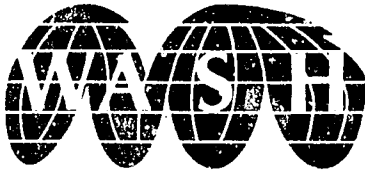


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EVALUATION OF FOSTER PARENTS PLAN'S WATER SUPPLY AND SANITATION PROJECTS IN YOGYAKARTA, INDONESIA

WASH FIELD REPORT NO. 71

MAY 1983

Prepared for:
USAID Mission to the Republic of Indonesia
Order of Technical Direction No. 117

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FOR HEALTH PROJECT



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May 13, 1983

Mr. William P. Fuller
Mission Director, USAID
Jakarta, Indonesia

Attention: Mr. Walter North

Dear Mr. Fuller:

On behalf of the WASH Project I am pleased to provide you with 10 (ten) copies of a report on Evaluation of Foster Parents Plan's Water Supply and Sanitation Projects in Yogyakarta, Indonesia.

This is the final report by Shirley Buzzard and Robert A. Gearheart and is based on their trips to Indonesia in October and November of 1982.

WASH assistance was the result of a request by the Mission on September 20, 1982. The work was undertaken on September 25, 1982 by means of Order of Technical Direction No. 117, authorized by the USAID Office of Health in Washington.

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

Sincerely,

Dennis B. Warner, Ph.D., P.E.
Director
WASH Project

cc: Mr. Victor W.R. Wehman, Jr., P.E., R.S.
AID WASH Project Manager
S&T/H/WS

DBW:tg

The WASH Project is managed by Camp Dresser & McKee Incorporated. Principal Cooperating Institutions and subcontractors are International Science and Technology Institute; Research Triangle Institute; University of North Carolina at Chapel Hill; Georgia Institute of Technology—Engineering Experiment Station.

WASH FIELD REPORT NO. 71

EVALUATION OF FOSTER PARENTS PLAN'S
WATER SUPPLY AND SANITATION PROJECTS
IN YOGYAKARTA, INDONESIA

Prepared Jointly by the Water and Sanitation for Health Project
and Foster Parents Plan International
for the U.S. Agency for International Development/Indonesia
on Behalf of Foster Parents Plan/Indonesia
under Order of Technical Direction No. 117

Written by:

Shirley Buzzard, Health Project Evaluator
Foster Parents Plan International

and

Robert A. Gearheart, WASH Consultant

May 1983

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

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GLOSSARY OF TERMS AND ACRONYMS

- AD Assistant Director of PLAN/Yogyakarta; i.e. assistant to the FD.
- BFA Bi-monthly Financial Assistance. Cash allowance paid to foster children's families once each two months. In Yogyakarta, this is Rp 6,000 (\$9.58)
- Kader Gizi Community nutrition workers, part of the Indonesian Government's primary health care project. They are volunteers who weigh children under five years old each month and carry out nutrition education in their communities.
- CDW Community Development Worker.
- CW Case Worker, member of each sub-district office team who works directly with the FC and client families to identify problems and help them set objectives for improving their living conditions.
- EO East Office, one of PLAN/Yogyakarta's four district offices.
- EW Education Worker.
- FC Foster Child, usually between the ages of six and 12, the child writes six letters per year to the Foster Parent. To be eligible, the child must live with his or her own family and be enrolled in school, and the family income must be below poverty level. Although the Foster Child is the main contact with the Foster Parent, all PLAN programs benefit the entire family and most serve the entire community.
- FD Field Director, responsible for all PLAN programs and administration in the office of assignment.
- FP Foster Parent, the person or organization in one of the five donor countries who sponsors an FC. In addition to letters and photographs of their FC, they receive annual reports from the child's case worker and informal reports on community projects from the FD.
- GKO Gunung Kidul Office, one of PLAN/Yogyakarta's four district offices.
- IH International Headquarters of Foster Parents Plan International, located in Warwick, Rhode Island.
- Kecamatan District; administrative official is Camat.
- Kelurahan Sub-district; administrative officer is Lurah.
- Line 13.40 Budget line items for sanitation (usually latrines).
- Line 13.41 Budget line items for water.

- PDO Project Design Outline, part of the SPO listing specific project budgets and activities which will collectively address the problems described in the SPO.
- PLAN Foster Parents Plan International, a PVO with community development projects in 24 developing countries. Families or organizations in the Netherlands, Australia, United Kingdom, Canada and the United States sponsor children in low income areas.
- Pedukuhan Community; administrative official is Dukuh.
- PusKesMas Pusat Kesehatan Masyarakat; Community Health Center; one is located in each Kecamatan.
- PVO A Private, Voluntary Organization; i.e. a nonprofit, nongovernmental organization.
- RI Republic of Indonesia
- SO South Office, one of PLAN/Yogyakarta's four sub-offices.
- SP Special Project, an extension of the PDO and SPO system carried out at the field level in Yogyakarta. Community members collaborate with PLAN sub-district office staff to plan projects, budgets, relative contribution of plan and the community, and the number of families who will benefit from two proposed project.
- SPO Sector Program Outline. Part of PLAN's program planning system by which field staff outline their year's programs and the objectives they expect to achieve.

EXECUTIVE SUMMARY

During the Fiscal Years of 1982 and 1983, Foster Parents Plan's Yogyakarta Field Office has supported the construction of nearly 2,000 hand dug wells in the rural areas surrounding the city of Yoghakarta on the south coast of Java. The wells are dug and incorporated in the construction of a bathhouse and latrine using a septic tank and soakaway to prevent contamination of the drinking water by the wastewater from the latrine or bathhouse. At a total cost of \$275,000 for materials PLAN has assisted 14,500 families improve or protect their water supply during 18 months.

An evaluation of the project was conducted primarily during the months of October and November, 1982 at the peak of a severe drought. In addition to the author of this report, an anthropologist, an environmental engineer also participated in the evaluation. Data from existing sources were relied on to assess the impact of the wells on income and health.

It was determined that, while the data are weak, there are patterns which indicate that wells have a greater impact on income in those areas which have longer seasonal droughts while the impact on health is greater in those areas which have adequate water year round.

The program is particularly strong in community involvement, and wells tend to be used and maintained. Latrines are not used as much as they should be, particularly in those areas which are less densely populated. A number of specific recommendations have been made by the author of this report as well as by the environmental engineer. These recommendations may be summarized as follows:

- 1) A more comprehensive mechanism needs to be established whereby community water resources are developed in a systematic and comprehensive way. This planning should include all members of the community and be based on the collection of information about water resources. Wherever possible, women should be encouraged to participate in the planning process.
- 2) The educational component of the program is fledging. Activities are under way to expand it. This is an important part of the project and should take very high priority so that community members learn about the relationship between clean water, sanitary disposal of sewage, and good health. Women particularly should be involved in a program of education about transportation and storage of water.
- 3) Local field staff demonstrate a commendable dedication to their communities. Arrangements have been made for senior staff to obtain technical training. This is to be encouraged with training in construction, maintenance and sanitation being given to all PLAN field staff, especially those concerned with community development and health.

- 4) Very few problems of maintenance and repair were encountered though latrines are under-utilized, and there was some cracking around well floors. This can be minimized with more supervision by community development workers during construction and by a stronger education program.

