminary feasibility/location studies presented in the above section) were organised for further interaction/awareness-creation. These interactions were facilitated by a team of community organisers and engineers of PASSS, covering the social and technical dimensions respectively of the Programme. In addition to the potential users and staff of PASSS, representatives of the local bodies like panchayats, cooperatives etc. and other leading/active members of the communities also took part in the interactions.

Main aspects covered in these interactions/discussions were the following:

- Presentation of the results of the potential/preliminary study of the spring.
- Collection of socio-economic details of the user-communities (specimen data card attached as appendix no. 17..)?
- Assessment of the interest and level of knowledge of the community in getting safe drinking water through development of the natural spring.

- Design/plan appropriate methods of education/awareness creation on ensuring active participation of the community in the Programme.
- Work out and agree on the details of sharing the costs of development of the springs based on the design prepared by the technical team.
- Work out time-schedule on completion of different activities related to development of the spring.
- Selection/formation of a Water Committee from among the potential users to facilitate participation of all user-members in the Programme and also to function as their representative for interaction with others.

Interaction of the potential users with the field staff of PASSS took place both individually by house-visits and in groups. Duration and frequency of the interactions/visits depended on the number of potential users, and their basic level of knowledge and willingness to participate in the Programme.

It may be worthwhile to state here that majority of the participants from the community of users in these interactions were women. PASSS has been focussing on women. With this objective, PASSS selected two women social graduates as social/community organisers. And they worked to create greater interest and awareness among the women in the user-communities not only on proper use and management of the springs, but also on other general aspects of environmental and personal hygiene.

III.3. Civil/Technical Activities in Development of the Spring

Technical/Civil works involved in development of the spring were presented and discussed in detail with the community by staff of PASSS. Shape, size and cost of the developed springs - the extent and type of technical/civil works involved - were guided by the following:

- Number of potential users. More the number, larger will be the tank.
- Location of the spring. In very sloppy areas, the structure protecting the tank is to be stronger.
- Soil type. In loose soils good foundation is required for the structure protecting the tank.
- Existing size of undeveloped tank. For springs with undeveloped water collection points of adequate or little more than adequate size existed, size of the same is maintained in developing the springs. In one case a larger undeveloped pond was divided into two parts after development - the upper part for drinking water and the lower part for other purposes.

In all cases, granite was used as the main material for protective walls as it was readily available. Granite, sand, cement and steel were used for the protective walls and cover. These were costlier when compared to country stones and clay. But water tanks points built with country stones springs and clay could be destroyed quickly, by rats, etc. And it would have been difficult to keep them clean. (Designs of few springs are attached for illustration in append.7)

III.4. Cost of Development of Springs

Cost of development of the seventy seven springs and the sharing of the costs by the Socio-Economic Units (Dutch Government) and the User-community are presented as appendix .9.... of this

Report. Total costs varied from Rs.28,754 for spring no.1 to Rs.3,115 for spring no.6. Distribution of the springs according to total costs involved in development of the spring site and the related number of users are presented below:

Range of costs (Rs.)	No.of springs	No.of users
Below 5,000 -	13	697
5,000 to 10,000 -	50	4160
10,000 to 15,000 -	12	1235
15,000 to 20,000 -	--	--
20,000 to 25,000 -	--	--
Above 25,000 -	2	349
Total Rs.	77 springs	6,441 users

The following factors contributed variation in total costs in development of the springs:

- Time of completion of the Programme. During the last one year cost of most materials used in development of the springs rose sharply. For example, in 1991 December cost of granite was Rs.280-300 per lorry load, the present rate is Rs.580-600. Similarly, cost of cement, steel and sand also increased. Sometimes, in rainy season, it was practically not possible to obtain sand even with much higher prices.
- Condition of the spring site before development and size of the developed water collection tank. Size of the tank is determined by two factors: (i) number of potential users and (ii) rate of flow of the spring.
- Labour and materials used for civil works.



- Location of the spring site from the nearest source of materials (cement, bricks, granites) and road point. Far the site, higher the costs of delivering the materials at the site.
- Seasonal factors affecting cost of materials - it was more difficult and costlier to get materials at the sites in the rainy season.

Of the total cost involved in development of the spring sites, 7.62 percent was contributed by the user-community. The remaining 92.38 was met from the grant provided by the Dutch Government through the Socio-Economic Units, Kerala. However, wide variations were also observed in share of the user-community across different springs, from 25.40 percent for spring no.20 to just 1.71 percent for spring no.74.

These variations were mainly due to the following:

- Difference in level of awareness of the user-communities. More awareness resulted in more contribution by the users.
- The relative socio-economic status of the user-communities. Lower the status lesser the contribution. In many springs, labour contributed by the user-communities was paid at market rates, and not given freely as originally planned, because these daily wages were the only source of income of their families.
- Seasonality also played role in varying contribution of the communities. It is found that contribution of communities for springs constructed in the lean season were relatively smaller.
- Speedy implementation also resulted in lower contribution by the communities. For the communities didnt get enough time to save for their contribution.

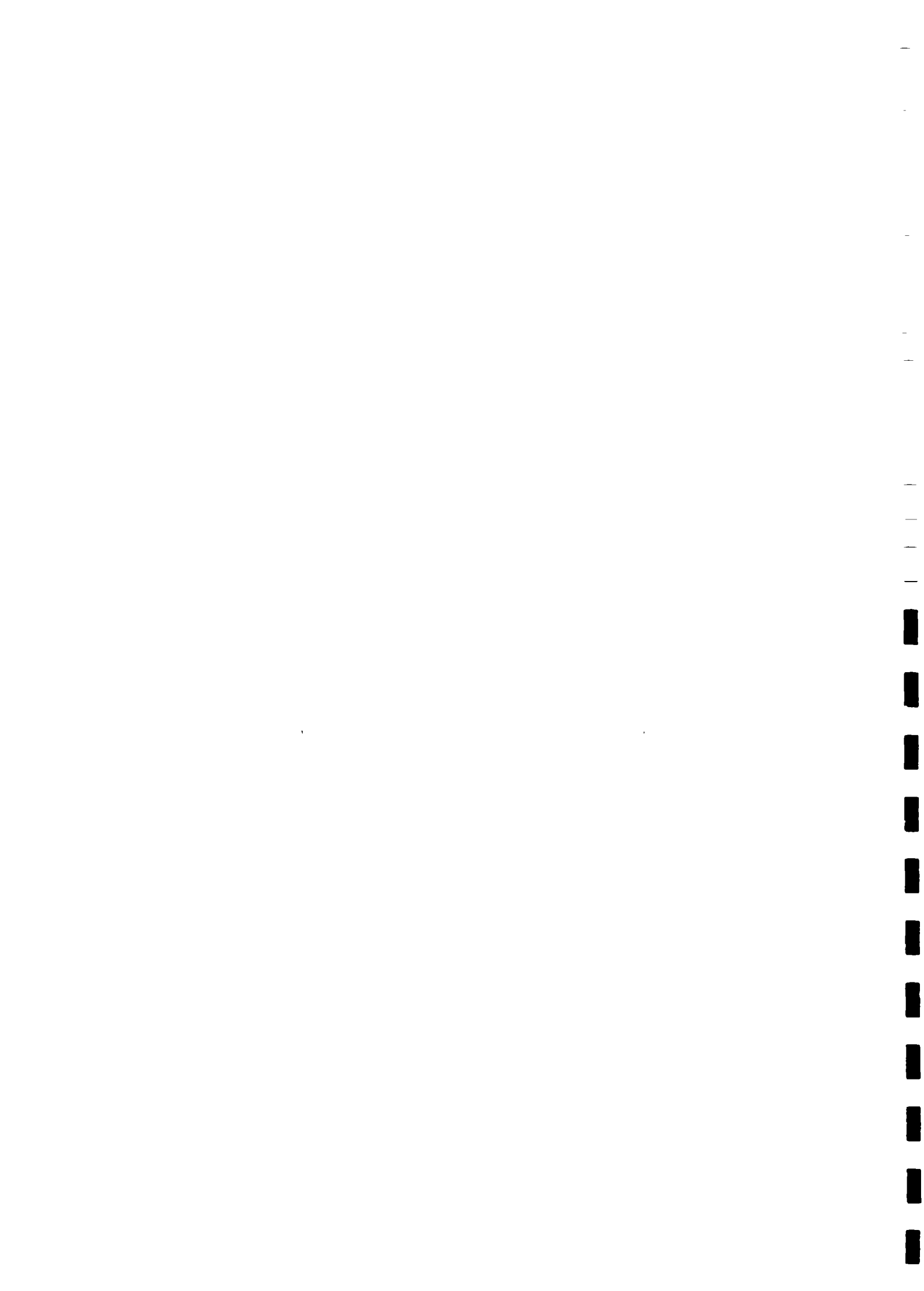
Percapita cost of developing the springs also varied from Rs.21.26 for spring no. 26 to Rs.923.80 for spring no.19. (Distribution of springs according to percapita costs incurred is presented in appendix 10)



III.5. Number of Participant Families/Users

Total 1,344 families with 6,441 members could be given accessibility to safe drinking water through development of the seventy seven natural springs in the Programme. (Number of families and users 'benefitted' by each spring is presented in appendix 10.). Number of participants/users varied from 5 for spring no.s 18 and 19 and 232 for spring no.30. Distribution of the seventy seven springs according to number of users are presented below:

No.of Users	No. of Springs
Below 20	4
20 to 40	5
40 to 60	12
60 to 80	19
80 to 100	21
Above 100	16
Total 6,441 users from 1,344 families	77 springs



III.6. Innovations/Changes Attempted in the Programme

As stated earlier, this Programme of development of natural springs for supply of safe drinking water was one of the first major attempts of its kind in Kerala. The Programme Implementing Agency (PASSS) did not have practical experience in the Programme. Nor was it very familiar with many of the technical and social dimensions of the Programme. And examples were also not readily available for help.

However, persons from the Co-ordinating office of the SEU, particularly the Executive Coordinator and the Advisor, visited the Programme many times and gave useful guidance/suggestions. Important innovations/changes made on the basis of suggestions of the SEU during implementation of the Programme are presented below:

- Provided proper water drawing facilities according to size of the springs and topography. Original idea was to provide only bucket and pulley. Main water drawing facilities provided are handpumps and taps. (List of springs according to water drawing facilities provided is presented as appendix..11.). Use of bucket and pulley is discouraged.
- Seat of handpumps raised to facilitate easy pumping and placing of the bigger vessels under the hand pump valve.
- Avoided sharp edges and corners in construction by adopting round shape which constituted better stability to the structure. But construction in round shape was found costlier.
- Provided shutters on top of the springs for preventing pollution. These shutters are removable, to facilitate: (i) periodical cleaning and (ii) chlorination.
- Provided proper drainage facilities, for allowing waste/spilled-over water to run off, without flowing back to the springs.
- Cleaned surroundings of the springs, and provided base for drawing water.



The Programme has also been visited by many people from India and abroad. (List of visitors with dates/places of the visits is presented as appendix 12). The feedback by way of encouragement/suggestions given by these visitors were of also of great help to PASSS in completing the Programme with suitable changes/innovations/improvements.

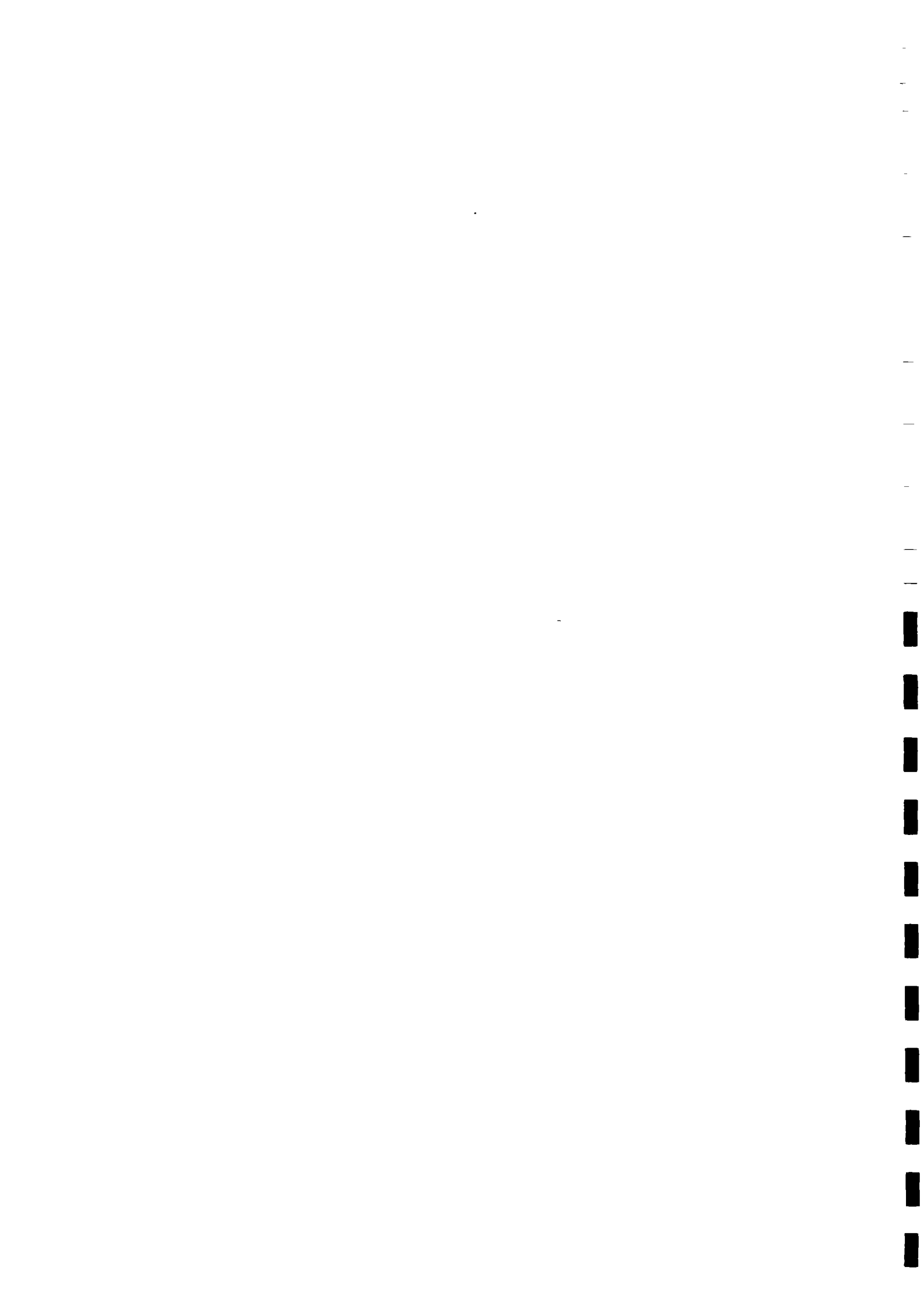
Based on the suggestions/comments of the Socio-Economic Units (SEU) PASSS attempted development of the last two springs (no.s 76 and 77) as 'models'. Reports on these model springs - at Kadackamon colony and Kurampala - are presented separately as appendices 13.(a) and (b). Main features of these 'model' programmes compared to those of the earlier ones, were the following:

- More efforts and time spent by project staff of PASSS in assessing the social and technical feasibilities of the springs.
- More efforts and time spent by project staff on 'social' aspects - organisation and motivation of the community.
- Regular and more systematic follow up - house visits and group meetings by the project staff.

As a result of the above, it was possible to:

- Ensure greater interest and participation of the community, especially women, in motivation classes and discussions.
- Ensure greater contribution of the community, in the forms of materials and labour, for development of the springs.

PASSS hope to use the experience gained in development of these two 'model' springs in similar programmes, in future.



The Programme also influenced Government policies. For example, the Government of Kerala has framed/announced the new 'State Water Policy' recently. Greater scope for involvement/participation is one of the main features of the Policy. Also, the Government is motivated to take up a programme for improvement of traditional open wells, with active participation of the people and the voluntary organisations at the grass-root level, based on our experience in development of springs.

It may be worthwhile to add here that the Programme also attracted the attention of the Press. Two leading newspapers in Kerala - Indian Express (English) and Malayala Manorama (Malayalam) - also published notes on the Programme (attached as Appendices 15.(a) and (b)). This generated interest among many Government, Non-Government and Private Agencies. PASSS agreed to their experiences with all others interested in the Programme. Now, PASSS is in a position to share its experience in planning and implementing the springs development programme in Kerala. Moreover, PASSS intends to develop and conduct a systematic training programme for NGOs and other interested agencies/groups in this subject as one of its main activities in the future.



III.7. Follow Up Programmes

Community/social organisers and engineers of PASSS kept their interaction with the user-community, through group meetings and house visits, even after completion and release of the springs to the community. Main focal group in these interactions were women of the user-communities. They were again stressed the needs for keeping the springs in good condition, proper use of drinking water and maintaining personal and environmental hygiene. In this context, many members of the community, especially women, expressed their desire to have latrines.

As stated earlier the Water Committees were entrusted with the primary responsibility of sustaining the Programme, after completion of development of the springs and releasing them to the user communities. These water committees were supposed to shoulder the following responsibilities:

- Organising periodical group meetings and facilitating interaction among the user community.
- Ensuring periodical cleaning of the water collection points and the surroundings.
- Arranging maintenance/repairs of the springs whenever required.
- Facilitating interaction of the community with PASSS and other related Governmental agencies.

PASSS is maintaining a close watch on the Water Committees to see how they are shouldering the above responsibilities. If necessary PASSS will again extend its cooperation to these Committees for effectively rendering their functions.



