

*The application of a questionnaire-survey  
with community involvement in  
La Sirena and Los Mangos, Cali, Colombia*

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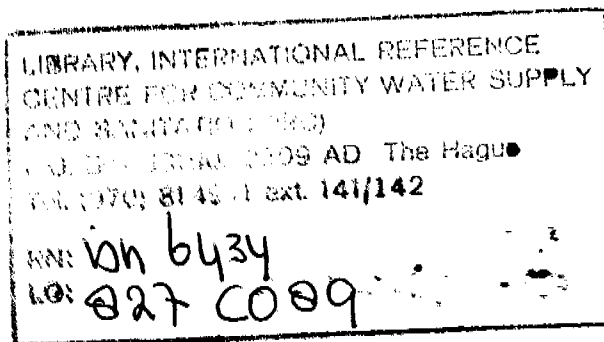
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## FOREWORD

The working-group, "Area de Abastecimiento y Remoción de Agua" of the University of Valle in Cali, Colombia, collaborates closely with IRC International Water and Sanitation Centre. Tasks of the working-group include research and technology transfer in low-cost pre-treatment systems and Slow Sand Filtration (SSF)\* for small communities in rural and urban fringe areas.

To promote community participation and hygiene education in its water supply projects, a socio-economic unit was established within the working-group in April 1988. Community participation and hygiene education are important to facilitate the people to use the treated water and sanitary facility and to maintain the water supply system and sanitary facilities. In the community participation and hygiene education programme of the working-group, experiences of the Rural Water Supply Programme of the former National Institute of Health of Colombia are taken into account. The approach of this National Institute in its hygiene education programmes was on one-way information transfer to increase health knowledge. Hygiene education was carried out with little or no community participation. The working-group wants to develop a more participatory strategy in hygiene education because it recognizes that change in behaviour will not be obtained only by augmenting people's health knowledge.

Furthermore, a hygiene education programme has to be adapted to the local conditions. In order to make such a specific local hygiene education programme, a baseline-study can be undertaken to assess the local conditions. As the "Area" had no experience with baseline-studies for hygiene education programmes, an attempt to carry out a questionnaire-survey was done in La Sirena and Los Mangos, two urban-fringe communities in Colombia. These communities were chosen because safe drinking water was about to be provided in La Sirena and an accompanying hygiene education programme had to be established to achieve changes in hygiene behaviour.

The author, as a health specialist, worked closely together in the survey with Patricia Arango, sociologist of the socio-economic unit of the working-group of the University.

Grateful mention is made of Mrs. Christine van Wijk-Sijbesma from IRC for reviewing the draft versions and for her energetic support.

\* S.S.F.= slow sand filtration, a water treatment method which is based on the principle that water passes through a bed of fine sand.

## 1. INTRODUCTION

Safe drinking water can only contribute to public health if the people use the safe water and the water doesn't get recontaminated before consumption. Also, potential health benefits of an adequate and accessible supply of clean water are frequently not realized because infections continue to be transmitted by other routes than the water supply itself. Therefore an integral upgrading of sanitation, drainage, waste disposal and general hygiene is needed. (1)

In May 1988 a questionnaire-survey was carried out in La Sirena and Los Mangos, two low-income peri-urban communities near Cali. A questionnaire-survey is defined in this article as a method of systematic information gathering by means of a list of questions.

In the following sections it is described how the survey was organized and carried out. Subsequently implications are given for the hygiene education programme and conclusions are drawn on the methodology.

(1) See Boot, M. (1984). Making the links: guidelines for hygiene education in community water supply and sanitation (Occasional Paper Series no. 5). The Hague, The Netherlands, IRC.

## 2. THE COMMUNITIES LA SIRENA AND LOS MANGOS.



The community of La Sirena

### Location and demographic aspects.

La Sirena and Los Mangos are communities located at the outskirts of Cali, Colombia. Cali has about 1 - 1.5 million inhabitants. It is the administrative and financial centre of the sugar cane, cotton and coffee growing areas.

La Sirena and Los Mangos are independent from each other. La Sirena counts 1645 inhabitants or 299 households. The average number of persons per household is 5.5. Los Mangos counts 176 inhabitants or 32 households. The average number per household is also 5.5.

In annex A a map of the communities is included.

La Sirena did not originate from an invasion, but arose when some families came to buy a plot of land. None of the families however, received in writing a proof of authenticity of the transaction. This caused problems to the 20 families that initially came to La Sirena because the municipal cadastre saw them as invaders and tried to remove them.