ACKNOWLEDGEMENTS

This report represents a joint effort of Foster Parents Plan International (PLAN) and the Water and Sanitation for Health (WASH) Project. The evaluation was coordinated and designed by PLAN with the participation of a technical consultant provided by WASH. This report is being published by WASH as part of its field report series in the hope that the dissemination of the report to a wide audience will increase its usefulness to other organizations which may be undertaking water and sanitation projects in developing countries.

The authors would like to express their appreciation to the field staff of PLAN/Yogyakarta for their cooperation during this research. Gus Hall, Field Director, set the tone for the evaluation by his enthusiasm for an assessment of the project, a natural outgrowth of his desire to provide PLAN families with the best possible programs. Dr. Samhari, head of PLAN/Yogyakarta's health program, played an important role in the data collection. Mr. Mustra, Water Project Coordinator, Mr. Sudiyo, Senior Technician, and the two community development workers in the sample areas, Mr. Mujiharjo and Mr. Sardjono, all worked extra hours with us visiting projects and assisting in data collection.

We would also like to express our appreciation to the staff of USAID/Jakarta, Ross Coggins and Walter North, for speeding our request through bureaucratic channels.

Chapter 1

INTRODUCTION

In 1969 Foster Parents Plan International (PLAN) began programs to assist the urban poor in the city of Yogyakarta. About 450 miles to the southeast of Jakarta on the southern central coast of Java is the Special Territory of Yogyakarta, a metropolitan area with 30 percent of Java's population or around 25 million people. Over the intervening 14 years, the size of the Yogyakarta program has grown to include over 19,000 affiliated families and has become PLAN's largest field post of the 24 countries in which programs are now established. As the programs in Yogyakarta have expanded, the focus of assistance has shifted from the urban poor to the surrounding rural areas. It is felt that assisting people to stay on their farms in rural areas is more productive than attempting to assist urban migrants. At this time, 90 percent of affiliated families live in the rural areas within a radius of 40 miles of the city of Yogyakarta. (For a detailed description of the people of the area and the health, social and economic conditions related to water supply and sanitation, see Appendix D.)

Plan/Yogyakarta has begun to focus on water problems of clients as part of its reorientation away from curative toward preventive health care. In 1982, potable water was considered the highest programming priority, and \$89,000 was committed to the construction of 368 wells and 76 water reservoirs during the period July 1981 to June, 1982. The rationale at that time was as follows:

To provide the communities with technical and material assistance for the construction of water supply and water storage systems, with proper use, can contribute considerably to the welfare of the community concerning health and economical improvement.

The PLAN project is partially funded by a matching grant from the Office of Private and Voluntary Organizations (PVO) of AID. The objective of the grant is the training of health promoters and the development of data collection and dissemination systems. As the project enters its last year under the grant, implementation of water supply and sanitation projects are the principle priorities. Through the Office of Health of the U.S. Agency for International Development (AID) the Foster Parents Plan (PLAN) requested the services of the Water and Sanitation for Health (WASH) Project to assist in the evaluation of their Yogyakarta water project. The request resulted in the issuing of Order of Technical Direction No. 117.

Approximately two weeks was spent in Indonesia by a WASH technical advisor reviewing and evaluating water supply and sanitation projects in the Yogyakarta area. At the same time a staff member of Foster Parents Plan was in the field and collected the social, economic and health data presented here. This report was written jointly by the two evaluators. The WASH consultant took responsibility for Sections 4.5 and 5.2 and the PLAN staff member took responsibility for the remainder of the report as a condensed version of a report previously submitted to Foster Parent Plan/Indonesia.

Chapter 2

A DESCRIPTION OF THE PLAN/YOGYAKARTA WATER AND SANITATION PROJECT

In 1981, PLAN/Yogyakarta conducted a survey of the sources of water for PLAN families. The results of this survey are shown in table 1. It was found that over half the respondents (54 percent) had access to walled wells as a source of water. Yet 28 percent still use open wells and nine percent use water from a spring or pond. Only two percent of PLAN families must drink water from the river. However water sources vary by season and while people may have access to walled wells or springs, during dry seasons they may be forced to use river water for at least some domestic uses. The highest percentage of open-well users is in the dry area served by PLAN's South Office (SO).

In the area of water supply PLAN has constructed 442 wells, 14 community gravity water systems, and 7 water storage tanks in Yogyakarta. PLAN has constructed 689 latrines and 42 public bath houses. Indirectly PLAN has assisted non-client families by providing construction drawings and technical advice for water supply and sanitation systems.

2.1 The Organization of PLAN/Yogyakarta

When Foster Parents Plan opened its program in Yogyakarta in 1969, all families were in the city of Yogyakarta and the program was administered from a central office. As urban clients were replaced with those in rural areas and PLAN began to offer services to people and communities which were some distance apart and reached by roads in very poor conditions, it became important to disperse the administration of the programs and establish personnel in the communities where families live. This saved time and money regarding transportation but more importantly, staff are better informed of problems and activities in the communities they serve. With closer contact, they maintain better rapport with clients and community leaders. The organizational structure, shown diagrammatically in Figure 1, also reflects PLAN/Yogyakarta's policy of integrated development through a team approach at the sub-district office level.

The Main Office (MO) is located in the east part of the city of Yogyakarta not far from the Sultan's Palace, one of Yogyakarta's main tourist attractions (see map, figure 2). The four district offices are located on the periphery of the city. The 12 sub-district offices which represent the contact point between PLAN and its clients, are located more or less central to their service area.

Travel time from the MO to the Gunung Kidul sub-district office (GKOII), the most distant, is about two hours by four-wheel drive vehicle. Because roads are poor and seasonally impassible due to rain and mud, transportation is a problem for PLAN personnel. Most personnel reach their clients or projects by motorcycle though four-wheel drive vehicles are used in more accessible places. A map showing the location of the district offices is shown in figure 2.

Table 1: Survey of Water Sources among PLAN Clients, 1981

OFFICE/TEAM	DITCH		RIVER		SPRING/POND		OPEN WELL		WALLED WELL		TAP/PIPE		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
North Office														
I					49	3	227	15	1155	76	83	6	1514	100
II			38	3	116	8	650	45	635	44	4	-	1443	100
III			50	3	112	7	285	19	192	13	788	52	1527	100

North Office Total			88	2	227	6	1162	26	1982	44	875	20	4484	100
Gunung Kidul Office														
I A			2	-	12	1	458	47	452	46	57	6	981	100
I B			6	-	179	27	110	17	356	54	13	2	664	100
II			-	-	113	18	268	42	242	38	-	-	623	100
III			198	16	460	38	348	29	197	16	-	-	1203	100

Gunung Kidul Office Total			206	6	764	22	1184	34	1247	36	70	2	3489	100
East Office														
I					1	-	363	22	1298	78	4	-	1666	100
II					4	-	71	5	1210	89	78	6	1364	100
III			12	-	201	18	236	21	651	58	19	2	1119	100