PASSS is also maintaining close contact with the user-communities through ensuring participation of them in its other Programmes. To start with, it has initiated the following economic programmes with these communities: (Details of plants distributed in Appendix 16)

- Agricultural development programme: Distributed quality planting materials of banana, pepper, cloves etc. to the user-families at subsidised rates. Training of the participants on agricultural practices is also planned.
- Supplied 'malabari' goats to selected families in the communities at subsidised rates. Training of participants in goat farming is planned.

PASSS is planning to supply poultry birds for the low income families of the user-communities. Smokeless chulhas and low cost latrines are also found to be essential components of the future programme. It is hoped that part of the income from the economic programmes will be used for periodic maintenance of the springs by these communities. By continuing these activities PASSS hope to maintain and strengthen its relationship with the user-communities.

In addition to the direct involvement of PASSS in development activities of these communities, it was also facilitating the communities to establish better rapport with development agencies of the Government, like the Departments of Agriculture, Rural Development, Education, Health, Public Works, etc. As such, the springs are also the focal/starting points around which these isolated/remote communities could be organised for greater participation in development action. For, Government officials visiting the communities with the sole objective of seeing the springs cannot escape without listening to the felt need of the communities and experiencing their difficulties, to some extent, themselves.



IV. SELF-EVALUATION: LESSONS LEARNT, CHALLENGES AND SUGGESTIONS

As already stated, this Programme of development of natural springs as sources of safe drinking water in isolated/hilly areas, was the first major attempt of its kind. And as such, it was purely of an experimental nature. Therefore, it could provide valuable lessons and experiences for the Programme Implementing Organisation (PASSS) and others associated with it. These lessons also threw up certain challenges to keep the springs in good condition in future. On the basis of the lessons learnt and the challenges observed some suggestions are made for improving efficiency of the future Programme.

IV.1. Lessons Learnt from the Programme

General lessons learnt by PASSS from the experience of implementing the Programme are presented below:

- Participation of the community is extremely essential for success of the Programme. Participation can be in the forms of involvement in motivation/awareness programmes, training, and follow up programmes, and also contribution of labour materials and cash for the Programme.
- Participation of women is to be ensured and essential for success and sustainability of the Programme in the long run. For women are more directly involved in collection and use of water for domestic purposes and personal/environmental hygiene compared to men, in the communities.
- Greater contribution of materials, labour and cash by the user-communities for the Programme will enable increase in targets. Because, with the same amount of external assistance more springs could be developed. However, this can be possible only with much longer motivation sessions for the user-communities prior to development of the springs. These must be balanced in programme development.



- For ensuring effective participation of the community of potential users, qualified and suitable personnel and much preparation/efforts by them are necessary. The social workers/community organisers/engineers should have the capacity to establish quick rapport with the communities and maintain it smoothly even in adverse circumstances.
- It was found desirable to have both social/community workers and engineers in the team for motivation/awareness-creation. Because the social workers can interact on social/organisational aspects while engineers can discuss the technical issues.
- The community should have confidence in the Project Implementing Organisation and its staff. Any loss of confidence will result in lack of interest/participation by them. There is also the possibility of the community turning against the Project Implementing Organisation and its staff, even if the 'benefits' of the programme is tangible. (Fortunately, no such situation developed in any of the communities in the Programme).
- The Programme should be flexible enough to accommodate suitable low cost project designs to take care of requirements of particular communities and springs and to absorb new ideas/innovations.
- The Programme should be visited, monitored and evaluated periodically by experts, so as to fill any obvious gaps and/or strengthen the programme. The Programme Implementing Agency should be willing to listen to and absorb the new ideas/suggestions of the experts.
- Cost of materials for development of the springs - granites, sand, steel, cement, bricks etc. - can be brought down by bulk and timely purchases. For example, costs of sand and bricks nearly 50 percent higher in rainy season.
- Providing safe drinking water in an isolated community is just only one of its many requirements. Continued interest of the community in development action (and to some extent even in maintaining the springs) depend on the follow up programmes. Follow up programmes should aim to generate 'group dynamics' (and not continued dependency) so that the communities will be able to tackle their problems without outside help.
- Lessons learnt from the experience in implementing the Programme should be documented and released for wider diffusion among all those interested in taking up similar activities.

In addition to the above general lessons, the Programme also provided certain specific lessons, as presented below:



- Representatives of the local bodies (Panchayat members) showed no active interest as members of the Water Committees. Because, they found it impossible to unduly influence or change the Programme contents/objectives for their own political advantages and also the coverage from a spring represents only a small part of their constituency.
- It is found labourious/complex to get permission from public local bodies (Panchayats, Government etc.) for development of the springs located in their land.
- For ground level storages bricks were found suitable and cheaper compared to granite. For underground storages however, granites are suitable, stronger and durable.
- Shutters should be provided in all storage tanks for prevention of pollution of water. The shutters should be of the size and shape to help periodical removal for periodical cleaning and chlorination of the tanks. Also the slab placed on top of the structure should be of proper slop to prevent seepage of unclean water back into the tanks.
- Most of the springs were located on the slopping terrain of the valleys, necessitating construction of protective/retaining walls on the upstream side of the storage tanks for preventing run-off water overtopping the structure covering the tanks.
- Reducing height of the structure protecting the tanks above ground level resulted increasing stability to the structure against natural calamities like floods, erosion etc. (In most cases, the height is 1.5 ft. above above ground level).
- Drainage facilities provided near the water sources were useful in maintaining hygiene in the surroundings. It was also found necessary and useful to provide washing places (mainly for clothes) at places properly away from the springs.
- House-visits by the social workers (women) for discussion with female members of the user-families were found to be very effective. Because the social workers were welcomed any time during the day when the male are away for their work.

The general and specific lessons learnt and presented above will be kept in mind while implementing future Programmes.



IV.2. Challenges for Future

The present Programme of development of 77 natural springs, though one of the first major programmes of its kind in Kerala, was only a small beginning on an experimental basis. The results of this experiment are positive and encouraging. And the lessons learnt are valuable. This situation also throws up challenges for future. Some of the challenges, to be met in the immediate future in the developed Springs are presented below:

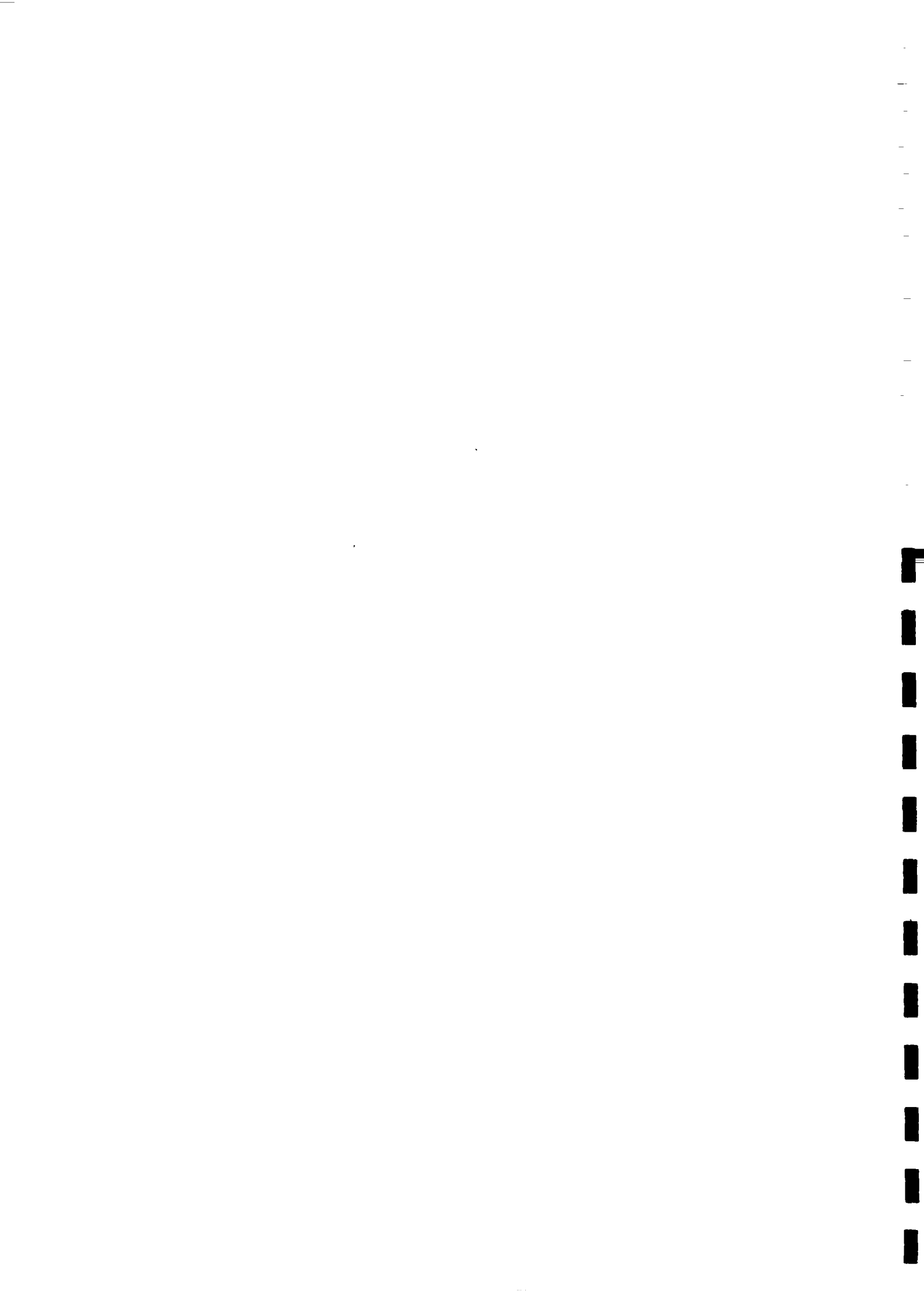
- The Water Committees of the Springs should be kept active through good leadership, communication and organisational capabilities. This may be difficult as members of the Committee are to be selected from among the user-community of the related spring.
- The Water Committees should be able, and made responsible, to sustain the proper use and maintenance of the developed springs.
- As most members of the community are daily wage workers it would be difficult to organise group meetings and motivation classes during working days. The community organisers/ social workers therefore should be prepared to stay with the community for interaction during the evenings.
- Springs and the community of users, as already stated, are located in remote, hilly and inaccessible areas. This makes the task of social workers/community organisers difficult. For they can be late and physically exhausted as they have to walk long distances in the hills.
- As the quality of water is tested by an approved agency, in their laboratory more than 250 kms away, there is much delay in getting the results. Because the results are required for final selection of the spring for development.
- To check whether the user-community will do chlorination of water periodically no established methods are available, except periodical visits and verification with the users.
- Further efforts are needed to reduce the cost of construction of the spring storage and related facilities.



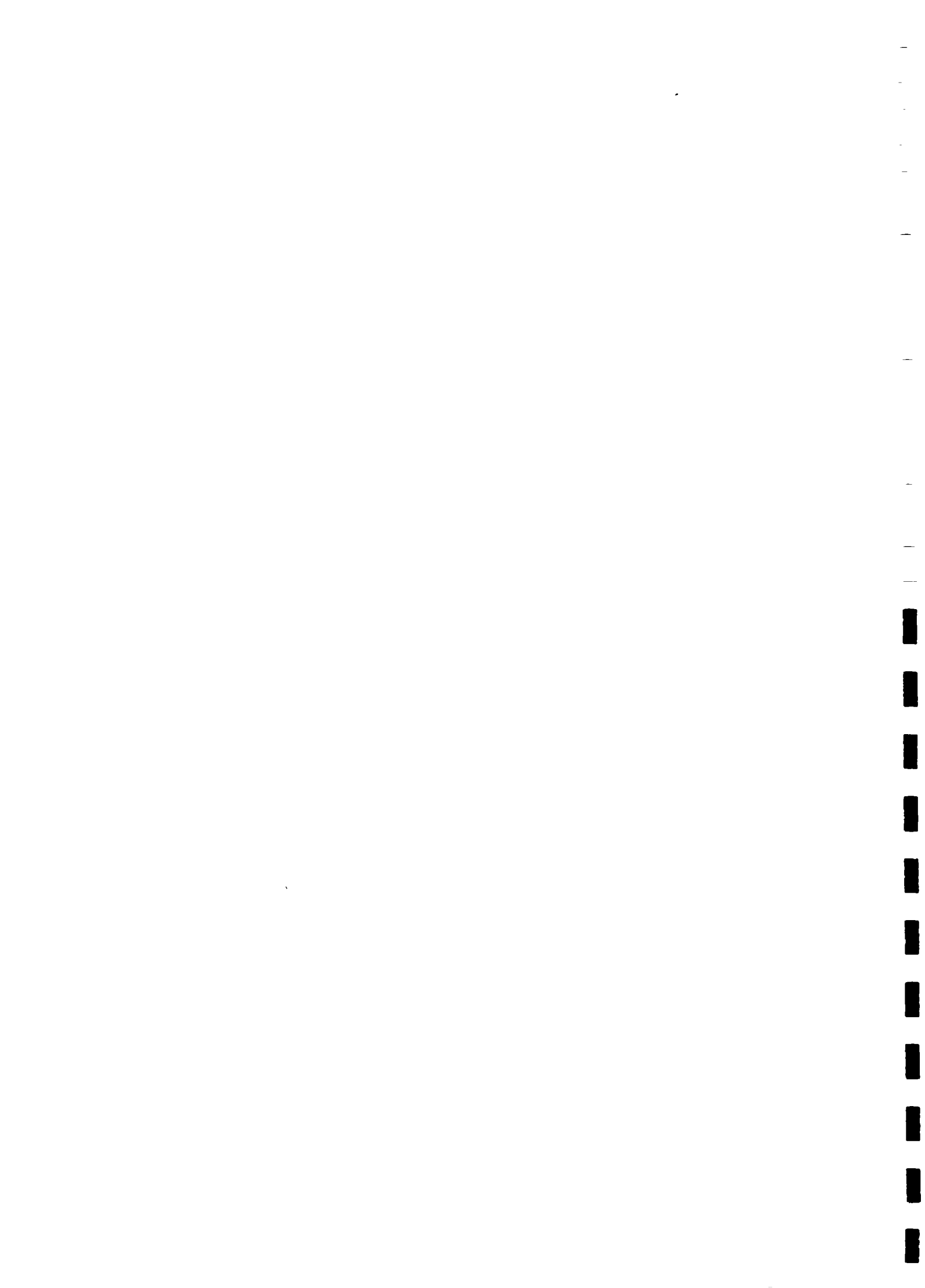
IV.3. Suggestions for Improving Efficiency of Future Programmes

On the basis of the above, the following suggestions are made for improving the efficiency of any future Programmes.

- The Panchayat members generally showed interest only in the initial stages of the programme, particularly in identifying the springs. It was found that they showed no interest in functioning as members in the Water Committees, as they cannot make any political gains out of it. Therefore, it is desirable to exclude them from the Water Committees.
- As the Water Committee members are from the relatively smaller user-communities it would be difficult to find capable and qualified members to serve in the Committees. Therefore, Water Committee members require regular training on different aspects of proper use and maintenance of the developed springs.
- 'Group dynamics' in the user-communities should be maintained through introduction other related activities like agriculture, poultry, goat farming, housing, sanitation, improved smokeless chulhas and education.
- Longer and more intensive awareness/motivation classes are required before development of the springs, to ensure much greater participation and interest among the potential users.
- Project staff should be capable, willing to work hard and understandable. For they need to establish good rapport with the communities and maintain it positively. It would be better to have a team of both female and male social workers who could address to both female and male sections of the communities, separately, if necessary. (This is also desirable as most of the springs are located in isolated/remote areas).
- Effective educational/training materials needs to be developed. Leaflets, palmflets, flip-charts, photographs, slides, films etc. needs to developed/produced and used for the purpose.
- Social workers and other project staff of the Project Implementing organisation should not ignore other demands/needs of the community. They should find some time to sit with the community trying to find out solutions for the needs. (In this connection no false promises should be made by the Project staff).
- Venue, time and duration of the awareness classes are important. Venue should be very near to the community, preferably near the spring. Time should be convenient to the members. Evenings are generally desirable/preferred. Duration should be decided with the members. Prefer to limit the classes to 1 hr. at a stretch.



- Motivation/awareness classes should be participatory. Lecture type classes are not desirable. Better to have discussions which will facilitate better exchanges between the resource person and the members and among the members themselves.
- Often it would be meaningless to provide motivation/awareness creation on environmental/personal hygiene/sanitation without helping the communities to have improved latrines. The resource persons/project staff/project implementing agency will have to draw up plans (and find out resources) to provide latrines to the users of the developed springs.
- Project areas may be divided conveniently to facilitate greater efficiency in project implementation. Because implementing the Programme on a wider area at a time can reduce its efficiency. For project staff also much time will be lost in travelling from one place to the other.
- Selection of Springs for development should be made very carefully. Flow rate of water to be assessed at the peak summer, to see whether it can meet the requirements of the potential users.
- The site-supervisors (field workers) and masons, who usually spent much time with the community, can play a greater role in communicating with the community on various aspects of the programme. This can be possible by providing training to the field workers and the masons too and bringing them into the mainstream of the project staff.



V. CONCLUSION

Lessons of the above experiment were many and useful. On the one hand, the Programme helped creating new awareness and opportunities to the remote and isolated communities; and on the other, it attracted the attention of many other agencies, including of the Government, who would be interested in taking it up as one of their activities. Of course, many gaps still exist. But the experiences gained by PASSS were very valuable to be shared with all others interested, while keeping its willingness steady to learn more. Thus, hopefully, more and more isolated/neglected communities can have easier access to safe drinking water, at the earliest and at relatively low costs, under their management in future.

Now, after going through the experiment, it would be worthwhile to ask what sort of Implementing Agencies will be suitable, and ready to take up, the programme of development of natural springs in Kerala. At least, it proves that non-governmental/voluntary organisations can do it. This can be a very valuable lesson in itself, for it can 'attract' the attention of other NGOs who would be interested and capable in taking up the mission of providing safe drinking water to the needy people of Kerala through appropriate, low cost and sustainable methods.