Once permission to stay was obtained, the process of the division of the plots and the building up of the community started.

### Socio-economic aspects.

The population has a heterogeneous background mainly related to its differences in income. Although there was no information available on the economic situation of the inhabitants, from the state and appearance of the houses it may be concluded that the

majority of the population belongs to the low-income groups. There are a few better-off families. The majority of the men is working in construction. The greater part of the women are housewives, some have a paid job as cleaning- or washerwomen in Cali.



Low-income groups in La Sirena

#### Organizations.

Several types of organizations exist in La Sirena, like civil, political and community organizations. Some organizations however are quite inactive. There is a Water Committee which is responsible for the water supply (collecting monthly contributions, promoting connections to other houses). It is attached to a political party.

The Action Committee is responsible for community development projects. The two committees (Water Committee and Action Committee) are represented by the same persons which is legally not allowed.

#### Infrastructure.

La Sirena counts two primary schools and one kindergarten. There is no hospital nor health centre in the two communities. Money has been raised in La Sirena to build a health centre. The Municipal Secretary of Public Health has promised to give financial support. At present the people have to go to the health centre of Siloe, some 15 minutes by bus. During the night, this is difficult because there are only buses till 9.00 p.m. and there are few private cars.

There is no adequate waste disposal system; several sites within the villages serve as depositing places for garbage. Most streets of the communities have no sewerage system. In a few streets in La Sirena the people are digging trenches and laying a rudimentary piped sewerage system with an outlet to the river. In the other places waste water is left running liberally causing damage and increasing risks of infectious diseases.



Inadequate waste-disposal:  
a source of infection

#### Health.

Statistic information of the nearby health centre of Siloe showed that between January and April 1988, 139 persons from La Sirena came to the health centre. This is equal to 8.4% of the total population of La Sirena.

This information also showed that water related diseases, like intestinal parasitism, and diseases that can be caused by inadequate hygiene, like skin infections and diarrhoeal diseases, represent 38.8% of the total number of consults.

Several health agents are living in La Sirena and Los Mangos, like nurses, a traditional midwife, a herbalist and three housewives that followed a course on how to cure children with diarrhoea. Most of them do not ask money for their services.

### Water supply.

The community of La Sirena constructed its own water supply system with treatment-plant; 60 to 70% of the population participated ten years ago directly or indirectly in the construction of the intake, the pipelines, the storage tank and, in 1986, the SSF-plant.

The request for a purification of the water originated from the community. As some people knew of the importance of clean drinking water for health, a community member who knew that the working-group of the University designed SSF-plants, asked for their support.

In February 1988 the SSF-plant started functioning. Designs were made by the University for upgrading the existing distribution network and intake because they were in bad condition. In June 1988 a new intake was constructed. Due to the state of the distribution network, the treated water was not safe for drinking at the time of the survey.

The people have private house-connections, there are no public points in the communities. A local caretaker is responsible for operation and maintenance.

The community of Los Mangos has a water supply system without treatment. Some houses are connected to the water supply system of La Sirena.



The SSF-plant of the community of La Sirena



### 3. THE QUESTIONNAIRE-SURVEY.

#### 3.1 Purpose

The main purpose of the survey was to identify the routes by which the infections related to water and sanitation are spread in the two communities so that a specific local hygiene education programme could be set up. Information was obtained through environmental walks in the communities and through meetings with local leaders about the inadequate solid waste disposal and waste water disposal. Little was known about the sanitary situation and the use of the water in the households.

In the survey, involvement of members of the communities was required because of their knowledge about local conditions and local customs. Furthermore it was expected, as often referred to in literature, that greater awareness and commitment to change in the community would be created by participating in the inventory of the infectious routes and by discussing the results in neighbourhood meetings. Also it was expected that this would stimulate the people to plan a community action programme.



The surveyors from La Sirena and the University

#### 3.2 Methodology

A draft questionnaire was made by the sociologist of the University and the health specialist. The questionnaire consisted of questions and observations: the questions (see annex B for the questionnaire) focused mainly on the present water supply system and water use practices, the observations on the sanitary facilities and their hygienic conditions.

House to house visits were made with the caretaker of the water supply to find people who were willing to take part in the adaptation and the implementation of the survey. Eleven members of the community of La Sirena were willing to participate as surveyors. There were no set criteria for the selection of the community surveyors. They only had to be able to read and write.