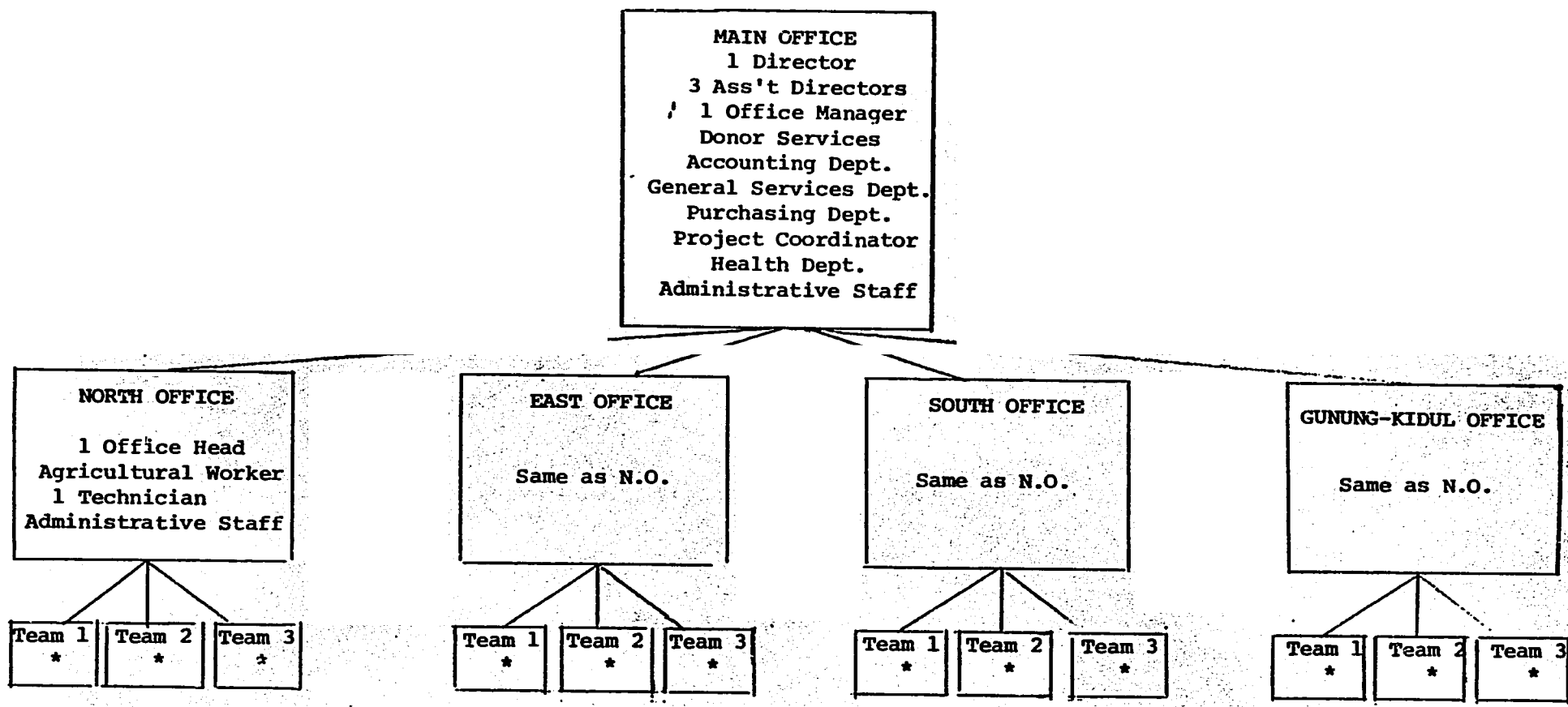
East Office Total			12	-	206	5	670	16	3159	76	101	2	4149	100
South Office														
I					21	3	27	4	576	92	4	1	628	10
II			1	-	71	5	430	30	922	65	4	-	1428	100
III			3	-	75	6	794	65	357	29	-	-	1229	100

South Office Total			4	-	167	5	1251	38	1855	57	8	-	3285	100

P.K.A.K. Total			310	2%	1414	9%	4267	28%	8243	54%	1054	7%	15,288	100%

Figure 1

STRUCTURE FLOW CHART PLAN YOGYAKARTA



* Each Team consists of:

- 1 Team coordinator
- 5 Case Workers
- 4 Junior Case Workers
- 1 Education Worker
- 1 Health Worker
- 1 Community Development Worker
- 1 Credit Union Worker
- 1 Paying Clerk

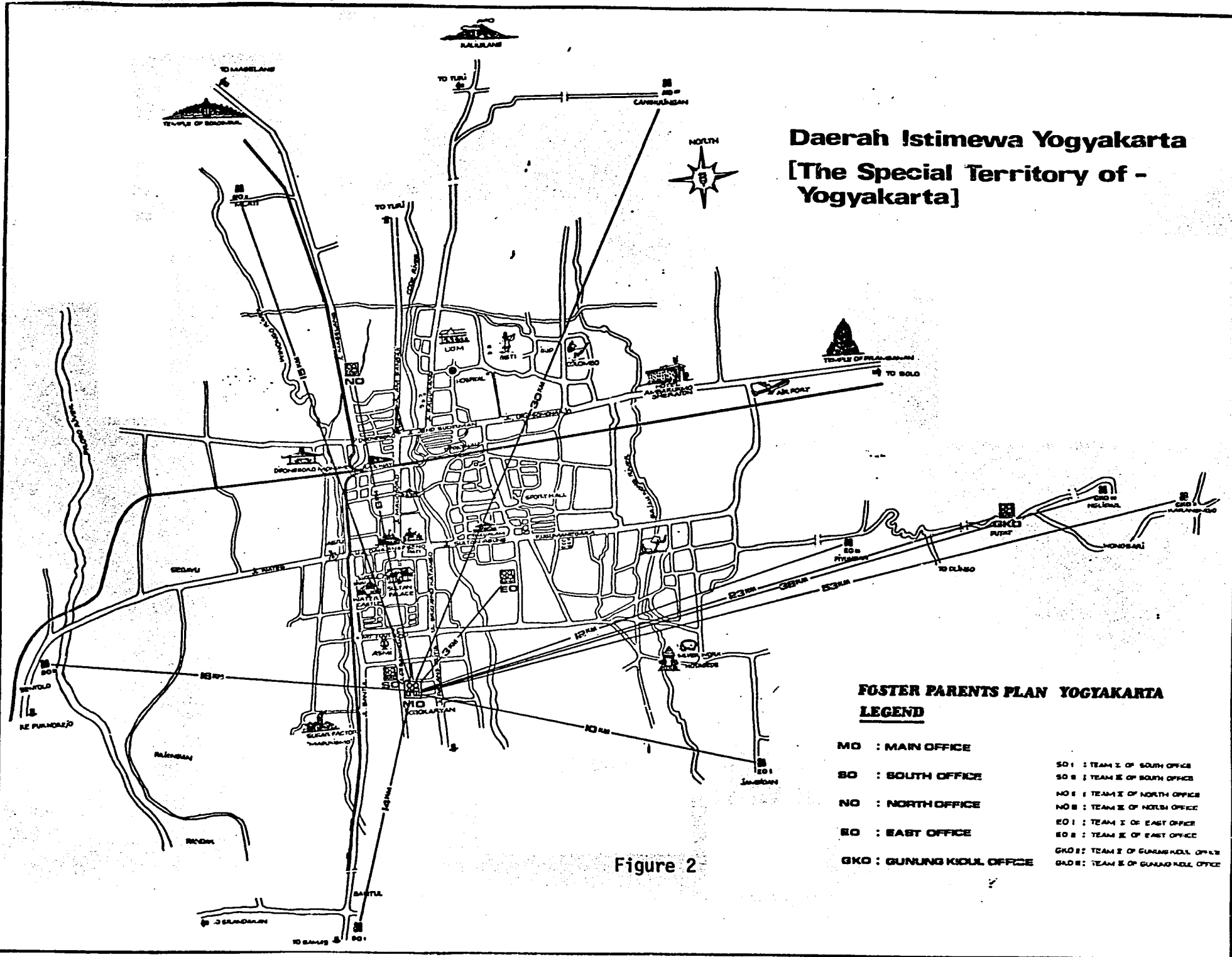


Figure 2

2.2 Government Health Efforts

Indonesia has an extensive health care system based on community health centers located throughout the country. An important element of this program is community health centers (PusKesMas) which serve as centers for the diagnosis and treatment of minor illnesses and make referrals to hospitals for more serious medical problems. PusKesMas are also the administrative centers for a growing primary health care program. In 1978, as an outgrowth of the WHO-UNICEF sponsored conference at Alma-Ata, many developing nations, including Indonesia, joined in an effort to establish primary or preventive health care projects. The program in Indonesia has been remarkably successful considering the time it has been in operation and the limited resources of the government. The Indonesia Primary Health Care program is structured around three levels of cooperation:

1. At the community level, health development committees have been formed and volunteers are being trained to provide nutrition, sanitation, and health education to other members of their communities. The health committee and the health volunteers are responsible to the headman who is responsible for all development programs as local governmental representative.
2. Government health centers are located in each kecamatan and PusKesMas officials are responsible for programming and technical guidance for the community health workers. The community health workers are trained to carry out community health education, weigh children under five, provide first aid, and they are taught to recognize communicable diseases and problems related to maternal and child health so that they can make referrals to the PusKesMas.
3. Intersectoral cooperation is an important part of the Indonesian Government's integrated approach to development. Government Departments of Health, Home Affairs, Agriculture, and the Administrative departments at all levels of government are directed toward improving health through improved nutrition, education, and environmental conditions.

2.3 Incorporation of Water Projects into PLAN's Sector Program Outline

For the current fiscal year, FY '83, water was incorporated into the Health Sector Program Outline (SPO). The goal of the health sector programs is "to improve the health status of clients and communities." The objective of the Potable Water Project Design Outline (PDO) is "to build and repair 2,510 wells and reservoirs" between July 1982 and June 1983. The priority placed on water projects is reflected in the substantial increase in the budget for water for the year to over \$203,000. The objectives of the PLAN/Yogyakarta wells and water project are defined largely in terms of "inputs" which is to build wells. This is based on the assumption that access to clean water is conducive to better living conditions. Although part of the health SPO, objectives for changes in health status are not explicit.

2.4 Planning Mechanisms

Planning for the implementation of a water project in a community begins with families who approach PLAN field staff, usually the community development (CD) or case worker (CW) with a request for a well. The CD worker then visits the proposed site of the well to inquire about land ownership, discuss participation by the members of the community, and see the proposed location of the well. The case worker (CW) and health worker (HW) visit the site of the proposed well before the Special Program (SP) is written. Written permission for the construction of the well must be obtained from the person who owns the land if it is to be used by more than one family. Permission is also obtained from the lurah, the chairman of the community development committee, and the camat, the district administrative official. The sanitarian from the Puskesmas also looks over the drawings of the proposed well to see whether the construction and location with relation to latrines is appropriate and coordinates it with government water projects.

After all prior clearances are obtained, the CD worker writes up an SP which usually involves anywhere from one to 25 wells since wells are often grouped in the SPs (see Appendix J). Grouping of wells on the SPs allows for the bulk purchase of materials and for more efficient delivery of supplies. The time delay between the first approach to the CD worker and the writing of the SP is usually three to six months.

When the SP is completed with information about the families who will be involved, and the materials which will be contributed by PLAN and the community and is agreed on, this form is approved by the team coordinator, the District Office Head, and sent to PLAN's main office. There the SP is checked for completeness and accuracy by the project manager and for technical details and materials by the project technician. At this point if there are any problems the SP is returned to the District Office for clarification.

Each month the FD meets with all personnel from the District Office and the SPs for projects are considered. These meetings tend to be very thorough as accuracy and clarity of SPs are required before they are approved by the FD. Throughout this approval process, applications may be returned to one of the earlier levels for clarification or refinement. As of this writing, all applications have ultimately been approved. Upon approval by the FD, families are informed of the decision and construction begins. Materials are ordered and the CD worker visits the site during construction as time permits.

A wells SP typically takes about three months from the approval of the SP through the completion of the well. The entire process may take from six to nine months between first interest in a well on the part of a client and completion of the well.

2.5 Costs

In this report, mention is often made of sanitation budgets and latrines because in both budgeting and planning, these projects overlap. Some people request wells and construct latrines and bathhouses as part of the package. These are written up as wells projects and charged to line 13.41. Other families may request a latrine which, in order to flush it requires a well and

they, too, get the three-unit system. yet it is written up as a latrine project and charged to line 13.40. In almost every case, wells, bathhouses and latrines with septic tanks are built as a unit regardless of which line it is charged to. In this respect, the distinction between line 13.40 and 13.41 is rather arbitrary as both include wells and latrines. The offices with greater water problems write more SPs for water projects though in FY '83 all offices have been active in both water and sanitation projects. The data for both water (budget line 13.41) and latrines (budget line 13.40) are summarized in Tables 2 and 3.

Table 2 gives the summary figures for the Line 13.41 items in FY '82 and indicates that the SO and GKO office were more active in water projects, since these are the two offices serving drier areas. In FY '83, to date, the SO has been particularly active in wells projects. The GKO office figures are deceptively low because the terrain is such that wells are difficult or impossible to dig and more extensive water distribution systems are used. A comparison of the two tables will show that the percent of community contribution has gone up slightly in 1983 (from 32 percent to 36 percent) and the average cost per project has also increased from \$220 and \$254. The most striking difference between the data from the two fiscal years is that the number of beneficiaries is lower for FY '83 and that the average cost per family (both PLAN and non-PLAN) has increased markedly from \$15 to \$43.* The reason for this increase is that more wells are being built to serve fewer families, increasing the cost per family.

Comparable data for sanitation for the two fiscal years are shown in Table 3. The number of projects is high for GKO in FY '82 because there were a large number of concrete slabs made for the surface area of pit latrines used in the GKO area where water shortage prevents the use of septic tanks. The total funds for sanitation projects is about the same for the full year of FY '82 and the first half of FY '83. If this pace is continued the budget for sanitation will be nearly double this year. The data are more comparable when relative figures are examined. The contribution of community members is about the same (30 percent FY '82 and 32 percent FY '83). The average cost per project is substantially greater in FY '83 because the cost of the concrete pit-latrines slabs was low and in FY '83 more wells and latrines were constructed. In FY '82 the mean cost of a project was \$31.04 while in FY '83 it is \$80.76.

The total number of beneficiaries, like cost, is comparable although FY '82 figures are for 12 months and FY '83 figures are for six months only. Given the doubled budget for the current year, these figures are appropriate. The data in the final column show the average cost per beneficiary family and vary considerably by office (with East Office costs per family somewhat higher)

*At the time of the field visit the Indonesian Rupiah was 626 to one U.S. dollar and throughout this report this figure is used for calculations.