List of Appendices

1. Copy of the Report of Activities of PASSS (Summary)
2. Copy of the Certificate of Registration of PASSS
3. Copy of the Memorandum of Association of PASSS
4. Copy of the Rules & Regulations of PASSS
5. Copy of the Certificate on FCRA
6. General schedule/stages of Activities in Development of the Springs
7. Design of the Springs
8. Photographs on development/use of the springs.
9. Cost details of the 77 springs
10. Number of families/users and Per capita cost of the springs
11. Details of Water drawing facilities, with costs, provided in the springs.
12. Details on Visits
13. (a) Report on development of the Model Spring at Kadackamon
13. (b) Report on the development of the Model Spring at Kurampal
14. Audited Statement of Accounts
15. (a) Report in the 'Malayala Manorama' Newspaper
(b) Report in the 'Indian Express' Newspaper
16. List of Planting Materials distributed among the participants of the Springs Development Programme as part of the Follow Up.

PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)

Address : Pazhakulam P.O., Adur - 691 527
Year of estt : 1984
Area of : All over Kerala and parts of Tamil Nadu
Operation : (for Smokeless Chulha Programme)
Pathanamthitta, Alleppey & Quilon Districts
(for other Programmes)

MAJOR ACTIVITIES:

1. Dairy Development Programmes:

- Animal Health and Clean Milk Production through Improvement of Cattle housing and training of farmers (more than 6'000 units during 87-91) Developed a 'technology' (package of practice) for low cost cattle-house improvement based on specific requirements of individual farmers. (Partly funded by SDC/IC)
- Fodder Production - encouraging cultivation of improved varieties of fodder and awareness building on proper feeding and preservation of fodder resources (more than 10'000 farmers/plots during 87-91) (Partly funded by SDC/IC)
- Calf Improvement - making available deworming medicines to female cross-bred among the small dairy farmers (partly funded by SDC/IC)

2. Poultry Programmes:

- Introduced 'Giriraja' Poultry among the more than 4'000 farmers (partly funded by SDC/IC). Establishing Production cum Rearing Unit of Giriraja birds, developed by the University of Agricultural Sciences, Bangalore.
- Organised training/awareness building on proper poultry management practices for the farmers

3. Goats Programme:

- Introduction of Malabari bucks among selected farmers/villages for improvement of local stock through cross breeding.
- Introduction of cultivation of improved varieties of fodder plants for goats
- Organised training on goat rearing for participant farmers

4. Agricultural Programmes

- Development of Plantain Cultivation - distributed more than 5'00'000 plantain suckers among selected/interested farmers in the Project Area during 1987-91.

Suckers were collected from selected gardens in Tamil Nadu.

Participation of all landholding groups noted. Resulted in reducing inflow of plantain from Tamil Nadu in the Project Area.

An effective strategy in increasing production of traditional Kerala fruits and levels of consumption and income of the small farmers, without sophisticated/expensive technology, while reducing dependency on other States.

Plantain was preferred since it is in conformity with the farming practices of the small farmers. (Banana requires a more expensive/sophisticated package of practices and also liable to seasonal fluctuation of the market).

(Partly funded by SDC/IC)

- Pepper Development: Production of improved varieties of pepper plants (rooted cuttings) and diffusion of cultivation among small farmers - more than 7'00'000 rooted pepper plants distributed during 1987-91.

Pepper grown as intercrop. Training on pepper cultivation and plant protection.

Training of farmers on proper processing and organising marketing arrangements planned. (Need to improve quality of the product and remove intermediaries through organisation of farmers and providing proper training and establishing necessary infrastructure).

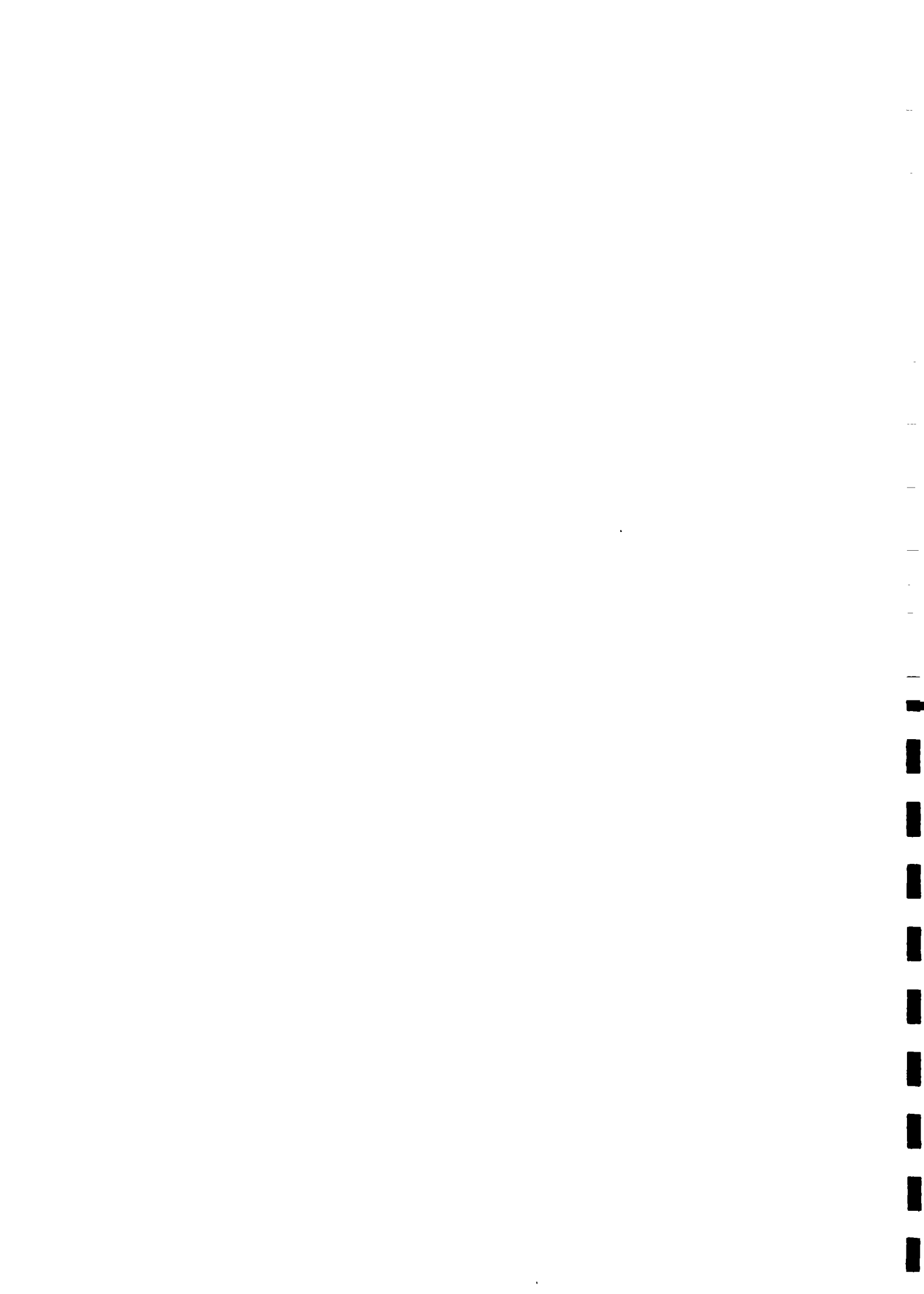
(Partly funded by SDC/IC and The Spices Board, GOI, Cochin)

- Development of other crops like -

Mango, Jack, pineapple, nutmeg, cloves, and vegetables.

- Organisation of training/awareness building for participant farmers and volunteers. (Partly funded by SDC/IC)

- Organising FARM CLUBS (informal groups of farmers for sharing of experiences and exchange of ideas among themselves and with others). and facilitate implementation of development programmes). More than 200 FARM CLUBS with a total membership of about 10'000 farmers already formed.



5. Diffusion of Smokeless Chulhas:

Installed more than 35'000 smokeless chulhas in different parts of Kerala, mostly among the low income groups. In 1990-91 PASSS was could instal the largest number of chulhas in Kerala (even ahead of the KSSP), and helped Kerala top other States and win the special prize of the GOI.

The Programme is partly financed by the GOI (through DNES/ANERT), The Coir Board, Tea/Rubber Estates, Rural Development Department and the concerned users).

6. Low Cost Sanitation

- Provided more than 900 low cost latrines among the low income groups. And health education and awareness building among the users.

(Programme funded partly by CAPART, Socio-Economic Units & Municipalities)

7. Development of Natural Springs

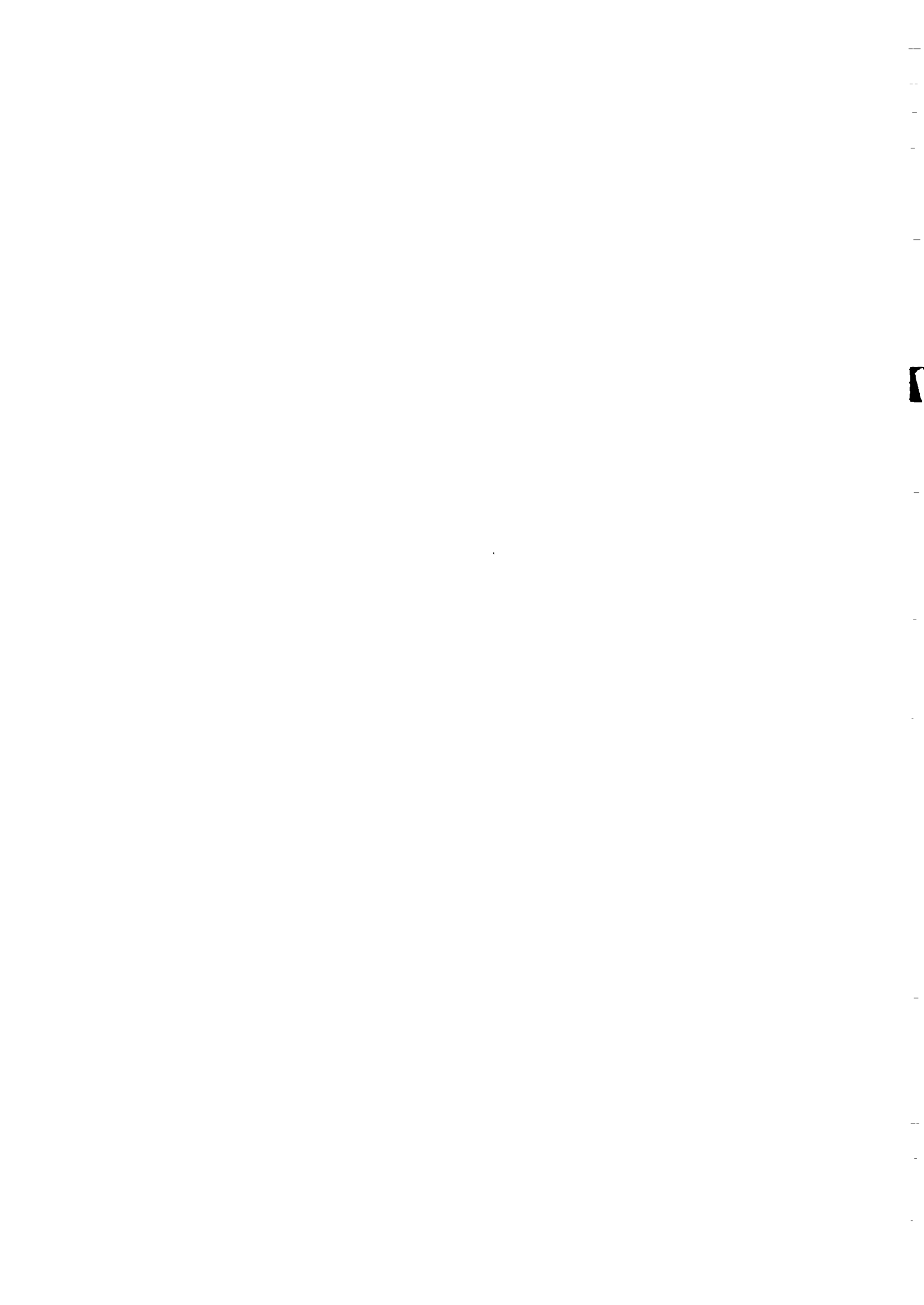
- Providing safe drinking water in the hilly and remote areas of Kerala through development of perennial natural springs. Ongoing Programme aims to cover more than 8000 families and population of about 50'000 in Pathanapuram, Adur and Kozhencherry taluks.

Maintenance/management of each springs to be left to the "Water Committees" consisting representatives of the users, local bodies and the concerned Grama Savikas and health worker.

Average per head cost of providing water comes to only around Rs.60, as against more than Rs.900 per head in the case of piped water. Moreover, even with best efforts it would be impossible to provide drinking water through pipes to more than 30 percent of Kerala population, considering the costs, distribution of population and topographical, geological and hydrological considerations.

Moreover, providing drinking water through development of the natural springs is more in conformity with the environment as against the conventional and expensive system of - dams, pipes, water taps and contractors.

(This Programme is partly funded by the Dutch Government through the Socio-Economic Units of the Kerala Water Authority).



MANPOWER AVAILABLE:

- Technical:	Agricultural Expert/Coordinator	- 1
	Engineers	- 2
	Social/Community Organisers	- 2
	Chulha Workers (SEWs)	- 80
	Trained workers in poultry	- 2
	in agriculture	- 2
	in animal husbandary	- 5
	in sanitation	- 15
	in springs development	- 5
- Office:	Office Manager	- 1
	Accountants	- 3
	Typist cum clerk	- 1
- Others:	Campus Supervisor	- 1
	Driver	- 1
	Messengers	- 2

INFRASTRUCTURE:

- Land	- 2.5 acres
- Vehicles :	Jeep - 1
	: Bikes - 4
	: Bicycles - 5
- Buildings :	5

Necessary office furnitures and equipments, agricultural equipments like pumps, sprayers, etc.

MANAGEMENT:

- Management entrusted with the Executive Committee consisting of 7 members elected annually from among the General Body. Day to day management is entrusted with the President and Secretary who are elected members of the Executive Committee (i.e., elected yearly).
- Implementation of the Programme by the Field/Technical Staff in consultation with the President/Secretary.
- Local organisations like Women's Groups, Youth Clubs, Cooperatives are cooperating with PASSS, along with its own FARM CLUBS, in implementation of the Programmes.



ANNUAL 'TOTAL BUDGET' OUTLAY : Around Rs.10 million

FUNDING AGENCIES:

1. Indian Government Agencies

- Department of Nonconventional Energy Sources, Government of India, New Delhi (through Agency for Non-Conventional Energy & Rural Technology ANERT, Trivandrum)
- The Coir Board, Government of India, Cochin
- The Spices Board, Government of India, Cochin
- Rural Development Department, Govt. of Kerala, Trivandrum
- Council for Advancement of People's Action and Rural Technology, CAPART, New Delhi
- Socio-Economic Units, Kerala Water Authority, Trivandrum (funds of the Dutch/Daninda Programme)

2. Foreign Government Agencies

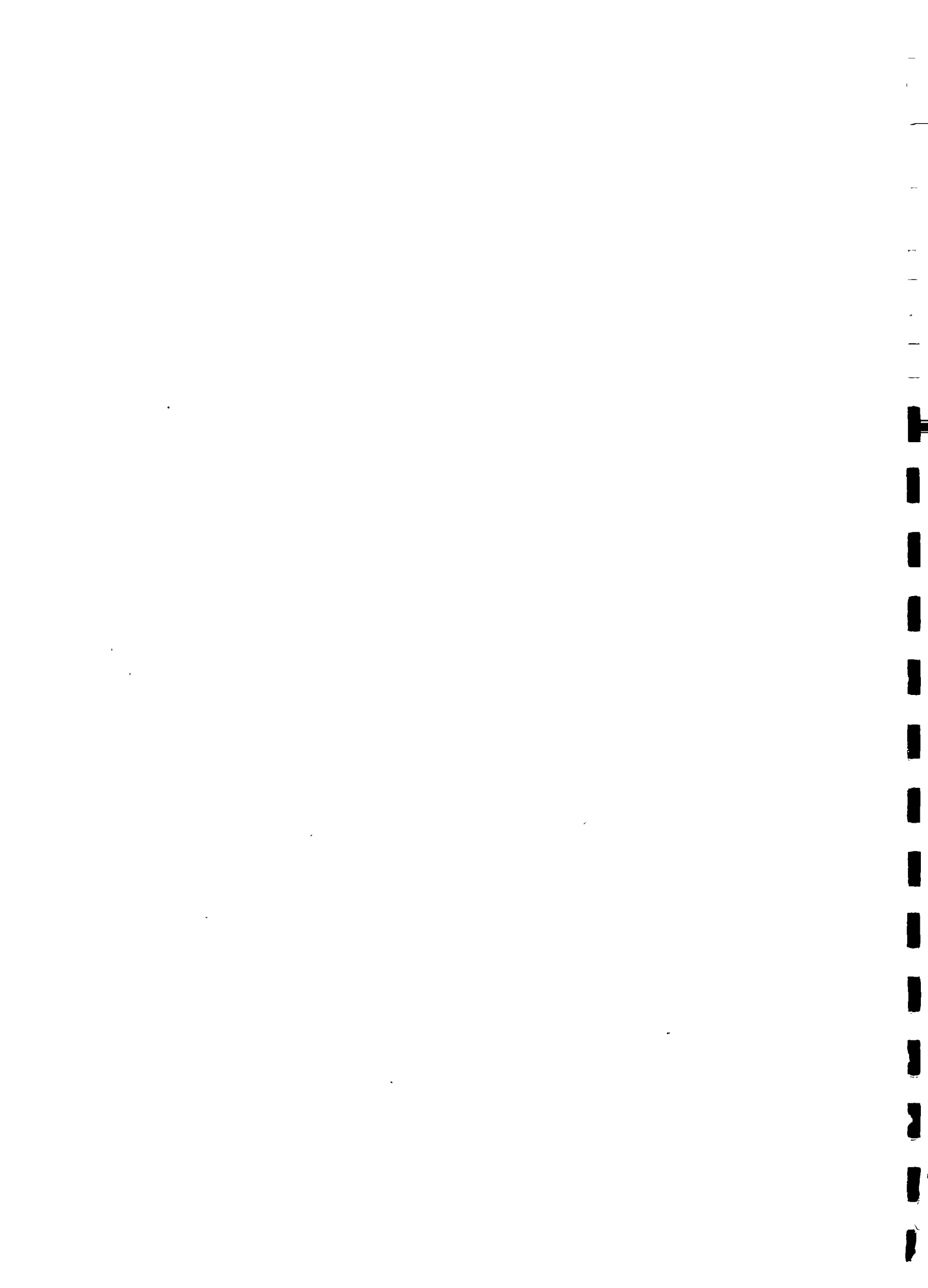
- Swiss Development Cooperation/Intercooperation, Switzerland
- Dutch Government (through Royal Netherlands Embassy, New Delhi & Socio-Economic Units, Trivandrum)

3. Private/Cooperative Agencies

- Coir Workers' Cooperatives
- Tata Tea Ltd. Munnar
- Other Tea/Rubber Estates

Collaborating with the related Government Departments/Agencies for Project implementation, mainly through utilisation of the technical services available for farmers' training and consultancy at the local level.