The group consisted mainly of housewives and secondary school students in the age of 13 to 18. Four meetings were organized to train them. During these informal training sessions, the following issues were discussed: the relation between water, health and hygiene, the language and relevance of the questions of the questionnaire and the differences between the various types of sanitary installations to be observed. As part of this training a visit was paid to the newly built treatment plant where its functioning was explained. Special attention was given to the expected positive impact of the treated water on people's health.

Similar sessions were held to train seven sanitary engineering students of the University for additional support.

A map of the community from the municipal cadastre was used to calculate the sample. A recounting of the houses was necessary and done with a member of the community. A minimum sample percentage of 25% was calculated to be necessary.

Small maps were made for the surveyors to indicate in which households the interviewing had to be done. In case nobody was home or wanted to cooperate, alternative households were added on the maps.

With the surveyors it was decided when the interviewing was done.

Fieldtesting of the questionnaire took place at the beginning of May 1988. The interviewing was done by groups consisting of one person of the University and one person of La Sirena so that local and technical knowledge were combined.

Each group filled in two questionnaires. The test showed that some of the questions had to be adapted because the surveyors or respondents did not understand the meaning. Part of certain questions had not been filled in at all because too much information was wanted in one question.

A few days before the survey was carried out a public announcement was made to inform the people about the survey and its general purpose.

Interviewing took place on two consecutive nights.

Nine groups of two persons filled in the questionnaires. The sociologist and health specialist participated also in the interviewing.

The groups were equipped with a list of instructions (see annex C) and a torch to facilitate required observations in case there

would be no light in the house or sanitary facility. In turns, the two persons interviewed the respondent. Preferably, interviews were held with the mother or eldest daughter of the family (minimally 15 years old), because they are most directly concerned with the family's water supply and hygiene. The average time needed per interview was 30 minutes. One hundred and eleven questionnaires were filled in, representing 33% of the households.

Some days after the interviewing a meeting was organised with the surveyors to share opinions and experiences. Little presents were given to them.



Interviewing of a community member by a surveyor from La Sirena

### 3.3 Data processing

In the codification the surveyors did not take part because they did not have time. It was carried out by two statistic students of the University by computer. The data processing took much time (about two weeks, fulltime) because 50% of the questions was open.

### 3.4 Results of the questionnaire-survey

A selection of the data that were obtained by means of the questionnaire-survey is presented below.

The survey focused and provided information about:

A. the infectious routes related to water and sanitation that exist in La Sirena and Los Mangos;

But also information was encountered on;

B. the functioning of the Water Committee of La Sirena.

Ad A. Information about the existing infectious routes

(A sample error of 5% has to be taken into account)

#### WATER

It was known that not all the households in the communities had a connection to the water supply system of La Sirena. The exact number of households without a connection and the reasons for not having one were not known.

In table 1 the percentages of households that have a connection and that use other watersources are given. In table 2 the main reasons why households do not have a connection are summarized.

Table 1 WATERSOURCES USED FOR DAILY CONSUMPTION

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
SSF-plant	61	55,0%
River or stream	41	36,9%
SSF-plant and river/stream	8	7,2%
Does not know	1	0,9%
TOTAL	111	100,0%

Table 2 REASONS FOR NOT HAVING A CONNECTION (N=42)

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Do not think it is necessary	11	26,2%
Do not know about the plant	6	14,3%
Do not have the money	5	11,9%
The supply is very irregular	5	11,9%
The water committee didn't give a connection	2	4,8%

More than one out of three households does not have a connection to the treatment plant that will provide safe drinking water in the near future, mainly because they do not see the necessity or do not know about the existence of the plant.

Those who did not have a connection to the water supply with treatment of La Sirena were asked whether they were interested in having one.

Table 3 INTEREST IN A CONNECTION

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Yes	31	73,8%
No	10	23,8%
Does not know	<u>1</u>	<u>2,4%</u>
TOTAL	42	100,0%

The majority of these persons is interested. However almost 25% of the respondents that do not have a connection are not interested.

All the respondents were asked whether they boil the water before consumption to see whether this is a common practice in the communities.

Table 4 BOILING THE WATER

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Always	76	68.5%
Sometimes	17	15.3%
Never	16	14.4%
No reply	<u>2</u>	<u>1.8%</u>
TOTAL	111	100,0%

Far out the majority of the respondents says they boil the water before consumption. It is however likely that many respondents say they boil the water because they know they should. At the moment of the survey, it was advisable to boil the water (also the treated water) because of the poor state of the distribution net.