OFFICE	NUMBER OF PROJECTS	CONTRIBUTION		PERCENT OF COMMUNITIES	DOLLARS PER PROJECT	BENEFICIARIES	
		PLAN	COMMUNITY			TOTAL NUMBER FAMILIES	DOLLARS PER FAMILIES
North Office	17	17,163.97	3,917.17	22%	1,009.65	1,588	10.88
South Office	135	32,627.77	7,220.23	22%	241.68	2,745	11.88
East Office	81	18,628.60	4,942.42	26%	229.98	1,510	12.33
G.K. Office	265	41,339.60	19,189.16	46%	156.98	1,268	32.60
TOTAL	498	\$109,759.94	35,268.98	32%	\$220.40	7,111	\$15.43

FY '82 13.41 (Water)

North Office	77	33,710.92	8,137.86	24%	437.78	834	40.42
South Office	122	27,576.03	14,759.37	53%	226.03	747	36.91
East Office	96	23,005.77	6,889.16	29%	239.64	509	45.19
G.K. Office	95	14,903.17	6,840.34	46%	156.87	138	07.99
TOTALS	390	\$99,195.89	\$36,626.73	36%	254.34	2,228	\$44.52

FY '83 13.41 (Water)

Table 2: Summary of Costs and Beneficiaries for Water Projects
For FY '82 and FY '83 through October

OFFICE	NUMBER OF PROJECTS	CONTRIBUTION		PERCENT OF COMMUNITIES	DOLLARS PER PROJECT	BENEFICIARIES	
		PLAN	COMMUNITY			TOTAL NUMBER FAMILIES	DOLLARS PER FAMILIES
North Office	3	2,776.56	479.00	17%	925.52	628	4.42
South Office	36	9,271.36	240.00	2%	257.53	923	10.04
East Office	8	605.60	352.00	58%	75.70	36	16.82
G.K. Office	597	7,337.57	5,063.20	69%	12.29	654	11.22
TOTAL	644	19,991.09	6,154.20	30%	31.04	2,241	8.92

FY '82 13.40 (Sanitation)

North Office	11	4,093.44	625.01	15%	372.13	149	12.37
South Office	11	3,841.56	1,701.25	52%	349.23	1,281	2.99
East Office	35	9,777.16	3,089.31	31%	279.34	439	39.58
G.K. Office	196	2,721.47	1,222.94	45%	13.88	199	13.67
TOTAL	253	20,433.63	6,638.51	32%	80.76	2,068	9.88

FY '83 13.40 (Sanitation)

Table 3: Summary of Costs and Beneficiaries for Sanitation Projects for FY '82 and FY '83 through October

but average out to about \$9 or \$10 per family. For sanitation projects, this seems to be relatively cost effective if a family can be provided with a safe, sanitary latrine at less than \$2.00 per person. The data given here include both PLAN and Non-PLAN beneficiaries. A breakdown of the data are shown in Appendix J.

The cost of the construction materials for a 12 meter deep well comes to about \$265. For a bathhouse and latrine with a septic tank and drain, constructed in conjunction with a well, the costs are \$310. Construction of wells with bricks is somewhat less expensive but requires more technical expertise for construction. These costs are given in detail in Tables 4, 5, and 6. Labor costs have not been included. In almost all cases, labor is either contributed by the community or specialists are hired and paid for by the community. As may be seen from the SPs shown in Appendix J, in most cases the community also contributes some of the materials. These are either materials available locally or which are purchased by community members.

2.6 Educational Component

In any water project, not only must there be the technical availability of clean water from convenient sources but people must also be educated about the importance of using clean water, about transporting and storing it in a hygienic manner and about how to maintain the facilities or repair them.

The educational component of the project is, at this point, quite limited. Field staff are aware of the limitations, and activities are underway to strengthen this aspect of the program. The only component for education is as part of the general education clients receive in PLAN/Yogyakarta's programs.

Every two months PLAN client families comes to the sub-district office to collect their Bimonthly Financial Assistance (BFA) payments. While clients are gathered at the office, they are given information on PLAN's programs and "motivated" to become involved in those programs. These talks are presented by different staff members depending on the subject of the session. PLAN clients are presented with six motivational lectures per year. Each session lasts an hour or two and is used to convey new information which may be of interest to the clients (For example, in one session the CD workers was describing the wing bean and its advantages as a protein source and easy-to-grow crop). Other educational sessions might stress the importance of proper disposal of wastes away from drinking water sources or on a particular income generating activity such as chickens or rabbits. Because health is an important part of PLAN/Yogyakarta's thrust, these motivational presentations often are on health or health-related topics. There is no follow-up nor is there a special educational package for clients who are building wells or for those who have already built them to reinforce proper use and maintenance of the wells.

Because PLAN staff recognize the shortcomings of their educational component, they are developing training packages for water and sanitation by collecting existing educational materials and translating them into Javanese. In addition, they are developing slide shows based on actual incidents of typhoid in the area to be used to demonstrate the importance of sound health practices with regard to water and sewage. The initial use of these training materials

<u>QUANTITY</u>	<u>MATERIAL</u>	<u>UNIT COST</u> <u>(in Rupiahs)</u>	<u>TOTAL</u>	
			<u>RUPIAHS</u>	<u>DOLLARS</u>
24 pcs.	Concrete Ring	5,000	20,000	191.69
1,000 pcs.	Brick	14	14,000	22.36
0.50 M ³	Lime	14,000	7,000	11.18
0.50 M ³	Red Cement	8,500	4,250	6.79
2.00 M ³	Sand	2,000	4,000	6.39
3 bags	Portland Cement	2,500	7,500	11.98
1.5 M ¹	Iron (Rail Iron)	3,500	5,250	8.38
10 pcs.	Clay Pipe	400	4,000	6.39
		TOTAL	166,000	265.16

*Red Cement is pulverized brick used as an inexpensive substitute for sand.

Table 4: Costs of Materials for a 12 Meter Hand Dug Well,
Concrete Ring Construction

<u>QUANTITY</u>	<u>MATERIA</u>	<u>UNIT COST</u> <u>(in Rupiahs)</u>	<u>TOTAL</u>	
			<u>RUPIAHS</u>	<u>DOLLARS</u>
6,100 pcs.	Bricks	14,000	85,400	136.42
1.75 M ³	Lime	14,000	24,500	39.14
1.75 M ³	Red Cemen	8,500	14,875	23.76
5.00 M ³	Sand	2,000	10,000	15.97
4 bags	Portland Cement	2,500	7,500	11.98
10 pcs.	Clay Pipe	400	4,000	6.39
1.50 M ¹	Iron	3,000	<u>4,500</u>	<u>7.19</u>
		TOTAL	150,775	240.85

**Table 5: Cost of Materials for 12 Meter Hand Dug Well,
Brick Construction**

<u>QUANTITY</u>	<u>MATERIAL</u>	<u>UNIT COST</u> <u>(in Rupiahs)</u>	<u>TOTAL</u>	
			<u>RUPIAHS</u>	<u>DOLLARS</u>
5.00 M ³	Rock	3,700	18,500	29.55
4.00 pcs	Bricks	14	56,000	89.46
2.00 M ³	Lime	14,000	28,000	44.73
2.00 M ³	Red Cement	8,500	17,000	27.16
8.00 M ³	Sand	2,000	16,000	25.56
8 bags	Portland Cement	2,500	20,000	31.95
20 pcs.	Clay Pipe	400	8,000	12.78
2 pcs.	Drain	400	800	1.28
2 pcs	concrete Plate	11,000	22,000	35.14
10 kg.	Jute	200	2,000	3.19
2 M ¹	Iron Pipe	3,000	<u>6,000</u>	<u>9.58</u>
		TOTAL	194,300	\$310.38

Table 6: Costs of Materials for Construction of Bathhouse and Latrine
(each room measures 1.8 x 2.0 meters
including drain and septic tank)

will be at the bimonthly motivational sessions at the PLAN sub-offices. Eventually it is hoped that special packages will be designed for smaller groups of clients at various stages of well construction. New techniques are also being used by PLAN staff by which individuals participate in group interactions such as brainstorming and role playing to identify problems and generate possible solutions.