Potential users/target groups are contributing their share in implementation of all Programmes. Such contributions are mainly in the forms of own labour and locally available materials and comes to around 50% of the total cost of the Programmes.





APPENDIX No.3

MEMORANDUM OF ASSOCIATION OF

"PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)"

1. The name and registered office of the Association:

Name: "PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)"

Registered Office: House No.6/253, Pzhakulam P.O.,
Via Adur, Pathanamthitta District,
Kerala State, India.

In this Memorandum of Association the "PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)" will be referred to as the 'Society'.

2. Area of Operation of the Society:

The area of operation of the Society shall mainly be the Adur Taluk of Pathanamthitta District and the Society can extend its operation to other Panchayats of the Kerala State, if found desirable in meeting its objects.

3. Objects of the Society:

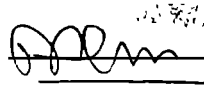
- a. To engage in social activities aimed at the overall development of the villagers, especially those who are in the lower income groups, through the following activities:
- 1) organising agricultural development activities;
 - 2) organising dairy, poultry, and other related activities;
 - 3) setting up of small industries and workshops;
 - 4) setting up of distribution centres of primary and essential commodities;
 - 5) setting up of educational facilities - training centres, libraries, schools etc.
 - 6) setting up of health clinic and organisation of medical check up/ treatment camps;
 - 7) organising and undertaking collection, distribution and marketing of agricultural, industrial and other produce;
 - 8) acquiring, distributing and developing resources/inputs of different kinds;
 - 9) acquiring, developing and distributing tools and other accessories of different types;
 - 10) implementing rural housing schemes aimed for the lower sections of the villagers;
 - 11) organising sports and other recreational activities; and
 - 12) organising, establishing, consolidating, maintaining and supporting, and encouraging all beneficial, charitable and uplifting activities of different fields of human activities and enterprises whatsoever, as and when required.



- c. To enter into contractual ties with any person(s) either natural or corporate in fulfilling the objects of the Society and in discharge of its duties and to shoulder and discharge its obligations thus created and to enforce its rights thus acquired.
- d. To enter into agreements and arrangements with any Government or Authority, whether Central or State, district, municipal, local or otherwise that may seem to be conducive to the object of the Society or to any of them to obtain from any Government or Authority such rights, grants, concessions and privileges as the Society thinks desirable and to comply with any such arrangements or agreements.
- e. To receive grants, donations, gifts or other property or any bequests for any or more of the objects of the Society.
- f. To establish, promote or assist in establishing or promoting and to subscribe to or become a member of any Society or Association whose objects are similar to the objects of the Society.
- g. To purchase, take on lease, or in exchange or otherwise, acquire any land, buildings, easements or other movable or immovable properties, which may be required for the performance of the objects of the Society and to sell, demise, lease, rent out, mortgage, give in exchange or surrender or dispose off the same.
- h. To apply the money and properties of the Society generally for the support and maintenance of the Society and for fulfilling the objects of the Society.
- i. To do or cause to be done all such other lawful deeds and things that are not contrary to the constitution of the Association and conducive to the attainment of the objects of the Society.
- j. To make bye-laws not inconsistent with the Memorandum of Association for the proper management and administration of the Society and its institutions.

✓ 4. Governing Body:

The list of the names and addresses of the members of the Governing Body for the present are given hereunder with their respective designations:

Sl. No.	Name	Address	Occupation	Designation	Signature
1	George Kulkarni	T. N. Thekkumilapatti	Co-Partner	President	

RULES AND REGULATIONS OF

"PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)"

1. Name: The name of the Association shall be "PAZHAKULAM SOCIAL SERVICE SOCIETY (PASSS)". (Hereinafter referred as the "Society").

2. Address: The address of the registered office of the Association shall be for the time being:

House No.6/253, Pzhakulam P.O.,
Via Adur, Pathanamthitta District,
Kerala State, India.

3. Area of Operation:

The area of operation of the Society shall be mainly the Adur Taluk of Pathanamthitta District and the Society can extend its operations to other panchayats of the Kerala State, if found desirable in meetings its objects, noted (4) below:

4. Objects of the Society:

a. To engage in social activities aimed at the overall development of the villagers, especially those who are in the lower income groups, through the following activities:

- 1) organising agricultural development activities;
- 2) organising dairy, poultry and other related activities;
- 3) setting up of small industrial units and workshops;
- 4) setting up of distribution centres of primary and essential commodities;
- 5) setting up of educational facilities - training centres, libraries, schools etc.
- 6) setting up of health clinics and organisation of medical check up/treatment camps;
- 7) organising and undertaking collection, distribution and marketing of agricultural, industrial and other produce;
- 8) acquiring, distribution and developing resources/inputs of different kinds;
- 9) acquiring, developing and distributing tools and other essential accessories of different types;
- 10) implementing rural housing schemes aimed at the lower sections of the villagers;
- 11) organising sports and other recreational activities; and
- 12) organising, establishing, consolidating, maintaining and supporting, and encouraging all beneficial, charitable and uplifting activities of different fields of human activities and enterprises whatsoever, as and when required.

b. To maintain, managing, and deal with movable and immovable properties of the Society;

b. Secretary: The Secretary shall work to promote the decision of the Governing Body. He shall maintain the membership register of the Society. He shall file the returns and documents with the Registrar of Association. He shall maintain a ~~an~~ record of the minutes of the meeting of the Governing Body as well as the General Body. He shall maintain the correspondence of the Society under the directions of the President.

c. Treasurer: The Treasurer shall diligently look after the financial interest of the Society and shall be responsible for the custody and maintenance of its books and accounts and the money entrusted to his care. He shall also be responsible for seeing that the Bank Accounts of the Society are properly maintained and the securities of the Society are kept in safe custody. The treasurer shall arrange for the audit of accounts of the Society. In general, the Treasurer shall observe the directions of the Governing Body with great fidelity, accuracy and integrity regarding the above and other works undertaken through such directions.

13. Powers and Functions of the Governing Body:

- a. The Governing body shall be responsible for conducting the affairs of the Association between Annual General Body meetings, provided that all decisions of the Governing Body shall be within the framework of the policy decisions and budget approved by the General Body of the Society.
- b. A report on the activities of the Governing Body shall be presented to the General Body of the Society.
- c. The Governing Body must meet at intervals not exceeding two months.
- d. At least ten days notice shall be given of all meetings of the Governing Body. Voting shall be in person and not by proxy.
- ~~xxx~~ e. The Governing Body can appoint panels/committees of experts in order to implement its objects as noted in (4) above, and pay suitable remunerations for the services received.

14. Accounts: True accounts shall be kept of all sums of money received and expended by the society and the matters in respect of which such receipts and expenditure take place, and of the property, credits and liabilities of the Society and subject to reasonable restrictions as to the time and manner of inspection the accounts shall be open to the inspection of members. Once at least in every year the accounts of the Society shall be examined and the correctness of the balance sheet and income and expenditure account ascertained by one or more properly qualified auditors.

15. Suspension: In case of death, resignation or retirement of the members of the Governing Body, or in the case of a member being held by a competent authority or two-third majority of the Governing Body to be unfit to hold the post as member such vacancy or vacancies shall be filled by the

9. d: To receive an Audited Annual Statement of the previous year.

10. The Governing Body:

(a) The Executive Body of the Society will be called as 'The Governing Body.' The Governing Body will consist of:

- a. The President of the Society, elected by the General Body.
- b. The Vice-President of the Society, elected by the General Body.
- c. The Secretary and Treasurer of the Society elected by the General Body.
- d. Not more than ~~10~~¹⁴ members elected by the General Body.
- e. Not more than $\frac{1}{3}$ co-opted members, without voting rights, from among those working in areas of agricultural development, education, health, small industries, sports etc.

(b) The total membership of the Governing Body shall be thus at maximum of 15 (Fifteen).

(c) In the absence of the President, the Vice-President shall act as Chairman, or in his absence the Governing Body shall elect one of its members to act as Chairman of the Meeting.

(d) Quorum: The quorum for all meetings of the Governing Body shall be one-third of the members, provided that at a subsequent meeting held after an adjournment due to lack of quorum, no quorum shall be sought.

(e) Term of Office: The term office of the members of the Governing Body shall normally be for one year and may be re-elected.

11. Term of Office:

- a. The term of office of the President, Vice-president, Treasurer, and Secretary and members of the Governing Body (as noted above at 10.e), shall normally be for one year and may be re-elected to any office of the Society.
- b. At the Annual General Body meeting, at which the members of the Governing Body retire as aforesaid, the Society shall fill up the vacancy(ies) by electing members (or any member) in their(his) place(s).

12. Powers:

- a. President: The President shall control, direct and take decisions on all the activities and matters of the Society. He shall give the necessary directions and advice to the Secretary and Treasurer. He shall preside

- c. To enter into contractual ties with any person(s) either natural or corporate in fulfilling the objects of the Society and in discharge of its duties and to shoulder and discharge its obligations thus created and to enforce its rights thus acquired.
- d. To enter into agreements and arrangements with any Government or Authority, whether Central or State, district, municipal, local or otherwise that may seem to be conducive to the object of the Society or to any of them to obtain from any Government or Authority such rights, grants, concessions, and privileges as the Society thinks desirable and to comply with any such arrangements or agreements.
- f. To receive, grants, donations, gifts or other property or any bequests for any or more of the objects of the Society.
- g. To establish, promote or assist in establishing or promoting and to subscribe to or become a member of any Society or Association whose objects are similar to the objects of the Society.
- h. To purchase, take on lease, or in exchange or otherwise acquire, any land, buildings, easements or other movable or immovable properties, which may be required for the performance of the objects of the Society and to sell, demise, lease, rent out, mortgage, give in exchange or surrender or dispose off the same.
- i. To apply the money and properties of the Society generally for the support and maintenance of the Society and for fulfilling the objects of the Society.
- j. To do or cause to be done all such other lawful deeds and things that are not contrary to the constitution of the Association and conducive to the attainment of the objects of the Society.
- k. To make bye-laws not inconsistent with the memorandum of Association for the proper management and administration of the Society and its institutions.

5. Membership:

Members of the Society shall consist of those persons who are engaged primarily in agriculture, small industries, education, health, sports, construction etc. subscribing to the ideals of the Society. Charter members are those who have signed the Memorandum of Association. Ordinary members are those who have been sponsored by the majority of the members of the Society whose membership has been approved by the Governing Body. All member will pay the annual membership of Rs.10/- as fee, to the Society.

6. Liability of members:

The liability of the members is limited. Each member undertakes to contribute to the assets of the Society in the event of its being wound up while he is a member, for the payment of debts or liabilities of the Society or towards the costs, charges and the expenses of winding up, and for adjustment of the rights of the contributors among themselves such amount as may be required not exceeding a sum of Rs.10/- (Rupees ten only).



7. Income and Property:

The income and property of the Association, however, derived, shall be applied solely for the promotion of its objects as set forth in the Memorandum of Association of the Society and for the maintenance of the Society. These funds should be spent to the attainment of the Objects of the Society only.

No remuneration in any form shall be given by the Society to any of its members, whether officers or servants of the Society. But such persons are entitled to be identified against by the expenses of the Society duly incurred in executing the objects of the Society.

8. Annual Meeting of the Society:

- a. The annual meeting of the General Body shall be called once in twelve months by the Secretary in consultation with the President. Three weeks notice shall be given and the Agenda shall be sent to members 10 days before the meeting. Extra-ordinary meeting of the General Body may be called by the President, and shall be called on receiving written requests from $\frac{2}{3}$ (two-thirds) of the members of the Society. Only the business for which the meetings is called shall be discussed.
- b. The President shall preside over at all meetings of the Society or in the event of his absence, the Vice-President of the Society may act as Chairman for conducting that particular meeting or in case the Vice-President too is absent, any member of the Society can be elected to act as Chairman for conducting that particular meeting.
- c. The Annual General Body meeting of the Society shall be held within three months of the close of the financial year and normally on the third Saturday in April of each year. An audited statement of accounts of the Society and a draft budget for the following year will be laid before the General Body for its approval with such clarifications as may be sought by the General Body.
- d. The quorum of the Annual Meeting shall be one-third of the membership, provided that in a subsequent meeting held after adjournment due to lack of a quorum, no quorum shall be sought by the General Body.
- e. In the Annual Meeting of the Society, voting shall be by person and not by proxy.

9. Duties and Functions of the Annual General Body Meeting

- a. To elect a President and other members of the Governing body as per Rules & Regulations No.10.
- b. To appoint auditors.

16. Legal Matters:

Any suit or other legal proceedings on behalf of the Society may be filed or taken by the Secretary in the name of the Society and the Secretary shall have the power to sign all pleadings, petitions, written statements and other papers or documents in connection with such proceedings.

17. Dissolution of the Association:

1. No motion for dissolution of the Society shall be entertained unless it is received in writing, by registered post by three-fourths of the members at least six weeks before the date of the meeting at which it is intended to be moved.
2. The Secretary shall cause immediate notice of such motion to be given to each member of the Society and the date, time and place of the meeting at which it is intended to be moved.
3. Such motion will be deemed to be carried at a meeting if it is supported by not less than two-thirds of the members of the Society.
4. On the passing of the resolution for the winding up of the Society, the Secretary shall take necessary steps to give effect to the same. Any surplus remaining after satisfaction of all debts and liabilities of the Society shall be made over.
5. In case the Society has to be wound up the property and funds of the Society that will remain after full satisfaction of the liabilities of the Society will be transferred or paid to some other Societies with similar objects and aims, as may be determined by the votes of the majority of the members present at the time of dissolution.

18. Change in Constitution:

1. The association shall have the right to add, to alter or amend these Rules & Regulations.
2. A proposal for such addition, amendment or alteration can be taken for consideration only if it is supported by at least one-third of the members of the Society.
3. Such a proposal may be considered either at the Annual General Body meeting of the Society or for a meeting specially convened for the purpose.
4. Such a proposal will be notified to all members of the Society by a registered post at least three weeks before the date of the meetings.
5. Such a proposal will be carried only if it is supported by at least two-thirds of the members of the General Body.

Articles of Association unless it is voted by two-thirds of the members of the General Body present at a meeting convened for the purpose and confirmed by two-thirds of the members present at a second special meeting.

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No. II/21022/ 65 / (317) / 85-FCRA. III
 Government of India/Bharat Sarkar
 Ministry of Home Affairs/Grih Mantralaya

New Delhi-110003, the

To

13 MAR 1985

T.A. GEORGENUTTY,
 PAZHAKULAM SOCIAL SERVICE SOCIETY,
 Q 489/84 PAZ HAKUCAM P.O. ADUR-691527, PATHANAMTHITTA DISTT,
 KERALA.

Sub:- Foreign Contribution (Regulation) Act, 1976
 Allotment of Registration number :-

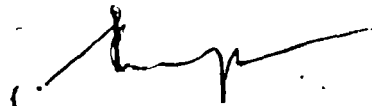
Sir/Madam,

With reference to your application No. _____
 dated _____, I am directed to say that your
 association has been allotted the following registration
 number in terms of Section 6(1)(a) of the Foreign
 Contribution (Regulation) Act, 1976.

0 5 2 9 3 0 0 3 5

till the Central Government by notification in the Official
 Gazettee, Directs that the association shall not, after
 the issue of such notification, accept any foreign contri-
 bution without the prior permission of the Central Government,
 or in case of any change taking place in regard to the name
 of the association, its address, its registration and its nature,
 its aims and objects, etc. it requires fresh registration.
 You are also advised to scrupulously comply with the provisions
 of the Foreign Contribution (Regulation) Act, 1976 and the
 rules framed thereunder.

Yours faithfully



FOR DEPUTY SECY. TO THE GOVT. OF INDIA

NO. II/21022/65 / (317) / 85-FCRA. III

Copy to the Manger/Agent

INDIAN BANK, PALLICKALADUR.

The association referred above has intimated that
 it has a separate bank account number 1490
 in your branch of the bank in respect of the foreign
 contribution received by it, This may please be confirmed
 This Ministry may kindly be informed whenever the above
 bank account it closed or another account number in respect
 of foreign contribution is allotted to the Association.