It was known that the drainage in the communities was inadequate. It was however unknown to what extend and what existing solutions there were.

Table 5 DISPOSAL OF THE WATER OF THE WASHING-BOWL

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Stream / river	34	30,6%
Street	16	14,4%
Sewage system	16	14,4%
Septic tank	10	9,0%
Patio	7	6,3%
Does not know	1	0.9%
Missing answers	<u>27</u>	<u>24,4%</u>
TOTAL	111	100,0%

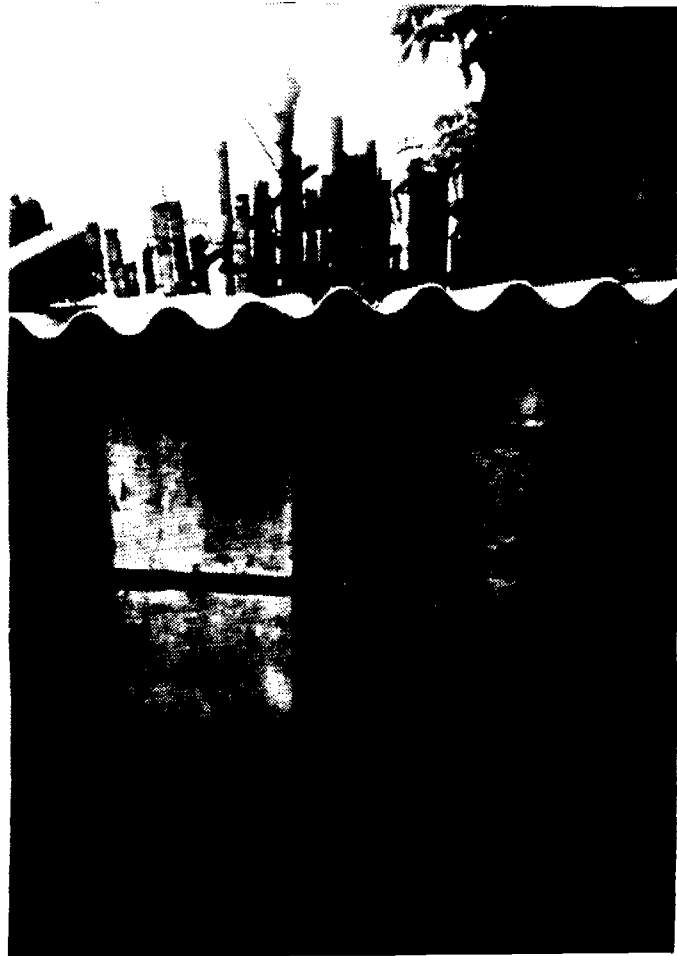
Only 14% of the households are connected to the sewage system. The rest of the households has an unsafe water disposal which pollutes the surrounding watersources and can cause serious diseases to the community members.

SANITATION

Nothing was known about the sanitary facilities in the two communities. And if there were any, what the state of hygiene was.

Table 6 TYPE OF SANITARY FACILITY

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Flush toilet	45	40,6%
Pour flush toilet	31	27,9%
Pit latrine	21	18,9%
Agua privy	8	7,2%
No permission to look	3	2,7%
Open field	2	1,8%
Other type	1	0,9%
TOTAL	<u>111</u>	<u>100,0%</u>



A sanitary facility in the communities

Table 7 OBSERVED STATE OF HYGIENE OF THE FLOOR OF THE SANIT. FAC.

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Clean	67	62,2%
Dirty	33	30,5%
Missing	6	5,5%
No permission to look	2	1,8%
TOTAL	<u>108</u>	<u>100,0%</u>

Table 8 OBSERVED STATE OF HYGIENE OF THE TOILET SEAT

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Clean	73	67,7%
Dirty	28	25,9%
Missing	5	4,6%
No permission to look	2	1,8%
TOTAL	<u>108</u>	<u>100,0%</u>

Table 6 shows that only few households do not possess some kind of sanitary installation. However, both floor and toilet seat are unhygienic in many sanitary installations.

During environmental walks through La Sirena and Los Mangos it was noticed that only in part of the communities a sewage system for excreta exists. About the other ways of faeces disposal little was known.