Perhaps one of the problems of the educational component will be which PLAN staff will carry it out. Since the CD workers are generally in charge of well construction it might be appropriate for them to have a short presentation on locating and constructing wells and latrines. Medical workers might have special presentations on specific aspects of water such as proper storage and transportation of water, proper disposal of children's feces, and so on. Educational workers might also be involved in setting up special programs but the educational workers are generally more concerned with technical training such as trade skills rather than general information.

2.7 Role of Various PLAN Staff in the Water Project

Water is an excellent example of a project which benefits from the team approach which characterizes PLAN/Yogyakarta's policy of providing integrated services to the families. Each sub-district office has health, social, community development and education workers on the staff, and their activities are coordinated through the sub-district Office Head.

At the same time, because water does not fall within a clearly defined "sector", it is not always certain who is responsible for what. This situation is intensified by the lack of clear objectives of the water projects. Historical precedent has led to the present system. Five years ago, PLAN had clinics and provided curative services to families. Because of policy shifts, clinics were closed and many of those personnel transferred to the new community health program which is managed by two public health physicians on PLAN/Yogyakarta's staff.

The physicians retrained the health workers (HWs) to provide educational support of the RI community nutritional volunteer project. The HWs responsibilities are described below. At about the same time that HWs were being trained to work with children and women of child bearing age, community development (CD) workers began to take on construction projects which involved water. Because wells and water projects require some of the same technical skills as building rabbit cages or bridges, the water project became identified with the CD workers. Thus, the wells/water project is almost entirely a CD project carried out by CD workers although it is written up as a PDO in the Health SPO.

To understand the roles of the various team members, it is useful to describe briefly the activities of each of the workers on the sub-district office team.

2.7.1. Case Workers and Junior Case Workers

Case workers and junior case workers work directly with families to help them resolve problems. Each family has a case worker who monitors its progress, who makes it aware of PLAN programs which may benefit it, who makes home visits to see the construction of the home and improvements which are made. The CW also provides families with special assistance in personal emergencies, prepares progress reports for FPs and sees that the FC writes the letters required by PLAN. Junior case workers assist the CWs in carrying out these activities.

2.7.2 Education Workers

Education workers are responsible for designing and conducting programs which will contribute to the educational improvement of individuals. There is an emphasis on teaching skills which will lead to income generation such as sewing, typing, literacy, carpentry and auto mechanics. Educational workers also assist FCs and their siblings obtain textbooks, uniforms, and transportation to assure that they attend school. They also work with local community leaders to build or renovate schools or provide schools with materials or equipment.

2.7.3 Medical Workers

Medical Workers work almost entirely in the preventive health program. They provide women with information on family planning, make referrals to specialists or to the PusKesMas if clients are suffering from illness, they conduct motivational sessions for PLAN clients at the BFA meetings and contribute to the training of the kader gizi which is conducted by officials from the PusKesMas. They provide support to the kader gizi by checking the Road-to-Health Charts of all children under five in client families and make referrals to a medical center if a child fails to gain weight regularly. HWs make home visits when clients are unable to visit the PusKesMas or to check on any reports of serious illness. They make arrangements for payment when clients need the services of a specialist and work with the CW to arrange financial assistance for funerals.

2.7.4 Community Development Workers

Community Development (CD) workers are responsible for wells and latrine projects and are mentioned frequently in this report. It should be noted that they are also responsible for a wide range of other activities and demonstrate versatility in their abilities to give advice on activities ranging from chicken raising, bridge building, and eel ponds to the construction of wells and latrines. By way of example, the projects undertaken by the CD workers in the two sample areas are presented in Table 7.

<u>NOII</u>		<u>SOI</u>	
<u>TYPE OF PROJECT</u>	<u>NO. SPs</u>	<u>TYPE OF PROJECT</u>	<u>NO. SPs</u>
wells, water	4	wells, water	5
latrine	2	latrines	4
irrigation/drainage	4	drainage.drain cover	3
furniture/supplies for school/clinic	4	school repair	3
hand sprayers	2	furniture supplies for school/clinic	3
home repair	6	home repair	4
fish pond	1	chicken project	1
		feeder road	1
Total	23	Total	24

Table 7
List of SPs Written by Typical CD Workers during FY '82
Showing Diversity of Projects

2.8 Community Participation

The programs of PLAN/Yogyakarta are examples of classic community development in that they begin with community members. PLAN staff are instrumental but members of the community implement all projects themselves. The role of PLAN staff is to present families with ideas and encouragement and to assist them with logistics. PLAN resources are used to add to those from the community but in almost all PLAN programs, the individuals who will benefit from the programs initiate and carry out the projects themselves.

With respect to the wells and latrine projects, there is no question but that the wells are owned by those people who contributed labor and cash toward their construction. The wells are never referred to as PLAN wells, and there is no feeling that PLAN has "given" either the wells or the latrines to the community. This has very important ramifications for community self-respect and for maintenance of the wells.

People are proud of their wells and feel good about having improved their source of drinking water and, in most cases, make it possible for other people in their community who are not PLAN families to have access to the new or improved water source. When asked "who keeps the area clean" in no case was there a hesitation in indicating who is responsible. In those instances where the well serves several families, it is customary that the family closest to the well is responsible for its routine cleanliness and minor repairs. More extensive repairs or the replacement of buckets or ropes is a group effort. Well projects may involve 10 or 12 families working together and thus the construction also contributes to community organization. There is no evidence that those same families continue to work together on other projects but they

do remain responsible to one another for the continued use of the well. For example, when the water table drops during the dry seasons, the well users must collectively decide when to stop using well water for laundry or bathing and find water from alternate sources for these uses.

At the same time that participation by community members strengthens the program and has important positive benefits for the maintenance of the wells, it also has within it problems which bear mentioning. When community members construct their own wells, the PLAN CD workers do not have control over the project. They can recommend certain procedures or specifications, but if at the last minute the community decides to locate the well a few feet away from the original site, decides to use brick instead of concrete for the parapet or decides to make the diameter larger, there is little that the CD worker can do.

Such decisions on the part of the community are sometimes constructive and improve the project but sometimes they do not. In one case, for example, a group increased the diameter of the well to the point where short statured women and children cannot reach the rope in the middle without leaning dangerously over the well. In another case the community decided to use the materials donated by PLAN to construct eight wells instead of the original six and "stretched" the materials to construct eight although they may be less sound structurally. A similar case was one where bricks were given for a well but the client used stone to build the well and used the bricks to construct a bathhouse which had not originally been planned.

Cases of misuses of materials are rare. In one case materials were given for a 12 meter well but the well constructed was only seven meters deep. Thus materials for five meters are missing and the members of the community were afraid to speak out against the dukuh who was responsible. In another case the dukuh was given responsibility for materials to build three wells. Only one was built but he argues that he used all the materials in the construction of the one well.

There is no institutional way to guard against such abuses. It is interesting to note that the few cases of abuse all involve dukuh. The best safeguard is the presence of those members of the community who would benefit from the wells or who are aware of neighbors who are abusing PLAN assistance. With pressure from CD workers these situations are usually resolved.