2. FCRA-II Section.
3. 2 Spare Copies.

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 FOR DEPUTY SECY. TO THE GOVT. OF INDIA.

APPENDIX No.6

SCHEDULE OF ACTIVITIES COMPLETED IN 77 SPRINGS

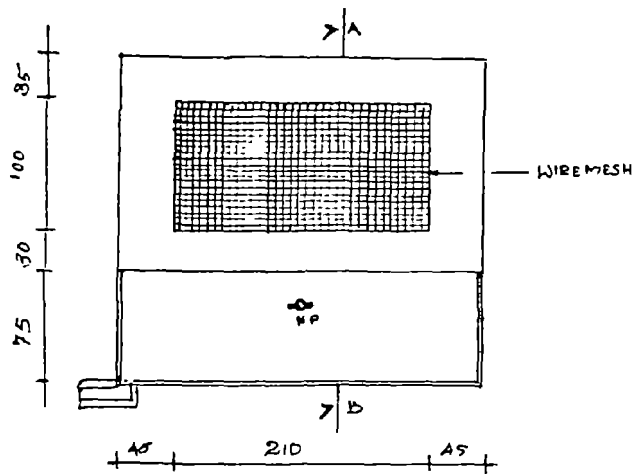
Time Span	Activities
1. August-September, 1991	Preliminary identification of 75 springs
2. September-October, 1991	Final selection of the first batch of 10 springs, motivation classes in 10 springs.
3. October-November, 1991	Selected Water committees and started construction works in all 10 springs
4. November-December, 1991	Completed construction works of 10 springs conducted health awareness classes, installed water drawing system and chlorinated the spring.
5. December-January, 1992	People started using the spring water after development. Preliminary identification of another 50 springs.
6. January-February, 1992	Contact visits in 10 springs, final selection, motivation classes and construction work started in a second batch of 15 springs and selected water committees.
7. February-March, 1992	Construction works of 15 springs completed, conducted health awareness classes, installed water drawing system and chlorinated the spring.
8. March-April, 1992	People started using spring water after development in a second batch of 15 springs and contact visits conducted. Identification of another 50 springs.



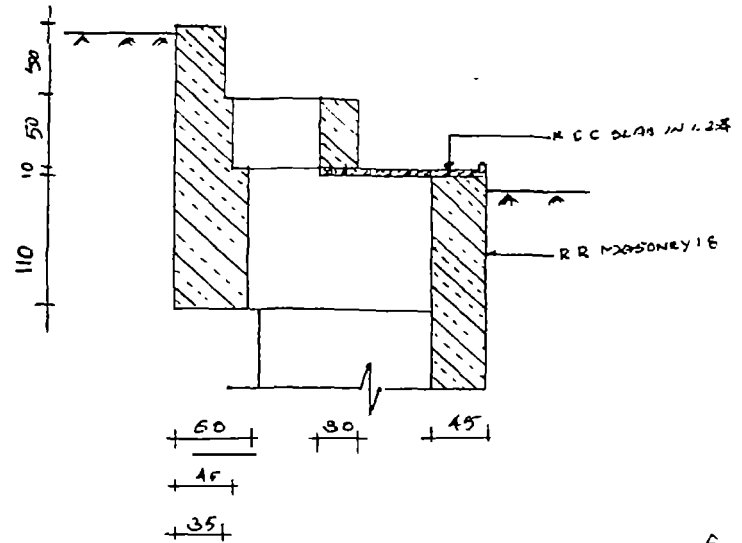
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- 9. April-May, 1992 Final selection of a third batch of 25 springs conducted motivation classes selected water committees and started construction works.
- 10. May-June, 1992 Completed construction of a third batch of 25 springs, conducted health awareness classe, installed water drawing system and chlorinated the springs.
- 11. June-July, 1992 People started using the spring water after development in the third batch of 25 springs contact visits conducted.
- 12. July-August, 1992 Distribution of Agricultural materials in 10 springs as a following programme. Final selection of a fourth batch of 25 springs for development.
- 13. August-September, 92 Motivation classes, were conducted water committees were selected and started construction works in the fourth batch of 25 springs distribution of agricultural materials in 15 springs.
- 14. September-October, 92 Completed construction works in the fourth batch of 25 springs, conducted health awareness classes, installed water drawing system and chlorinated the spring. Selected two more springs for development as a model of the lessons experienced from the field and conducted motivation classes.
- 15. October-November, 92 People started using the fourth batch of 25 springs, contact visits conducted and agricultural materials distributed in 9 springs as follow-up programme. Water committees were selected and started construction works in the two model springs.
- 16. November-December, 92 Completed construction work of the two model springs, conducted health awareness classes, installed water drawing system and chlorinated the spring.
- 17. December-January, 1992 - 1993 People started using the spring water after development in two model springs, contact visits conducted and agricultural materials distributed as follow-up programme.

APPENDIX NO. 7
PLAN AND SECTION OF A SPRING AT MANNAKONATHU (NO. 77)



PLAN

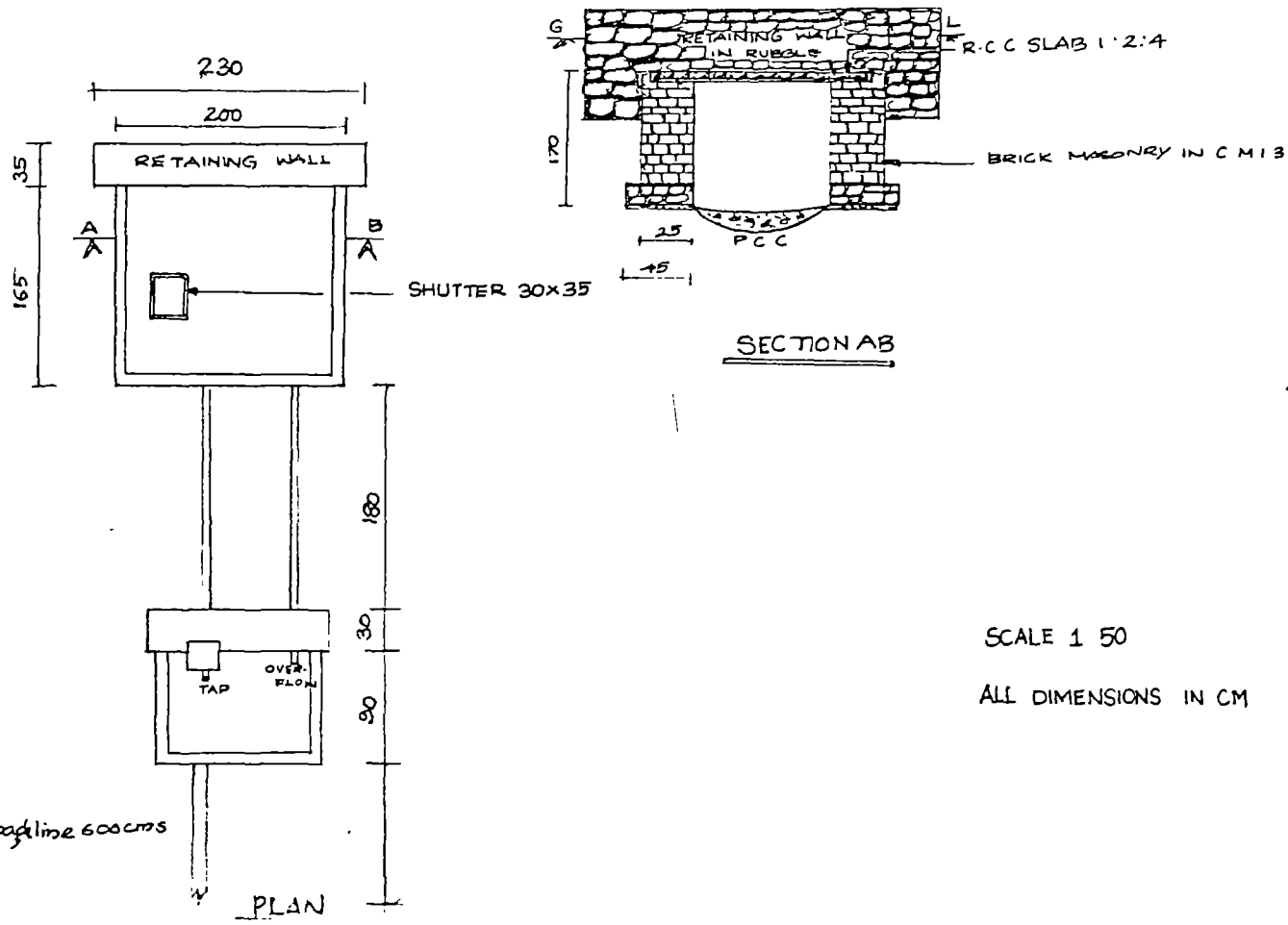


SECTION ON AB

Scale 1:50

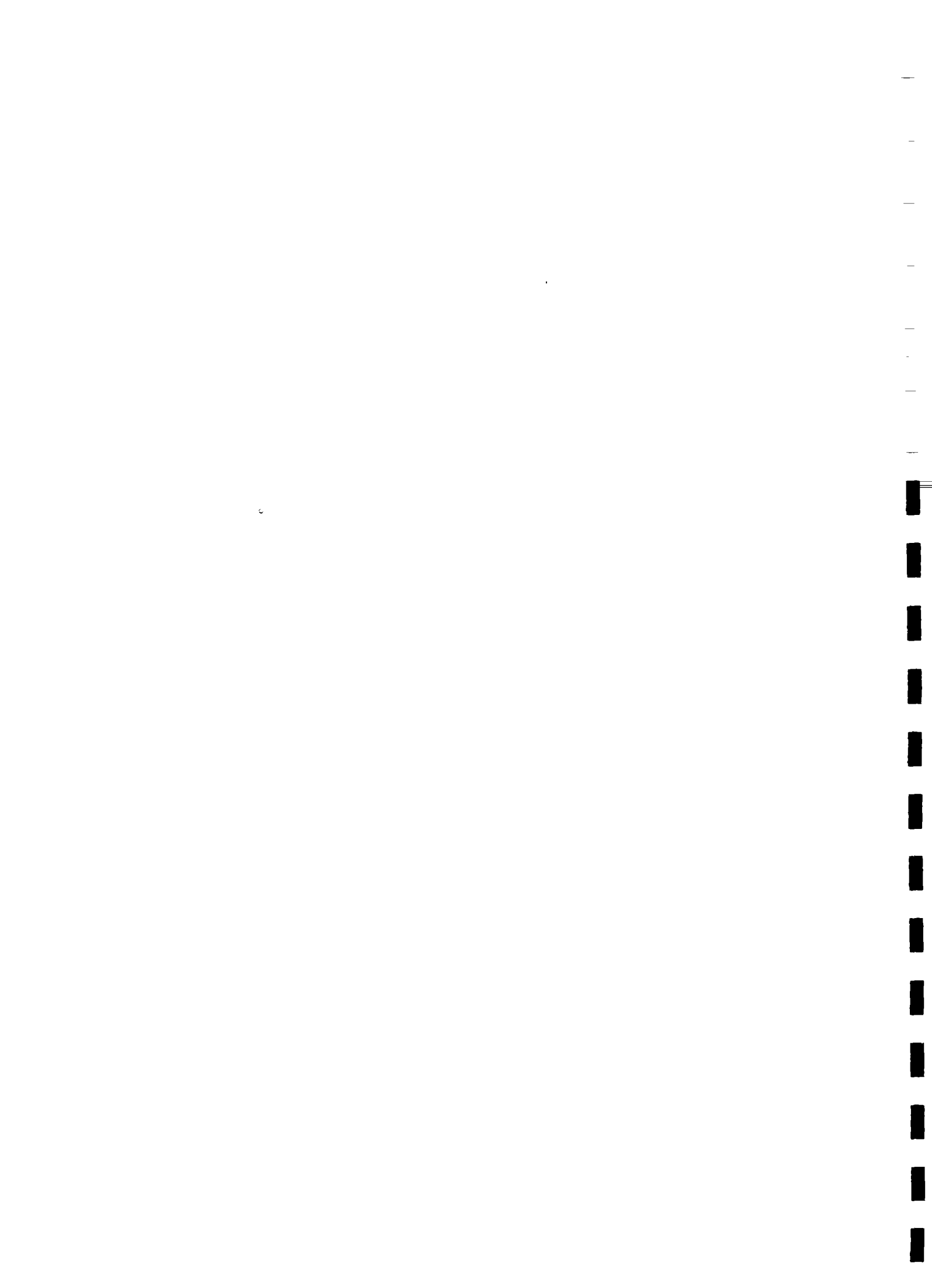
all dimensions are in CM's

PLAN & SECTION OF A SPRING AT PURACHAL (NO 18)



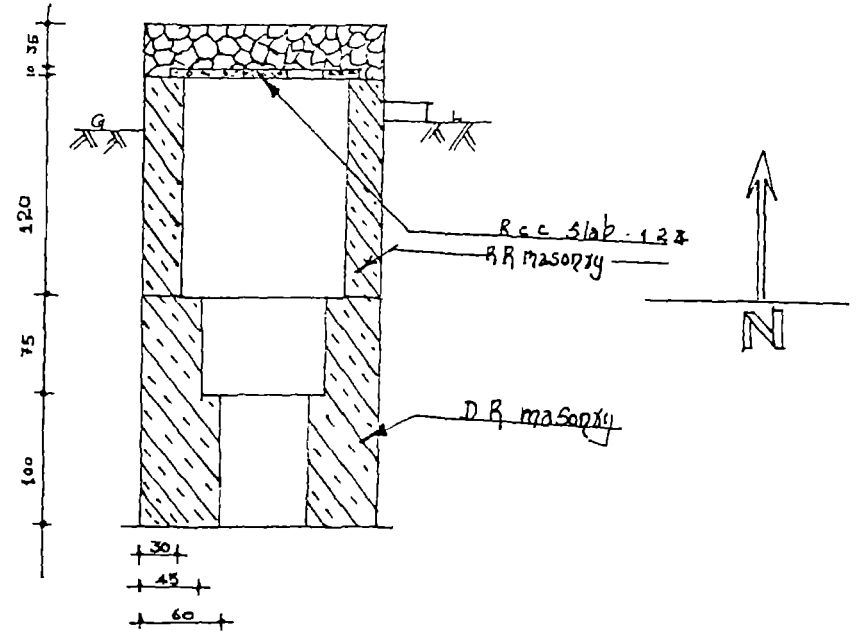
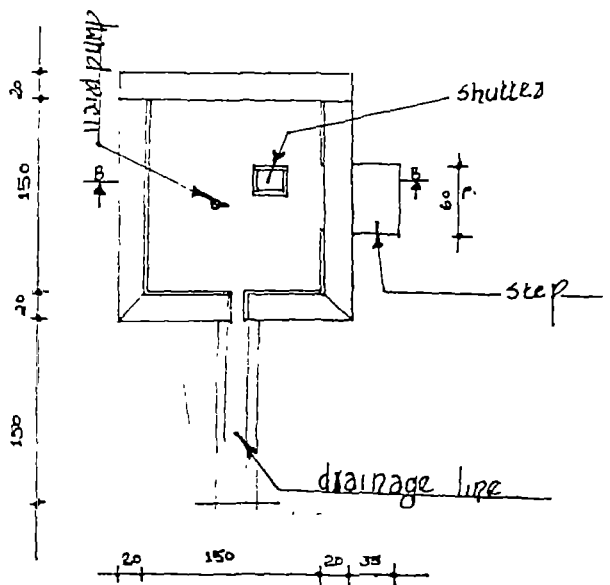
SCALE 1 50

ALL DIMENSIONS IN CM



NO - 25

- PLAN AND SECTION OF A SPRING AT PERUMTHOL -



Section - BB

- scale - 1:50 -

- All dimensions in cms -

PAZHAKULAM SOCIAL SERVICE SOCIETY - PASSS

DETAILS OF CONSTRUCTION COST OF VARIOUS SPRINGS.