Table 9 FAECES DISPOSAL

	<u>Number of respondents</u>	<u>Adjusted frequency</u>
Septic tank	47	42,4%
Stream / river	28	25,2%
Pit latrine	19	17,1%
Sewage system	13	11,7%
Open field	3	2,7%
No reply	1	0,9%
TOTAL	<u>111</u>	<u>100,0%</u>

Almost 30% of the households is polluting the river and thus exposing community members to infectious routes. Also it was noticed that many septic tanks were not functioning adequately.

B. Some information about the functioning of the Water Committee. The people of La Sirena and Los Mangos were willing to cooperate and very hospitable. However in a few houses the people said they could not give any information. The reason for this soon became clear: the Water Committee had visited some households the night

before in order to forbid the people to respond. However, after explaining the purpose of the survey the people changed their minds and were willing to cooperate.

A possible reason for this behaviour may be that the Water Committee wanted to have more information about the survey. Possibly the purpose of the survey still was not clear to them.

Also it was noticed during the interviewing that various people felt a distrust and antipathy to the members of the Water Committee. This was, according to the people, due to the fact that the Committee made promises it did not keep.

The optimal functioning of the Water Committee is open to some doubt as 6 households out of 42 say that they do not have a connection to the water supply of La Sirena because they do not know about the plant and 2 households out of 42 because the Water Committee did not connect them. This may be caused by the fact that the members of the Water Committee are not sufficiently prepared for their tasks or that time-constraints keep them from carrying out all their jobs.

### 3.5 Presentation and discussion of the results

The surveyors of La Sirena will present the data of the survey to the community for discussion in general meetings and in neighbourhood meetings. It is hoped that the data will stimulate the people to talk about their problems, come up with ideas to solve them and that they will feel motivated to take action in order to reduce or eliminate the infectious routes.

### 3.6 Subsequent action programme

Based on the results of the survey the subsequent action programme was established.



#### 4. CONCLUSIONS CONCERNING QUESTIONNAIRE-SURVEY METHOD.

- A questionnaire-survey is a good method to assess the local hygiene situation.
- A questionnaire-survey can serve as a base for the subsequent action programme.
- A questionnaire-survey always should be planned and carried out in close cooperation with the leader(s) of the community. Afterwards the findings have to be shown to and discussed with them.
- Time can sometimes be a restriction for community members to participate in the whole process.
- A questionnaire-survey is a time-consuming method. It is therefore important that:
  - a) the questionnaire contains only a limited number of questions. In future projects, the questionnaire must be more standardized so that less time is needed for codification and compilation of the results. Furthermore this will make it easier for community members to participate also in this phase of the process.
  - b) the questionnaire-survey always is preceded by observations and talks to both community leaders and community members. Only then precious time can be saved by putting the most adequate questions in the questionnaire.
- A thorough training of the surveyors is needed on explaining the purpose of the survey, introducing themselves, behaving well and, especially, on skills like filling in the questionnaires. Precious information is lost when surveyors forget to fill in part of the question.
- The questionnaire-survey as a method to assess the local hygiene situation, can be used by the working-group in other programmes where SSF projects are introduced (like the Integrated Development Plan for the Pacific Coast, the National Federation of Coffeegrowers, etc.).
- More community participation should then be built in in the process of surveying, especially in the preparation phase and data processing. For it is expected that when the community members are drawn in early in the project and take part in all the phases (the planning, application, data processing and presentation of the data), they will obtain a more consistent view of the situation than in the case of La Sirena and Los Mangos. Only then greater awareness and commitment to change in the community may be created and only then the people may feel stimulated to plan a community action programme.