This lack of "control" over the community can be frustrating for the CD workers who sometimes must stand by and watch while changes are made which are not necessarily improvements. These cases are not frequent and usually the results are not seriously detrimental to the end product but serve to point out one of the disadvantages of community participation from a programming point of view. In balance, the advantages of involvement far outweigh the disadvantages.

Chapter 3

METHODOLOGY OF THE EVALUATION

This evaluation was undertaken to assess the effectiveness of PLAN/Yogyakarta water project at three levels as follows:*

1. Functional: This aspect of the evaluation concerned the physical structures and engineering aspects of the project to determine whether wells were located, constructed and maintained in the most efficient and effective manner. For the gravity water systems, the objective was to determine whether materials were suitable and the design efficient and whether, in both cases, the water system or well improved the quality, quantity, and access to water.
2. Process: This aspect of the evaluation focused on the use of the wells by the community, how projects are implemented at the community level, and an assessment of the effectiveness of the educational component.
3. Outcome: Although it is difficult to attribute specific changes in peoples lives to a well when other projects and services are being implemented in the community, this evaluation attempted to assess the impact of the wells on health and on income. This aspect of the evaluation also addressed the perceptions well owners and users have of the impact of wells on their lives.

The evaluation was designed to draw, as far as possible, on existing data to maximize the use of time in the field and to take advantage of the extensive resources already available. The evaluation was done from October 14 to November 14, 1982, by Shirley Buzzard who made a preliminary visit to the area for two weeks in March and a follow-up visit for a week in February, 1983. The evaluation of the technical aspects of the project were done from October 25 through November 4 by R.A. Gearheart, an environmental engineer supplied by the Water and Sanitation for Health (WASH) Project.

The area around Yogyakarta experiences seasonal droughts and the evaluation was planned to take the place during a period when water availability was at its lowest. As it turned out, Yogyakarta was experiencing one of the unusually dry periods which occur every five to seven years in the area. Therefore, observations and comments are based on the "worst case" situation which existed at the time of the evaluation. During most of the year residents have more water than they did during this October and November, and most years the drought is not as severe as it was in 1982.

*The specific question being addressed are shown in Appendix E.

The following sources of data were used and are referred to throughout this report:*

1. The results of a health survey of PLAN/Yogyakarta's families undertaken in 1980 by PLAN employees and medical students from Gadjadara University. This survey was conducted in conjunction with the decision to close PLAN's clinics and redirect its resources to preventing illness rather than curing it.
2. PLAN Health Sector Evaluation: In 1982, all PLAN Field Offices were requested to conduct a thorough assessment of the health problems in their communities and give careful consideration to the methods and procedures by which PLAN programs address these programs. This evaluation paper is a very good overview of the constraints on health care and PLAN's health program.
3. PLAN evaluation documents. PLAN has a hierarchical system for program planning and evaluation which consists of a series of documents in which program objectives and methods are outlined. The Sector Program Outline (SPO) describes all those related activities in one sector. In Yogyakarta, potable water is the number one programming objective. The SPOs are made up of a series of Project Design Outlines (PDOs) which describe specific smaller projects directed toward the goals of the SPO. In 1982, PLAN/Yogyakarta had a special SPO for drinking water but in 1983 drinking water was included in the Health SPO. In 1983, the objective of the water PDO was to build 2,510 wells and reservoirs. These SPOs and PDOs are included in Appendices F and G.

In addition to these planning documents, required of all PLAN Field Offices, PLAN Yogyakarta has extended the scheme to its district offices. Projects are initiated in the community, written up by staff at the sub-district offices, and incorporated into planning by Special Projects (SPs). As described above, SPs for wells and water projects are written up by the CDW and include information on exact locations of the wells, costs, contributions of PLAN and of the community, and the identification of the families involved in the project.

4. Yogyakarta Situation Assessment and Goals Establishment (SAGE) Report: This annually updated report is a description of the social, economic, health and other problems confronting PLAN families in the communities in which PLAN works and a description of the ways in which PLAN seeks to address these problems. As such, it is a comprehensive description of the activities of the field office.
5. A survey of well owners was undertaken. This two page questionnaire is included as Appendix G. The questionnaire was administered to 112 well owners or well users in all of PLAN's working areas. The objective was to determine the users' perceptions of the impact of the wells.

*In addition, published references are cited at the end of the report.

6. Budgetary information from FY '82 and FY '83 includes all items charged to line 13.4 in 1982, and FY '83 until the time of the evaluation. As such, the budget data include about 18 months of water projects. Before FY '82 PLAN/Yogyakarta did few water projects.
7. Visits were made to all three gravity water systems by the authors. In addition, visits were made to over 45 well/bathhouse/latrine projects and eight wells with pumps.
8. Interviews were conducted in Yogyakarta with the Field Director, the Assistant Director, medical staff, CD workers, Case Workers and the two technicians in charge of the water projects. Interviews were also conducted informally with people using the wells with special attention to the women. People at the wells were asked about the frequency with which they visit the well and daily water use.
9. Since time and logistics prevented undertaking a thorough study of the wells in all of PLAN's working areas, two areas were chosen for intensive study. The sample areas were chosen because they represent two extremes of water availability. One area, South Office, Team I (SOI) is a dryer area and experiences long periods of water shortage each year. The other area is one with ample water year round in North Office, Team II, (NOII). Within each of these sample areas, four pedukuhans were chosen. They are considered by PLAN field staff to be typical of the pedukuhans in the area and each had several wells (4). Within the two sample areas the following information was collected and the results are presented and discussed in Chapter 4:
 - o The SPs for all the wells in the sample areas were analyzed for budgets, number of people and families involved, and the contribution of PLAN and the communities.
 - o The Foster Child (FC) files for all families who have wells were examined to obtain data on income, health, and deaths. A comparative sample of FC files from the same pedukuhans who have not (yet) built wells were also examined for comparison. In SOI, the comparative sample was chosen from those families who have requested wells but the SPs have not yet been approved. In NOII no comparable list was available so the comparative sample was chosen by taking the next FC folder in the file and examining it to see whether that family had been involved in a well project. If not, it was included. Thus the comparative sample for NOII was drawn somewhat differently than that in SOI. In SOI it is certain that the comparative group of families need well improvement while in NOII clients may not have requested wells because water is available from existing sources. Nevertheless, the data present interesting comparisons which are discussed later.
 - o Data were collected from the health worker (HW) records on referrals to hospitals, referrals to specialists, and deaths. Although these data are not broken down by pedukuhan they do give a picture of the overall health situation in the two sample areas.

- o Interviews were held with the Dukuh, the village headman, in all pedukuhans. Information was gathered on births, deaths, and total population of the community. Dukuhs were also interviewed as to their perceptions of the well project and they often accompanied us on visits to the wells, pointing out other sources of water or latrines.
- o All the wells in the eight pedukuhans were visited including visits to community wells and unimproved wells and alternative sources of water. Latrines, bathhouses, and traditional pit latrines were also visited and interviews were held along the way with people in the communities and with people using the wells/bathhouses.
- o Each pedukuhan has from one to three kader gizi, volunteer community nutrition workers. These kader weight all children under five years in their communities each month and the data are sent to the local PusKesMas where they become part of the Indonesian Government's health data collection effort. The kader kindly allowed the data to be copied from their records on the number of children weighed each month and the percentage who gained or failed to gain weight.