Sl No.	Name of Spring	Contribution from PASSS		Contribution from group		Total cost of construction	
		Rs	Ps	Rs	Ps	Rs	Ps
1	Embroid kulam	23628	-	5126	-	28754	00
2	Thondukandathil	4724	00	818	00	5542	-
3	Vedamala	3765	60	823	00	4588	60
4	Attirakkathu	4867	95	427	00	5294	95
5	Konathukuzhy	4633	30	1058	00	5691	30
6	Mudakkanamkuzhy	2562	00	553	00	3115	00
7	Kodiyattukuzhy	3464	75	898	00	4362	75
8	Kumbickal	3365	55	698	00	4063	55
9	Vazhappara	4377	30	923	00	5300	30
10	Vellappara	7319	86	1073	00	8392	86
11	Kuttikonam	4764	00	516	00	5280	00
12	Ambedkar colony	7570	00	1251	00	8821	00
13	Shanthi Bhavan	5802	00	970	00	6772	00
14	Kalayil	5442	80	917	00	6359	80
15	Vazhappara kulam	3718	30	701	00	4419	30
16	Field No.10 (I)	3960	00	619	00	4579	00
17	Field No.10 (II)	4329	30	629	00	4958	30
18	Purachal	3455	00	414	00	3869	00
19	Sanyasicone	4480	00	139	00	4619	00
20	Thodiyikandom	4024	00	1370	00	5394	00
21	Kavullathil	396	00	420	00	4386	00
22	Chankoorkulam	4530	00	590	00	5120	00
23	Micamine	3986	75	480	00	4466	75
24	Thengumtharakulam	4212	00	700	00	4912	00
25	Perumthol	3980	00	375	00	4355	00
26	Perumthol School	8246	00	250	00	8496	00
27	Kal Bhavan	7633	00	875	00	8508	00
28	Thalappakettu	7968	00	955	00	8923	00
29	Valiakavu	7846	00	885	00	8731	00



Sl No.	Name of Spring	Contribution from Passs Rupees	Contribution From group Rupees	Total cost of construction Rupees
30	Anachal	25380.00	3200.00	28580.00
31	Anappara	7989.00	725.00	8714.00
32	Mullumala-60	6985.00	450.00	7435.00
33	Mullumala-80	7450.00	385.00	7835.00
34	Ambanar	7850.00	325.00	8175.00
35	Kottakkayam	7575.00	275.00	7850.00
36	Kadambupara	7901.00	650.00	8551.00
37	Nambyarmadom	8850.00	610.00	9460.00
38	Orekkar	7846.00	345.00	8191.00
39	Paravilayil	7680.00	360.00	8040.00
40	Parayil	7700.00	475.00	8175.00
41	Vijayamandiram	8333.00	550.00	8883.00
42	Charivupurayidom	7585.00	300.00	7885.00
43	Schempanaruvi School	6585.00	175.00	6760.00
44	Depot kulam	10950.00	465.00	11415.00
45	Moonnumukku	9932.00	660.00	10592.00
46	Block No66	10900.00	330.00	11230.00
47	Block No 82	10933.00	680.00	11613.00
48	Kottavasal well	10534.00	750.00	11284.00
49	Kottavasal Kambiline	9587.00	825.00	10412.00
50	Nirappil	10904.00	610.00	11514.00
51	Muster office	9538.00	200.00	9738.00
52	Vanmala	7830.00	280.00	8110.00
53	Lookout	6870.00	175.00	7445.00
54	Ottackal	6786.66	180.00	6966.66
55	Erappanchal	9850.00	380.00	10230.00
56	Nalppatham mile	9865.00	400.00	10265.00
57	Kaduvakalungu	8932.00	300.00	9232.00
58	Theatre kulam	7856.00	350.00	8206.00
59	Nedumannoor kadavu	8832.00	525.00	9357.00
60	Oottukuzhy	9932.00	580.00	10512.00

S1 No.	Name of Spring	Contribution from PASSS Rupees	Contribution from group Rupees	Total cost of construction Rupees
61	Kuttan kulam	8885.00	455.00	9340.00
62	Valiyakonam	9560.00	300.00	9860.00
63	Naricode	9875.00	250.00	10125.00
64	Thalavoor	9950.00	345.00	10295.00
65	Valiyaparakuzhy	7982.00	325.00	8307.00
66	Kundayathumoola	8835.00	200.00	9035.00
67	Aramanakulam	5125.00	175.00	5300.00
68	Chackenchirakulam	8880.00	350.00	9230.00
69	Uppinathara	7859.00	280.00	8139.00
70	Thennekkan	7779.00	365.00	8144.00
71	Thannicode kulam	7933.00	285.00	8218.00
7	Harimangalam	7934.00	410.00	8344.00
73	Kaleeckal kulam	7975.00	255.00	8230.00
74	Kadaman kulam	8585.00	150.00	8735.00
75	Charavukala kulam	6832.00	400.00	7232.00
76	Kadackamon	7792.00	900.00	8692.00
77	Mannakonathu	8352.00	1100.00	9452.00
Total		5,88495.12	48513.00	6,37008.12

After preparing the completion report of the first 25 springs, an additional amount of Rs 9705/- (Rupees Nine thousand seven hundred and five) was to be spent for providing proper drainage, man holes with shutters etc; as per the recomandations from SEU for these 25 springs.

APPENDIX NO. 10

DETAILS OF SOCIAL ASPECTS

Sl. No.	Name of Spring	No. of beneficiary families.	No. of beneficiaries.	No. of motivation classes.	Per capita unit cost
1.	Embrylkulam	19	117	4	245.76
2.	Thondukandathil	12	57	4	97.22
3.	Vedamala	21	90	2	50.98
4.	Attirakkathu	10	44	2	120.33
5.	Konathukuzhy	12	57	2	99.84
6.	Mudakkanamkuzhy	7	31	2	100.48
7.	Kodiyattukuzhy	24	109	2	40.02
8.	Kumbikkal	7	33	2	123.13
9.	Vazhappara	10	45	4	117.78
10.	Vellappara	23	105	2	79.93
11.	Kuttikonam	14	66	2	80.00
12.	Ambedkar colony	40	172	5	51.28
13.	Santhi Bhavan	24	112	5	60.46
14.	Kalayil	21	91	5	69.88
15.	Vazhapparakulam	12	63	2	70.14
16.	Field No. 10(1) Chithalvetty.	21	98	2	46.72
17.	Field No. 10(2)	23	120	2	40.48
18.	Purachal	1	5	1	773.80
19.	Sanyasikon	1	5	2	923.80
20.	Thodyilkandam	9	36	2	149.8
21.	Kavullathil	8	32	2	137.06
22.	Chankoorkkulam	8	45	5	113.77
23.	Micamine	12	53	2	84.27
24.	Thengumtharakulam	3	15	1	327.46
25.	Perumthol	9	43	2	101.27
26.	Perumthol School	-	400	2	21.24
27.	Kala Bhavan	19	78	2	109.07
28.	Thalappakketttil	11	63	2	147.63
29.	Valiyakavu	14	75	3	116.41
30.	Anachal	56	232	1	123.18



1	2	3	4	5	6
31.	Anappara	21	72	1	121.03
32.	Mullumala 60	14	62	2	119.92
33.	Mullumala 80	40	135	2	58.03
34.	Ambanar	33	134	1	61.01
35.	Kottakkayam	20	73	1	107.53
36.	Kadampupara	13	64	4	133.61
37.	Nambiyarmadom	21	86	3	110.00
38.	Orekkar	12	57	5	143.70
39.	Paravilayil	19	71	5	113.24
40.	Parayil	22	79	5	103.48
41.	Vijayamandiram	17	82	3	108.33
42.	Chaivupurayidom	24	91	1	86.65
43.	Schembanaruvi School	---	41	1	164.88
44.	Depot kulam	27	122	2	93.56
45.	Moonnumukku	21	108	2	98.07
46.	Block No.66	18	81	1	138.64
47.	Block No.82	17	82	1	126.22
48.	Kottavasal Well	40	183	4	61.66
49.	Kottavasal Kambiline	28	87	3	107.34
50.	Nirappil	23	82	1	140.41
51.	Muster Office	19	96	2	101.43
52.	Vanmala	17	84	2	86.55
53.	Lookout	12	53	2	140.47
54.	Ottakkal	17	88	3	79.16
55.	Erappanchal	16	89	2	114.94
56.	Nalpathamile (40th Mile)	29	129	3	79.57
57.	Kaduvakkalungu	19	72	3	128.22
58.	Theatre kulam	40	181	3	45.33
59.	Nedumanoorkadavu	13	59	4	158.59
60.	Oottukuzhy	21	82	3	128.19
61.	Kuttankulam	15	70	2	133.42
62.	Valiyakonam	18	80	2	123.25

1	2	3	4	5	6
63.	Narikkodu	17	79	2	128.16
64.	Thalavoor	18	91	2	138.13
65.	Valiyaparakkuzhy	16	72	4	115.38
66.	Kundethumoola	24	94	2	96.12
67.	Aramanakulam	4	20	3	265.00
68.	Chakkanchirakkulam	20	94	5	98.19
69.	Uppinithara	21	84	6	96.89
70.	Thennakkanna	12	74	4	110.05
71.	Thannikkodukulam	11	66	3	124.52
72.	Harimangalathu	21	103	2	81.01
73.	Kaleekalkulam	20	87	3	94.59
74.	Kadamankulam	4	11	3	794.09
75.	Charivukalakkulam	10	61	4	118.45
76.	Kadakkamon	17	67	5	129.73
77.	Mannakkonathu	12	51	5	185.33
Total		1344	6441		

Range	Frequency (No. of spring beneficiaries)
Below 20	4
20 - 40	5
40 - 60	12
60 - 80	19
80 - 100	21
Above 100	16
Total	77

DETAILS OF TECHNICAL ASPECTS

Sl. No.	Name of Spring	Type of water drawing system	Flow rate Lits per minute	Water storage capacity, l
1.	Embrayikulam	Hand pump	10 lit/min.	7450 lts
2.	Thodukandathil	"	1	1825
3.	Vedamala	"	0.80	1575
4.	Attirakkathu	"	0.30	648
5.	Konathukuzhy	"	1.0	1508
6.	Mudakkanamkuzhy	Waste-no tap	1.0	1450
7.	Kodiyattukuzhy	Rope, bucket and pulley	1.0	1178
8.	Kumbikkal	Hand pump	1.0	1194
9.	Vazhappara	Rope, bucket and pulley	1.5	1696
10.	Vellappara	Hand pump	1.5	1630
11.	Kuttikkonam	"	1.0	1500
12.	Ambedkar Colony	"	2.0	1800
13.	Santhi Bhavan	"	3.0	1900
14.	Kalayil	Rope, bucket and pulley	0.5	1800
15.	Vazhapparakkulam	Hand pump	0.5	1200
16.	Field No.10(1) Chithalvetty	"	0.8	1350
17.	Field No.10(2)	"	0.85	1375
18.	Purachal	Waste-no tap	1.0	1350
19.	Sanyasikon	Hand pump	1.7	1600
20.	Thodiyilkandam	"	1.1	800
21.	Kavullathill	"	0.9	800
22.	Chankoorkkulam	"	0.7	1450
23.	Micamine	"	3.95	2800
24.	Thengumtharakkulam	"	1.4	1550
25.	Perumthol	"	3.0	4000
26.	Perumthol School	"	3.0	2160
27.	Kala Bharen	"	5.0	3000
28.	Thalappakkettil	"	4.0	2880
29.	Valiyakavu	"	5.0	3600
30.	Anachal	Waste-no tap	15.0	9000
31.	Anappara	Hand pump	2.0	1900
32.	Mullumala 60	"	3.6	3800
33.	Mullumala 80	"	2.8	3600
34.	Ambanar	"	3.0	2800
35.	Kottakkayam	"	2.3	2200

1	2	3	4	5
36.	Kadampupara	Hand pump	4.5 lit/min.	3250 lts.
37.	Nambiyarmadam	"	3.2	2500
38.	Orekkar	"	3.5	2520
39.	Paravilayil	"	4.0	3000
40.	Parayil	"	2.5	1800
41.	Vijayamandiram	"	5.5	4000
42.	Charivupurayidom	"	3.5	3000
43.	Schembaneruvi School	"	2.6	2100
44.	Depot Kulam	"	3.0	2160
45.	Moonnumukku	"	6.0	4500
46.	Block No.66	"	4.0	3000
47.	Block No.82	"	3.5	2520
48.	Kottavasal Well	"	8.0	6000
49.	Kottavasal Kambiline	Waste-no tap	3.4	2000
50.	Nirappil	"	5.5	4000
51.	Muster Office	"	4.1	3000
52.	Vanmala	Hand pump	4.0	2880
53.	Look out	"	3.5	2500
54.	Ottakkal	"	1.8	1520
55.	Erappanchall	Waste-no tap	6.0	4320
56.	Nalpathamile (40th mile)	Hand pump	6.5	4500
57.	Kadukkalungu	"	6.2	4300
58.	Theatre Kulam	"	4.5	3250
59.	Nedumanoorkadavu	"	4.0	2980
60.	Oottukuzhy	"	4.5	3240
61.	Kuttankulam	"	3.7	2665
62.	Valiyakonam	"	3.8	2750
63.	Narrikkodu	"	3.9	2800
64.	Thalavoor	"	1.7	1324
65.	Valiyaparekkuzhy	"	4.2	3025
66.	Kundethumoola	"	5.5	3960
67.	Aremanakulam	"	2.9	2600
68.	Chakkanchirakkulam	"	5.0	5000
69.	Uppinithara	"	2.0	2100
70.	Thennakkanna	Waste-no tap	2.8	2016
71.	Thannikkodukulam	Hand pump	2.5	1800
72.	Harimangalathu	"	3.8	2750
73.	Kaleekalkulam	"	4.1	3500

Contd....3



1	2	3	4	5
74.	Kadamankulam	Hand pump	3.2 lit/min.	3400 lts.
75.	Charivukalakkulam	"	3.8	3800
76.	Kadakkamon	"	3.2	2300
77.	Mannekkonathu	"	3.5	3600

APPENDIX NO. 12

PAZHAKULAM SOCIAL SERVICE SOCIETY - PASSS

DETAILS OF THE IMPORTANT FIELD VISITS:

Before Construction:

Sept. 18-20, 1990 : Mr. Paramasivan, Hydrologist, AFPRO, Coimbatore and Mr. J. Srinath, Jr. Hydrogeologist Visited following sites.

1. Embroyil (Spring No. 1)
2. Thondukandathil 2
3. Mudakkanmkuzhy 6
4. Konathukuzhy 5
5. Attirakkathu 4

21st March 1991 : Ms. Kathleen Shordt and Dr. Balachandra Kurup, SEU, KWA, visited following sites.

1. Embroyil (Spring No. 1)
2. Thondukandathil 2
3. Mudakkanamkuzhy 6
4. Shanthi Bhavan 13

4th May 1991 : Mr. J. Srinath, Hydrogeologist, AFPRO, Coimbatore and Mr. A. Kalimuthu, Asst. Engineer visited following sites.

1. Vellappara (Spring No. 10)
2. Kumbickal 8
3. Vazhappara 9

4th Dec. 1991 : Mr. Teo Haagsma, TLO, KWA and Dr. Balachandra - Kurup, SEU, KWA visited following sites.

1. Embroil (Spring No. 1)
2. Thondukandathil 2.

11th Dec. 1991 : Mr. J. Srinath, Hydrogeologist, AFPRO, Coimbatore visited following sites.

1. Kalayil (Spring No. 14)
2. Ambedkar Colony 12.



During Construction:

March 5th, 1992 : Mr. Mann and Dr. Balachandra Kurup visited following sites.

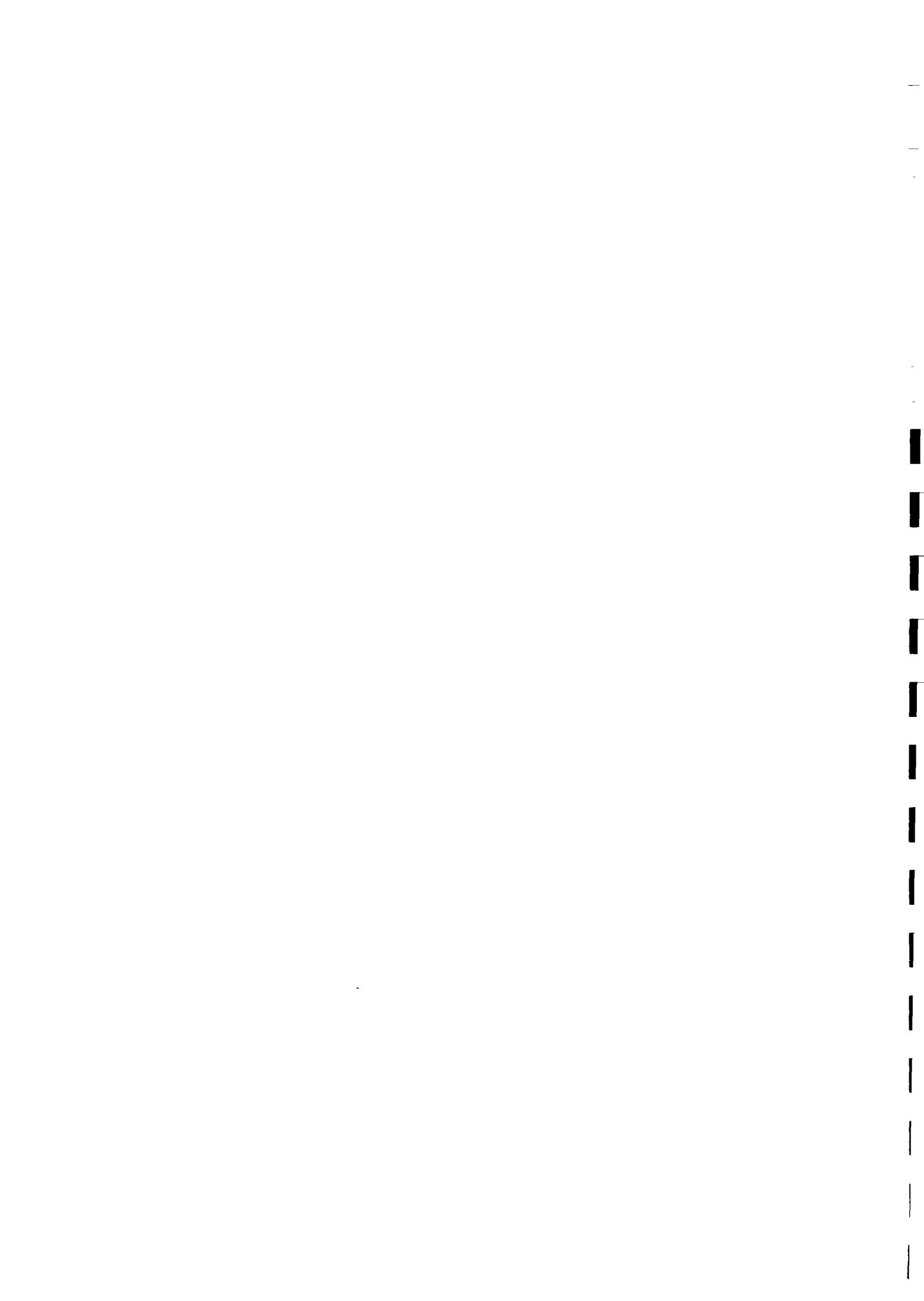
1. Kavullathil (Spring No. 21)
2. Santhi Bhavan " 13
3. Kalayil " 14
4. Ambedkar Colony 12
5. Field No. 10(1) 16
6. Purachal 18
7. Sanyasicon 19
8. Micamine 23
9. Perumthol 25

March 6th 1992 : Mr. Mann and Dr. Balachandra Kurup visited following sites.