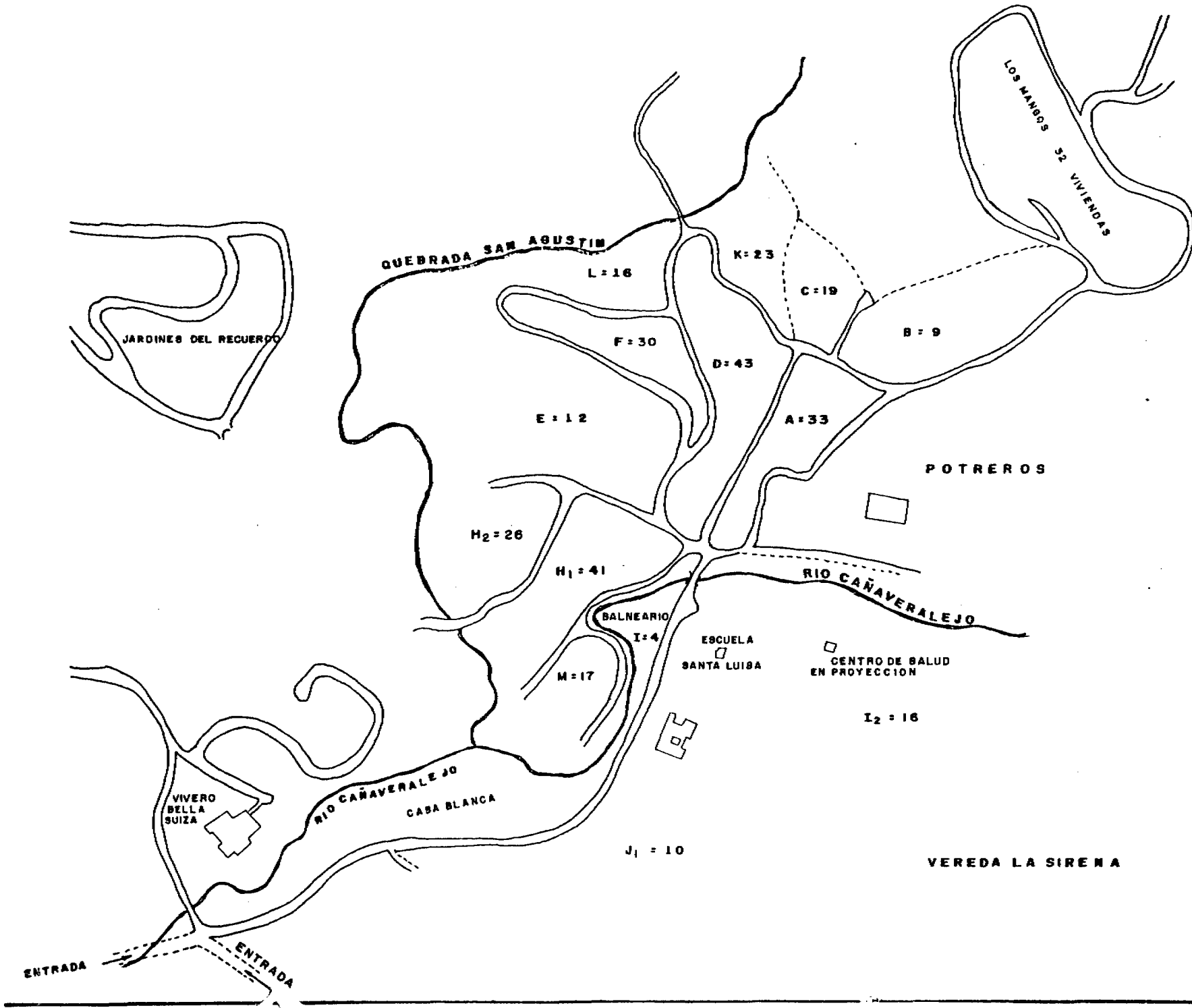
## 5. RECOMMENDATIONS FOR FOLLOW-UP IN LA SIRENA AND LOS MANGOS.

Next to technical improvements should the action programme for La Sirena and Los Mangos consist of the following activities:

- A. First of all meetings between the University and the Water Committee should be organized in order to improve the relation. Once more the purpose of the survey should be explained and the findings have to be shown to and discussed with them. More insight is needed into their reasons for not collaborating in the survey. Subsequently the functioning of the Water Committee may need to be improved. The question of separation between the Water Committee and the Action Committee can be discussed. It may be necessary to set up a training for the members of the Water Committee and to regularly organize elections for new members.
- B. In the meetings that are organized to present the data of the survey, also hygiene education must be given. As many surveyors of the communities as possible must participate in the meetings because they possess valuable information. The meetings can be organized per street or block of houses to discuss the results of the survey and to stimulate the people to improve the hygiene situation. The hygiene programme should cover, among others, the following items:
- The people that do not have a connection should be stimulated to take one. It should be explained to them what the SSF-plant does and why it important is to consume treated water. The people that are not interested in a connection (more than 25%) should get extra attention. When they really do not want a connection, they should be stimulated to boil their drinking water. Alternatives for financing for the people who can not pay a connection must be searched for.
  - It must be explained how poor drainage and stagnant water can cause diseases. The people must be stimulated to lead the water away and to take part in the construction of the sewage system.
  - The people of the few households that do not possess a toilet or latrine must be stimulated to build one. (It may be necessary to investigate whether the flush toilet is the most adequate type of sanitary facility for this kind of communities because it produces a considerable amount of waste water which needs to be collected and disposed by the sewerage system.) It must be explained to them that disposing excreta in the open field can cause serious health risks to the community

members.