1. Kuttikonam (Spring No. 11)
2. Naricode 63 Y Before starting
3. Kundayathumoola 66 X construction work.

April 7th, 1992 : Two scientists from Pollution Control Board visited following sites and taken water samples for testing.

1. Kavullathil (Spring No, 20)
2. Thondakandathil 2
3. Thengumthara 24
4. Vellappara 10
5. Mudakkanamkuzhy 6
6. Konathukuzhy 5
7. Vazhappara 9
8. Kumbickal 8
9. Purachal 18
10. Sanyasicone 19
11. Perumthol 25
12. Micamine 23



May 1st : Dr. Balachandra Kurup and Ms. Christeena visited following sites.

- | | |
|--------------------|----|
| 1. Embroyil Kulam | 1 |
| 2. Kavullathil | 21 |
| 3. ChanKur kulam | 22 |
| 4. Thondukandathil | 2 |
| 5. Thalappakettu | 28 |

May 15th : Mr. Babu Jacob, I.A.S., Water Authority Chairman with Dr. Balachandra Kurup from S.E.U. visited following sites.

- | | |
|-----------------|------------------------|
| 1. Thennakkana | 70 - work in progress. |
| 2. Embroyil | 1 |
| 3. Chekkanchira | 68 |

May 27th : Dr. Balachandra Kurup from S.E.U. visited following springs before starting construction works.

- | | |
|----------------------|---------------|
| 1. Lookout | Spring No. 53 |
| 2. Ottackal | 54 |
| 3. Erappanchal | 55 |
| 4. 40th Mile | 56 |
| 5. Kaduvakkalangu | 57 |
| 6. Theatre kulam | 58 |
| 7. Nirappil | 50 |
| 8. Kottavasal Border | 48 |
| 9. Depot kulam | 44 |
| 10. Moonnumukku | 45 |
| 11. Block No. 66 | 46 |
| 12. Block No. 82 | 47 |

May 28th : No field visit. Discussion with Dr. Balachandra Kurup.

August 17th: Ms. Kathleen Shordt and Dr. Balachandra Kurup visited following sites.

- | | |
|-----------------------|----|
| 1. Lookout | 53 |
| 2. Ottackal | 54 |
| 3. Nedumannoor kadavu | 59 |
| 4. 40th Mile | 56 |
| 5. Erappanchal | 55 |
| 6. Kottavasal Border | 48 |
| 7. Kambiline | 49 |

August 18th: Ms. Kathleen Shordt and Dr. Balachandra Kurup visited the following sites.

- | | |
|------------------|----|
| 1. Purachal | 18 |
| 2. Perumthol | 25 |
| 3. Thalappakettu | 28 |
| 4. Micamine | 23 |
| 5. Sanyasicone | 19 |

October 3rd : A Dutch & Danish team comprising of a Social Organiser and an Engineer with Mr. Vijaya Kumar from AFPRO and Dr. Balachandra Kurup from S.E.U. visited following sites.

1. Chekkanchira Kulam 68
2. Embroyil kulam 1
3. Thennakkana 70

November 12th : Ms. Kathleen Shordt and Dr. Balachandra Kurup visited the following sites.

1. Mannakkonathu 77 X Model Springs
2. Kadackamon 76 X

November 13th : No field visit. Discussion with Ms. Kathleen Shordt and Dr. Balanchadra Kurup.

APPENDIX NO. 13 (a)
PAZHAKULAM SOCIAL SERVICE SOCIETY - PASSS
NATURAL SPRING DEVELOPMENT PROGRAMME
REPORT OF THE MODEL SPRINGS
CONSTRUCTED AT KADACKAMON COLONY

Procedures involved in construction of Springs:-

I. Identification of Spring:

As per the enquiry from the Society, the Panchayath through the Panchayath President and member informed us about the spring and the importance of its construction.

II. Verification of Technical and Social feasibility:

A team of 4 members comprising of 2 Engineers and 2 Social Organisers visited the place and the following feasibilities were verified.

1) Technical

- a. Perenniability of spring.
- b. Quality of water.
- c. Rate of flow of water.
- d. Depth of spring.
- e. Cost of construction.

2) Social

- a. No. of beneficiary family.
- b. Average distance from spring to houses.
- c. Genuine need - availability of alternative of water.

Since these social and technical conditions were met with satisfactorily, decided to go for primary house visits.

III. Primary house visits:

The main objective of primary house visits.

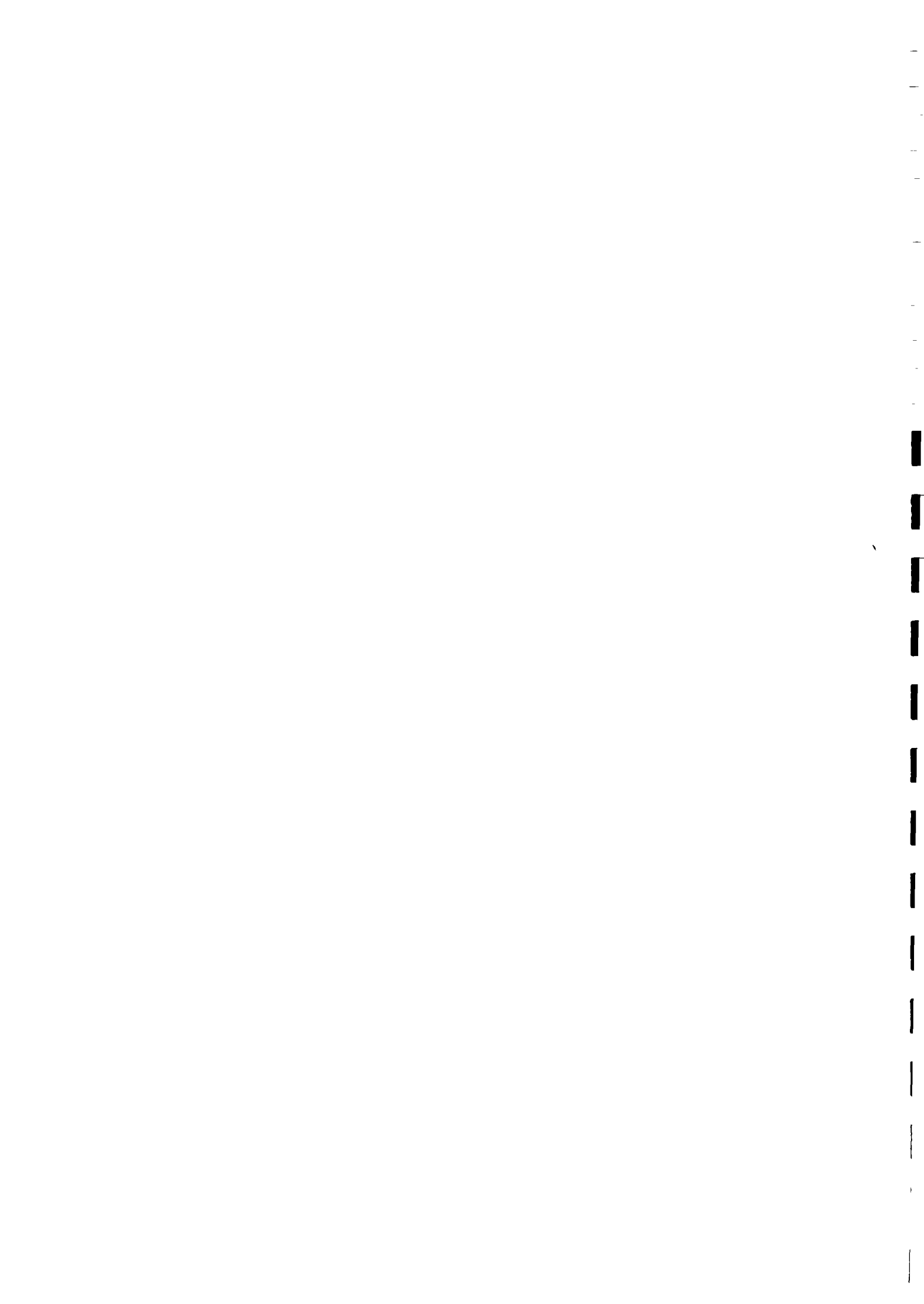
- (i) Self introduction
- (ii) Interest of the people towards this programme
- (iii) Actual number of beneficiaries.

IV. Selection of the spring for the developments:

Considering the above mentioned points the spring at Kadakkamon was selected for development.

V. Permission from the land owner: -

A written permission at Rs. 15/- stamp paper was received from the land owner Mrs. T. Thanka allowing the PASSS to take up the spring for construction and let the people to take water further also.



VI. Secondary house visits:

- (i) Rapport.
- (ii) Description of our programmes in brief.
- (iii) Importance of safe good drinking water.
- (iv) Motivate the people for a discussion.

VII. Motivation class:

1. Health education class.
2. Design and construction.
3. Operation and maintenance of hand pump and bleaching powder.
4. Beneficiaries participation and selection of water committee.
5. Health education class.

VIII. Assessment about the house visits:

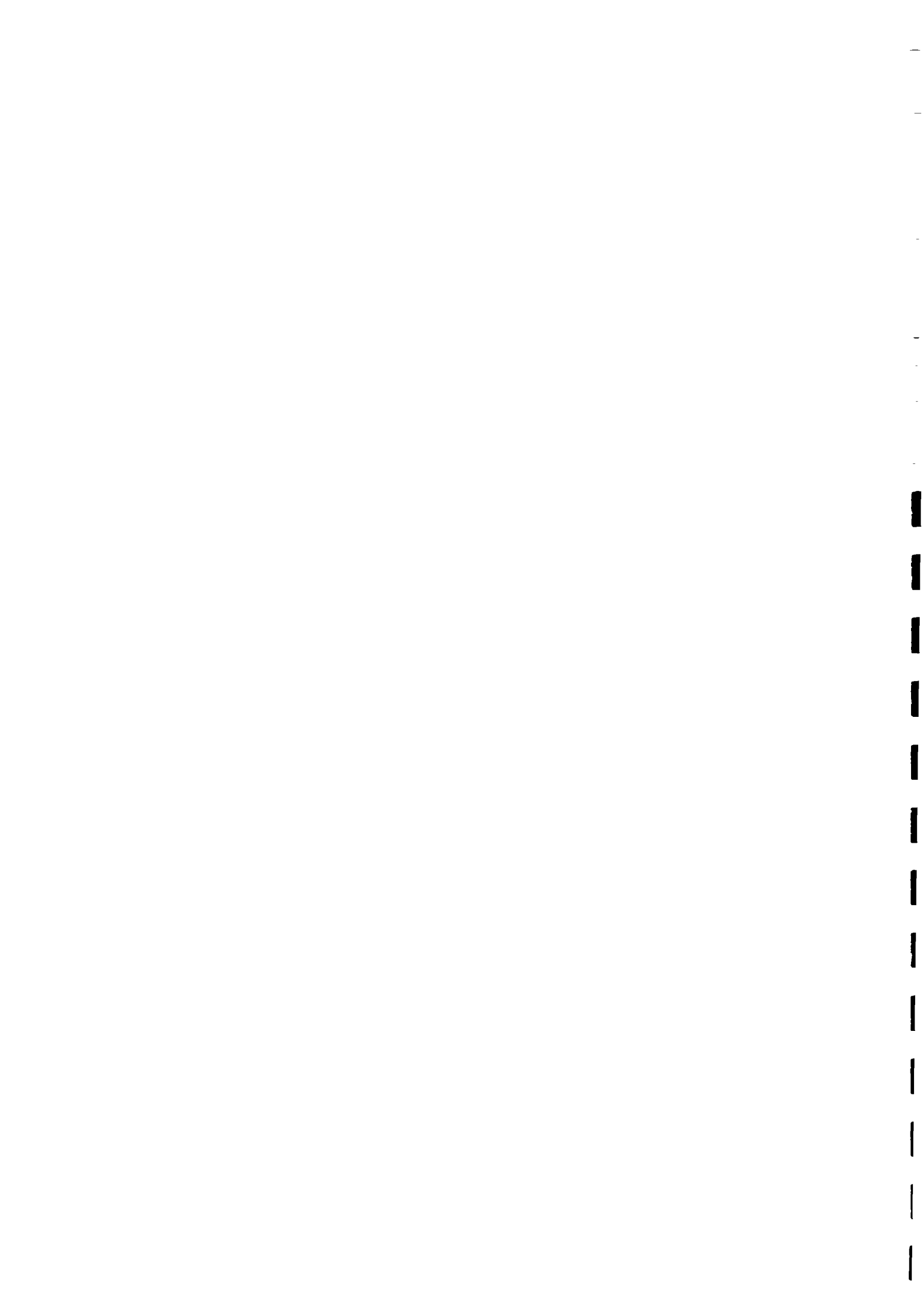
The spring at Kadakkamon is situated at an area which was found enjoying all the privileges of a recognised Harijan Colony. So the people had the habit of receiving every thing granted and as they earn their bread through daily wages, showed only little interest towards their participation in the construction work. But through our motivation classes, we could change their attitude considerably and could make them understand the importance of safe good drinking water in healthy life.

IX. Construction:

1. Material arrangement.
2. Motivation class during construction.
3. Installation of hand pump.

Conclusion:

Though the people were hesitant towards this programme in the beginning, they have taken a keen role in organisation and construction after several motivation classes. The main participation was in the field of excavating the site and for arranging sand for construction. The all over participation of the beneficiaries towards this programme was satisfactory.



APPENDIX NO. 13 (b)

REPORT OF THE MODEL SPRING CONSTRUCTED AT KURAMPALA

I. Identification of Spring:

As PASSS Farm Club of Kurampala area is functioning properly, they could help us in identifying a perennial spring at Mannakonathu.

II. Verification of technical social feasibility:

A team of 4 members comprising of 2 Engineers and 2 Social Organisers visited the place and the following feasibilities were verified.

1) Technical

- a. Perenniability of spring.
- b. Quality of water.
- c. Rate of flow of water.
- d. Depth of spring.
- e. Cost of construction.

2) Social

- a. NO. of beneficiary family.
- b. Average distance from spring to houses.
- c. Genuine need - availability of alternative of water.

Since these social and technical conditions were met with satisfactorily, decided to go for primary house visits.

III. Primary house visits:

The main objectives of primary house visits

- (i) Self introduction. And to check
- (ii) Interest of the people towards this programme
- (iii) Actual number of beneficiaries.

IV. Selection of the spring for development:

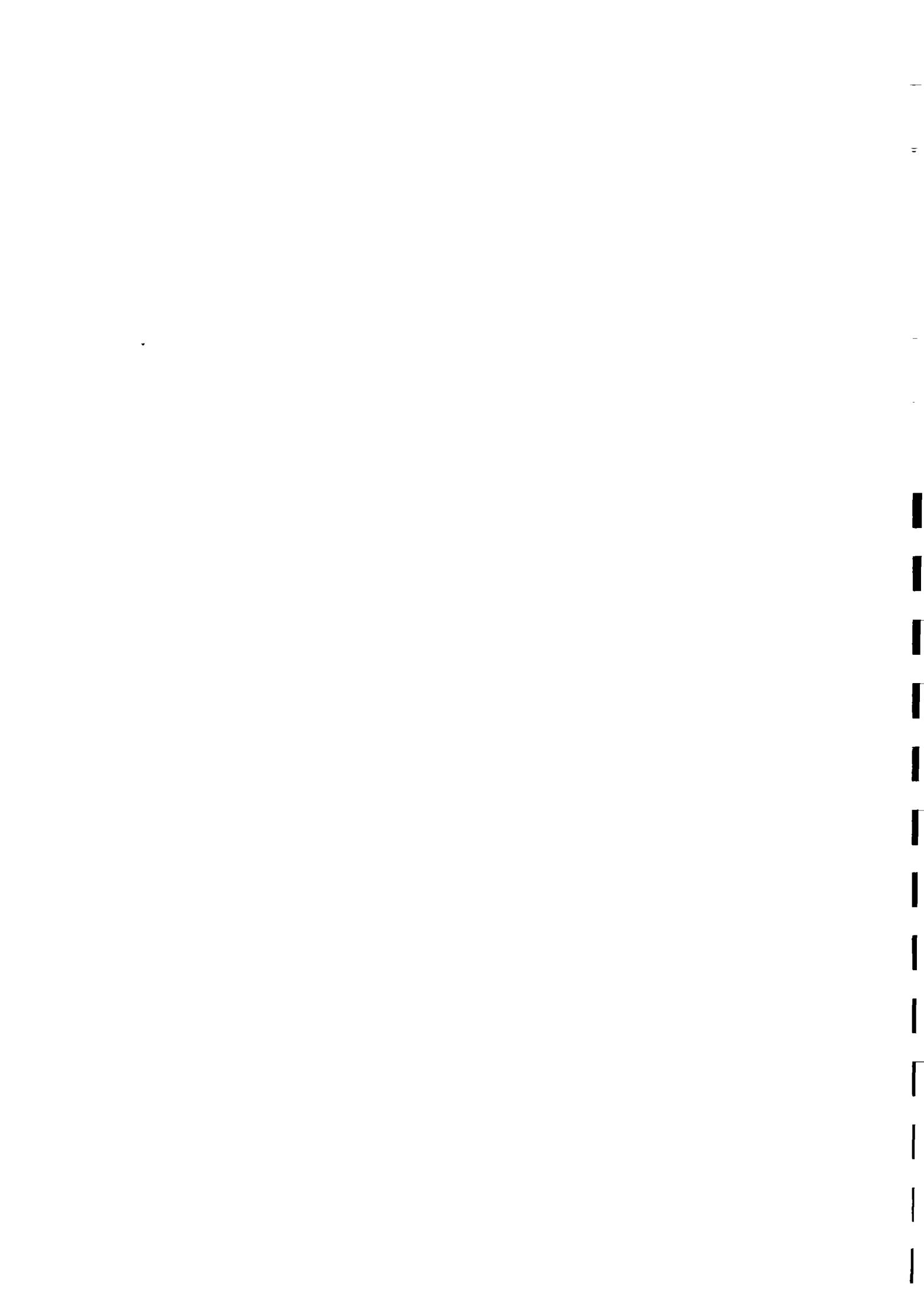
Considering the above mentioned points, the spring at Kurampala was selected for development.

V. Permission from the land owner:

A written permission at Rs.15/-stamp paper was received from the land owner Mr. Raghavan allowing the PASSS to take up the spring for construction and let the people to take water further also.

VI. Secondary house visits:

- (i) Rapport.
- (ii) Description of our programme in brief.
- (iii) Importance of safe good drinking water.
- (iv) Motivate the people for a discussion.



VII. Motivation class:

1. Health education class
2. Design and construction
3. Operation and maintenance of hand pump and the method of application of bleaching powder.
4. Beneficiaries participation and selection of water committee
5. Health education class.

VIII. Assessment about the house visits:

The spring at Kurampala is situated in an area, where the majority of people are Harijans, but yet to be recognised as a Harijan Colony by Government. We got a warm welcome from them as we are the first people to approach them with a project of health and development. Through the frequent house visits and motivation classes, we could make them understand and importance of safe good drinking water. People have shown considerable interest towards the health classes.

IX. Construction:

1. Material arrangement.
2. Motivation class during construction.
3. Installation of hand pump.

Conclusion:

People have shown considerable interest in participation of construction of structure especially in excavating the site, transporting materials to site and as unskilled labourers, helping masons. This is the area, where we could get maximum participation towards the organisation and construction.

APPENDIX NO. 14

PAZHAKULAM SOCIAL SERVICE SOCIETY - PASS

REG.NO. Q 489/84

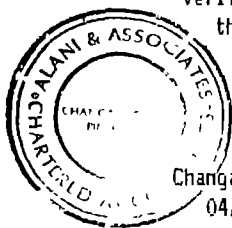
CONTRIBUTION FROM ROYAL NETHERLANDS GOVERMENT THROUGH SEU/K.W.A.

RURAL WATER SUPPLY THROUGH DEVELOPMENT OF NATURAL SPRINGS

RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD 19.04.91 TO 30.11.92

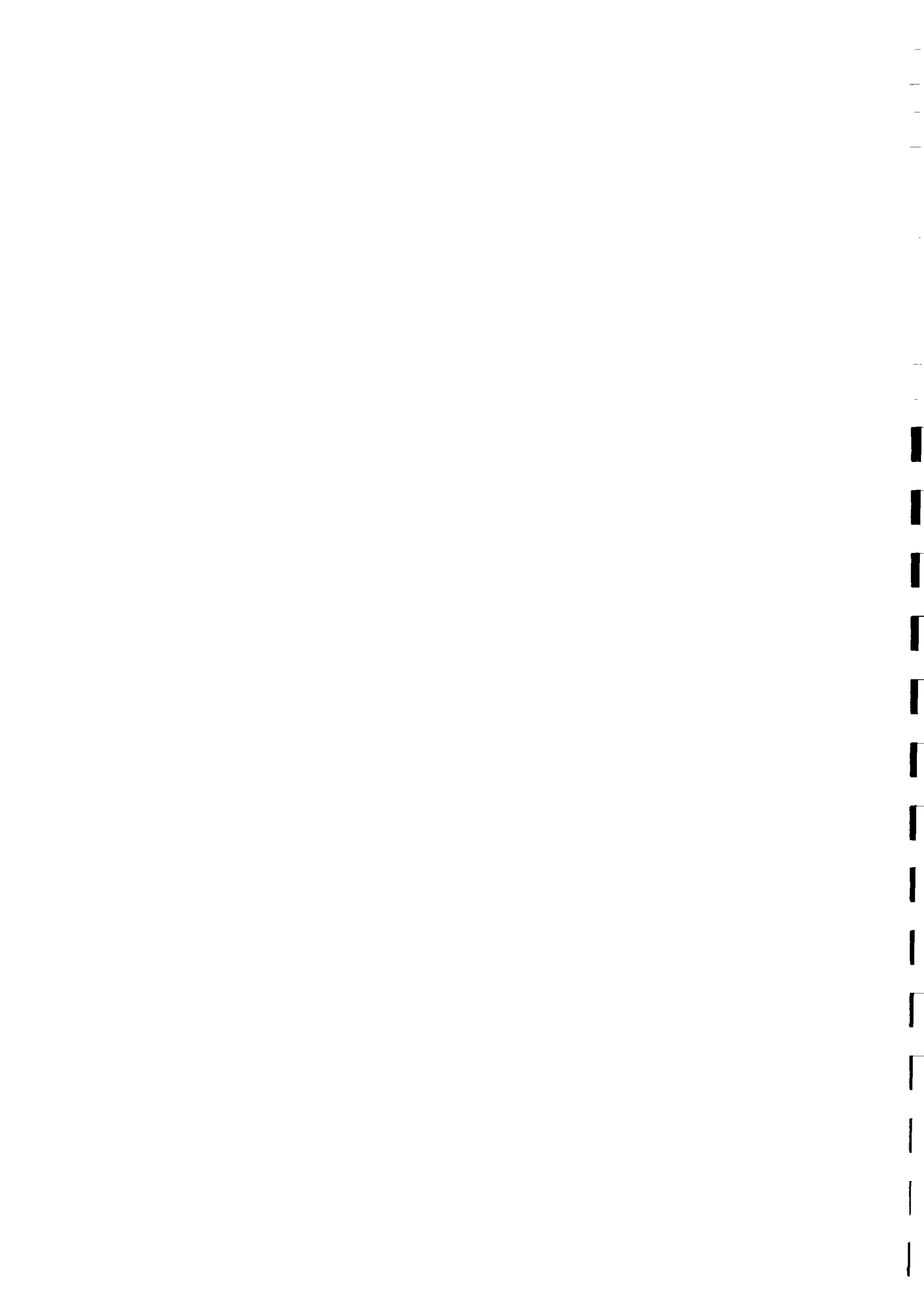
R E C E I P T S		P A Y M E N T S	
To Contribution from SEU/C.O.	9,02,750.00	By Intial community organisation Acitivities	64,645.65
Bank Interest	1,912.45	" AFPRO study and other services	660.00
		" Technical design for 77 springs	26,170.00
		" Survey yeild and feasibility for springs	5,283.85
		" Physical execution of springs	5,88,495.15
		" Preparation of documents and reports	6,602.10
		" Administrative expenditure :-	
		Salary for project workers	54,550.00
		Travel & Office expenditure	41,856.27
		Closing Balance as on 30/11/92	
		Cash on hand	1,13,089.46
		Cash at Bank	3,309.95
Total	9,04,662.45	Total	9,04,662.45

Verified with books and Vouchers and found them to be in accordance therewith



Changanacherry
04/11/1992

Thomas T. Alani F.C.A.
Chartered Accountants



4 KOCHI

DISTRICT NOTEBOOK

Water all through the year from natural springs

By John Mary

SMALL developmental miracles are still possible and they are happening in Kerala.

The hilly terrain in Kerala like anywhere else has a searing problem during summer. It becomes parched, with water sources drying up. The land and its people miss the rhythm. Vegetation shrivels, wild animals stray into human habitat and wreak havoc and people grow less hygienic as water gets scarce. And that's the time everyone wants the rains to come. But the mood is changing in the rocky hillocks in Kollam and Pathanamthitta districts.

The people in about 11 panchayats in Pathanapuram and Parakode blocks are not going to flee the next summer for they have provided themselves with some 80 well developed natural springs (wells) that will take care of their water needs all through the year.

The springs have in a way upset the calculations of the planners by using up only one-third of the budgeted amount. The planners estimated Rs 12,000 a spring, but on an average the springs needed only a little over Rs 4,000. That leaves a lot of money out of the original Rs 9 lakh for developing 75 springs. The unspent balance is being used for expanding the project to cover 20 more, raising the total to 100.

The credit is shared by the beneficiary families which contributed men and material, the Pazhakulam Social Service Society which con-

ceived and supervised the project, the socio-economic unit of the Kerala Water Authority and the Dutch Government.

That the springs could be developed in the prescribed time (April 91 - June 92) and at a lesser cost than estimated, demolishes the humdrum calculations of the governmental agencies which for the sake of their mega projects, demand extra amounts to meet cost escalations in every budget.

The experiment at Pathanapuram and Parakode holds out a model for the rest of the State.

The Pazhakulam Social Service Society first prepared a scientific scheme for developing 10 springs

Pathanamthitta

The geology wing of the action for food programme (AFPRO) from Coimbatore undertook the feasibility studies. The society held several sessions with the beneficiary families and their willingness was obtained for handing over the land to the panchayats. In Kerala, where even the raising of a thatched fence results in quarrels, land was easily made available for the project spread over 11 panchayats.

Instead of projects originating from design tables of the Water Authority engineers, the beneficiary families themselves discussed with the society representatives the viability of each source of water. They also fixed their contribution

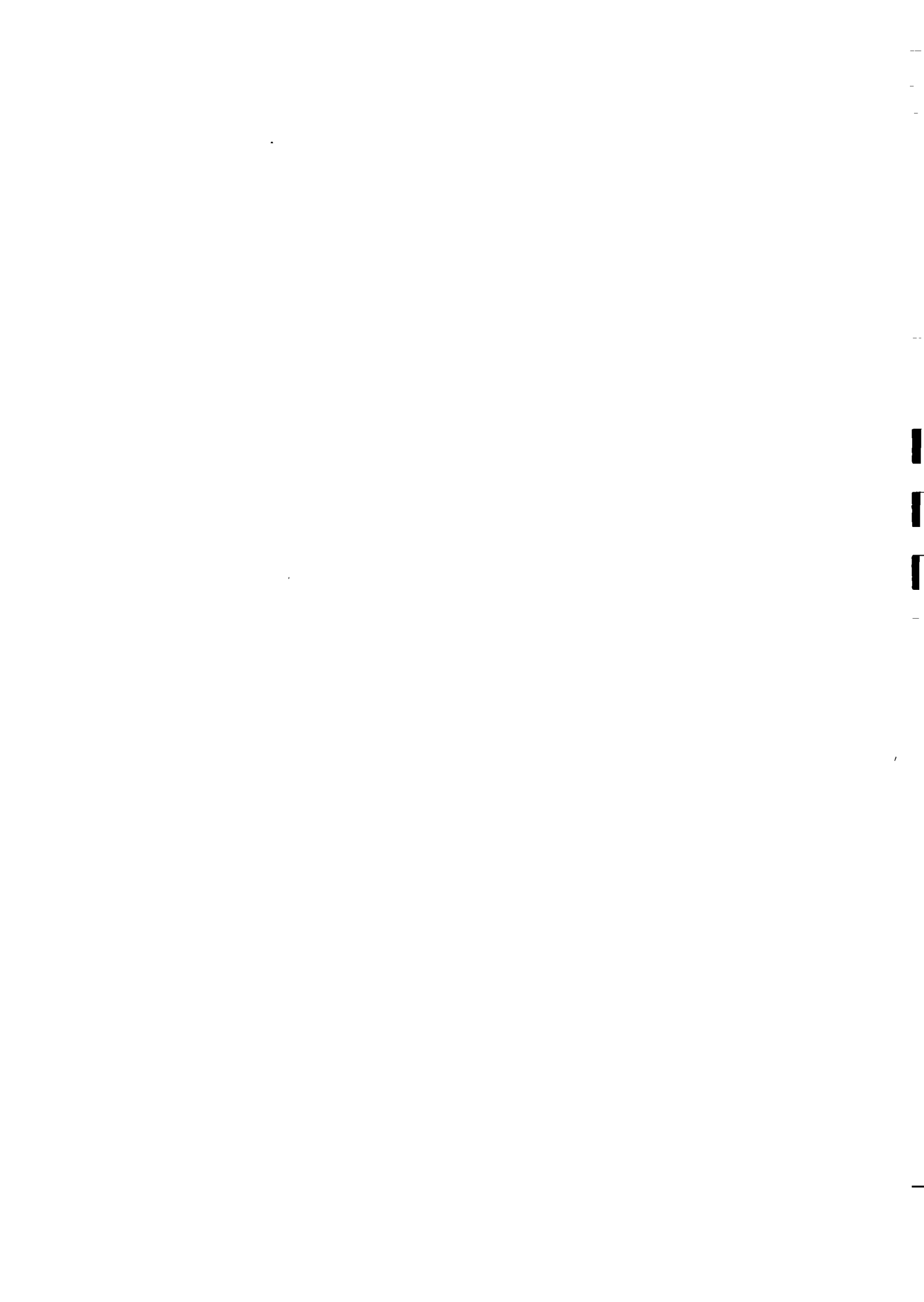
both in physical labour and materials. So the primary responsibility of developing and maintaining the springs rested with the people. It thus became a people's movement.

Of course, the officials rendered yeoman service. Interestingly, the Government officials were dropped from the water committees when it was found that their presence could not be ensured regularly at meetings.

After the springs were identified, the Pollution Control Board tested the quality of water. AFPRO designed them and depending on the flow rate, handpumps and taps were provided. The bucket and pulley system was least preferred because it was found to be unhygienic. The KWA, not directly associated with the project undertook a spot check of the quality of the selected springs.

The scheme was implemented in two stages. In the first stage 10 springs were selected and the budgeted amount was Rs 12,000 each. The actual cost came to a little over Rs 4,000. There was one spring which had a flow rate of 600 litres an hour which incurred a cost of nearly Rs 25,000. The total amount earmarked for 75 springs was Rs 9 lakh, with the unspent balance another 25 are to be completed soon.

The springs are going to be new life-centres. There could be enough water for dairying and poultry-keeping. Small-time industrial activity, restricted to the lush part of the year, can now be carried on in the scorching summer.



APPENDIX NO. 16

PAZHAKULAM SOCIAL SERVICE SOCIETY, PASSS.

LIST OF PLANTING MATERIALS SUPPLIED TO VARIOUS SPRING BENEFICIARIES

AS A FOLLOW-UP PROGRAMME.

Sl no.	Name of spring	Seedlings							Plantain suckers	Mango Graft	Jack Graft	Guava Graft	Rooted Pepper Cutting	Pomegranate
		Coconut	Araca-nut	Nutmeg	Clove	Citrus	Cinna-mon	Goos-eberry						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Vazhappara well	7							34	3			2	
2.	Ambedkar colony	20		8	8		3	8	54	15		3	137	1
3.	Shanathi Bhavan	25	-	3	5	4	3	1	90	20	-	-	129	-
4.	Kalayil	14	-	2	12	3	1	1	84	14	-	-	84	-
5.	Vazhappara kulam	4	-	-	-	-	-	-	8	3	-	-	5	-
6.	Field no.10 (i)	9	-	-	2	-	-	-	35	-	-	-	23	-
7.	Field no.10 (ii)	5	-	2	3	-	-	-	23	1	-	-	25	-
8.	Sanyasikon	6	-	-	-	-	-	-	1	10	-	-	15	-
9.	Thodiyikandom	2	-	-	-	-	-	-	10	1	-	-	15	-
10.	Chankoor kulam	-	-	1	3	-	-	-	21	7	-	-	-	-
1.	Micamane	46	-	2	-	2	-	-	8	2	-	-	24	4
2.	Peruthol	5	-	-	2	-	-	-	2	2	-	-	50	-
3.	Thalappakettu	2	-	-	-	-	-	-	3	3	-	-	25	-
4.	Kadmpupara	3	-	-	2	-	-	-	10	1	-	-	12	-
5.	Nambyarmadom	4	-	2	-	-	-	-	15	-	-	-	13	-
6.	Orekkar	2	-	-	-	-	-	-	10	2	-	-	20	-
7.	Parvilayil	3	-	-	1	-	-	-	6	-	-	-	10	-
8.	Paryil	4	-	-	2	-	-	-	7	-	-	-	5	-
9.	Vijayamandiram	2	-	-	1	-	-	-	6	1	-	-	9	-
0.	Charivupurayidom	3	-	-	-	-	-	-	6	-	-	-	6	-
1.	Depot kulam	4	-	-	-	-	-	-	5	1	-	-	12	-
2.	Moonnumukku	2	-	-	-	-	-	-	6	1	-	-	10	-

Contd -----2-----

PAZHAKULAM SOCIAL SERVICE SOCIETY, PASSS.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
23	Block No.66	3	-	-	1	-	-	-	8	-	-	-	5	-
24	Block No.82	4	-	-	1	-	-	-	6	-	-	-	7	-
25	kottavasal well	13	-	-	22	3	-	3	37	7	-	3	175	-
26	Kottavasal kambiline	-	-	-	-	-	-	-	27	1	-	-	75	-
27	Nirappil	2	-	-	-	-	-	-	10	2	-	-	15	-
28	Nalpatham mile	15	-	-	-	-	-	-	5	-	-	-	8	-
29	Nedumanoor kadavu	20	-	-	-	-	-	-	23	3	-	-	100	-
30	Kuttan kulam	5	-	2	5	-	-	2	2	6	-	-	110	1
31	Valiyaparakkuzhy	13	12	-	-	2	-	1	4	18	-	1	278	-
32	Kundayathumoola	6	-	-	-	-	-	-	17	-	-	-	2	-
33	Uppinithara	2	-	2	-	-	-	-	18	1	-	-	14	-
34	Thennekkana	2	-	3	3	-	-	-	-	10	-	-	15	-