Also the improvement of the hygiene in the sanitary facility should be an objective of the hygiene education programme. It must be made clear to the people how this, and bad solid waste disposal, can affect public health.



Annex A Map of the communities

Annex B Questionnaire used in La Sirena and Los Mangos

TRANSLATED QUESTIONNAIRE ON WATER SUPPLY AND SANITATION  
IN LA SIRENA, CALI, COLOMBIA

Name ..... Male / Female  
Address .....  
Number of persons living in the house .....

1. Where does the water come from you use for daily consumption?
2. Why don't you have a house-connection to the system that is administered by the Water Committee?
3. Are you interested in having such a connection?
4. What is your opinion about the 15.000.00 pesos you have to pay to get a house-connection?
5. What is your opinion about the quality of the water you use?
6. Where does the water come from that you use for the following activities?  
drinking / washing of the dishes / bathing / clothes washing / food preparation / cleaning of teeth / animals / vegetables / cleaning of the house.
7. Do you always boil your drinking water?
8. Do you use any other methods to improve the quality of the water you use?
9. Where do you get your water when it doesn't come to your house?
10. Do you think there is a difference between water from the river, a well or a stream on the one side, and the water from the system that is administered by the Water Committee on the other

side?

11. What do you think of the actual distribution net?

12. In case this distribution net would be changed, would you, or your family, be willing to work one day a week?

13. Did you or any of the persons living with you have diarrhoea in the past two months?

14. What is according to your opinion, the most urgent problem that should be solved by the community?

15. Do you know what the University of Valle has been or is doing in this community?

OBSERVATIONS

16. Number of taps in the house.

17. Tap is open or closed.....

Tap can be closed well / not easily / not at all, is broken down.

Water disposal of each tap.....

18. What kind of sanitary facility is there in the house?

19. Describe the state of hygiene of the sanitary facility for what is concerned the seat, floor and walls.

Is there a smell in the sanitary facility?

Ask whether there are flies during day-time.

20. Where are the human faeces disposed?

21. Observe whether there are human faeces in the patio.

Name of interviewer .....

Date of interview .....

.....

.....

.....

INSTRUCTIONS FOR THE INTERVIEWER

The person to interview is the mother. If she is not there, an other female member of the family, older than 15 years old, should be interviewed.

Try to avoid as much as possible, that people answer "I do not know".

ad A. When the person does not want to give her / his name, just fill in the sex.

Question nr.2. House-connection to the system administered by the Water Committee.

The persons has to give (a) reason(s) why they do not have a house-connection. Write down all the answers he / she gives. When the respondent does not know the answer, please help him / her by summing up possible reasons, like:

- because the monthly contribution is very high
- because it is not important
- because of a private connection.

Question nr.6. Boiling the water.

Probably the person knows that it is important to boil the water and therefore it is very well possible that he / she does not tell you the truth.

As you know the people of the community well, try to create a confidential relation and try to find out if the person really is telling the truth. Ask f.i. what they do have a lot of work to do and they run out of boiled water.

Question nr.7. Other methods.

Other methods to treat water can be

- add lemon to kill the bacteria
- let the water sedimentate
- add pills

- use filters in the tap
- use a compact filter.

Question nr.11. The actual distribution net.

First explain to the respondent what a water supply is and a distribution net.

"A distribution net is a total of tubes and taps that are built in order to bring water to the houses of a community".

Question nr.16. House-connections.

Open tap: Indicate for each tap if, at the moment of the observation, there is water coming out of the tap and nobody using it.

Closes well: Open each tap and close it again and indicate for each tap whether it closes well or not, or whether it is hard to close.

Water disposal of each tap: In other words, we would like to know where the dirty water goes to that comes from clothes washing, dishes washing, etc. For example: the water of the wash-bowl goes to the street or patio.

When you can not observe where the water goes to, ask the respondent and write down the answer for each tap. If the water goes to a septic tank, look at the drawing on the next page to see what a septic tank exactly is like so that you are sure the answer is right.