Chapter 4

RESULTS OF THE EVALUATION

Attempting to assess the impact of a well on a family's life is a precarious undertaking. In most communities there are a variety of PLAN and governmental programs under way and a family's living conditions are influenced by all of these as well as external factors such as inflation and unemployment rates. In this section, nevertheless, data are presented concerning changes in health conditions and income in two sample areas. Although the data are from existing sources and may not be as accurate as one might wish, certain patterns do appear and deserve discussions.

4.1 Perceived Impact of Program from Well Owner's Survey

Any development project has two kinds of impact. It is to be hoped that projects make substantive improvements in peoples' lives--that quality of life is somehow improved and that the process of community development is strengthened. One important aspect of the community development process and the attitude community members have toward other projects is their perception of the impact. If people believe their lives are improved then there are those who would argue that they have been improved.

Because the wells project in Yogyakarta is the first program priority, a survey of well owners was undertaken to determine their perception of the project to date. This survey included 112 well owners from all 12 sub-district office areas. Questions were asked about the construction of the well and about the impact they felt it had on their life. The respondents were usually from a PLAN family (77 percent) or in the case of community wells, a community leader such as the dukuh (11 percent). Other respondents included the teacher at a school where a well was built and a representative of the PusKesMas where PLAN had assisted in building a well. In a few cases, the respondent was a neighbor who uses the well.

Most wells are private, that is a PLAN family builds a personal well intended for use by a single household (41 percent). The next largest group of wells (25 percent) was built by a group of families. Public or community wells comprise 15.2 percent of the sample, and wells privately owned but used by the community make up 17.5 percent of the sample. Thus, the wells project offers different types of ownership of the wells. The number of families using the wells varies from one to over 50 in some of the water distribution systems. The modal number is between three and five families. The average number of families (PLAN and non-PLAN) is 9.96 per well.

Most respondents (88 percent) say they have access to an alternate source of water other than the well PLAN has helped them construct. Only 12 percent say the well is their only source. In most cases (56 percent) the alternate source is another well. Twenty-eight percent of the respondents have access to a spring. Only 7.7 percent must take water from a river when the well is dry or short of water.

The average distance to an alternate source of water is about 200 meters. According to the survey, the distance to an alternate source is 81 meters in the E0, while in GKO it is 365 meters. The S0 distance averages 170 meters while the N0 is 199 meters. Only 11 percent of respondents say they have no alternative water source.

Respondents say that a well is typically constructed in about three and a half weeks and 88 percent were constructed in under six weeks. It only takes three or four days to dig a well if labor is available for full time work. Because wells are often group projects, families may work on them only part-time or on weekends. Rain may delay digging. Most wells are dug during the dry season when water tables are low and there are fewer problems of mud and surface water. The longest construction time for one well was 14 weeks.

Wells are constructed using professional well diggers for the most part. Forty-two percent of the wells were constructed entirely with skilled labor. In some cases skilled construction workers or well diggers live in the community and contribute time. In other cases the community hires outside people to do the work. In half the wells (49.5 percent) a combination of skilled and unskilled labor was used. This combination usually consists of professional diggers with families constructing their own surface structure. Only 8.7 percent of the families constructed wells without the benefit of professional help.

The average well is just over 11 meters deep though they range from three to 24 meters. Wells of over 12 meters are difficult and dangerous to dig and those of greater depth usually require pumps as hauling water up by bucket is difficult and time consuming. The modal depth is 12 meters and represents the maximum a typical family can dig with limited labor resources.

Eighty-four percent of the respondents say they have water year around, though only 64 percent say this is an improvement over the previous water source. Quality and accessibility are considered the most important improvements in their water supply.

4.1.1 Quantity

Sixty-four percent of the respondents say they have more water now than they did. A little over 14 percent say they have less water now. Reasons given for the reduction in quantity include the special drought conditions this year.

"Because of this long dry season, we have less water. Last dry season the well did not go dry" (GKOI).

"We have less now because more people from another community are using it in this dry season" (GKOIII).

"Because of the long dry season, there is less water" (NOII).

4.1.2 Quality

Improved water quality is perceived by respondents to be one result of the well. A little over 78 percent of the respondents say the water is cleaner now. Only 7.8 percent say the quality has declined. In these cases it is often because water is muddy or because the wells are new. (Wells should settle for two weeks before the water is used to allow debris from construction to settle.) The following are sample statements regarding water quality:

"Because the debris from construction is still in the water and people are taking water we haven't cleaned the water by allowing it to set calmly" (SOIII).

"Because the water is low and a lot of people use it, it is muddy now" (NOIII).

4.1.3 Accessibility

The main advantage people see to their wells is the increased accessibility of water. It was said by 81.6 percent that water is easier to obtain now. Those complaining that it is harder to obtain (11.7 percent) say it is because of increased numbers of people using the wells.

"It is more difficult now because we have to wait until the water is sufficient before we can get it" (GK0III).

"It takes longer now because we have to wait in line" (NOI).

Perceived impact on health is positive but not dramatic. About half of the respondents say diarrhea is less common because of the well. The other half indicate that diarrhea was never a serious problem. Similarly, when asked about the incidence of serious waterborne illness such as typhoid or cholera, over half say there never was a problem and the remainder say there appears to be less of it now.

When asked whether they intended to make additional improvements, most responded negatively. This is probably because most clients build well-bathhouse-latrine combinations which require no further improvements. Most common improvements planned are the construction or improvement of a bathhouse and the improvement of the area around the drain.

One question on the survey asked how the family had heard about the well program. Sixty-five percent had obtained information from the CD worker. The second most frequent response was the CW (41 percent). HWs and EWs had the smaller roles with 23 percent receiving information from the HW and fewer than 10 percent from the education worker. Only 23 percent say they received information about the project at the BFA motivational sessions. Community leaders and other families are rarely sources of information.

4.2 Data from Sample Areas

In addition to the survey of well owners from all PLAN work areas, certain areas were chosen for intensive investigation. Since it was logistically impossible to collect data from all those areas in which wells or other water projects are under way a sample of two areas was chosen to concentrate data gathering. Within the two areas, data were collected specifically on income and health because preliminary research and interviews indicated that the impact was most likely to be felt in those sectors.

In this section is a brief overview of the two sample areas, followed by a presentation of the data for health and income. A discussion comparing the samples is also included. The samples are referred to here as wet and dry.

4.2.1 Dry Sample (SOI)

This area experiences seasonal shortages of water yet the primary occupation of most clients is farming. Women engage in a variety of income generating activities, the most common of which is weaving mats or bags. Some make brown sugar, sell firewood, or vegetables. A few make tempe (soybean cakes). The main crops are corn, cassava, beans, carrots, and tomatoes, and some fields are suitable to produce one rice crop per year.

The area is within the Kacamatan of Pajangan. The area served by SOI includes eight kalurahans. The sample area consists of four of the 22 pedukuhans within the Katurahan of Triwidadi. These are as follows:

Table 8: Summary Data for Dry Sample Area, SOI

<u>PEDUKUHAN</u>	<u># WELLS</u>	<u># PLAN FAMILIES</u>	<u>TOTAL # FAM</u>	<u>TOTAL # PEOPLE</u>
Butuh Lor	7	29	91	486
Butuh Kidul	13	44	82	415
Sabrang Kidul	2	18	61	213
Kayuhan Kulon	1	23	80	450
TOTALS	23	114	314	1,564

Triwidadi is the driest part of the area served by the SO. As shown in the preceding table, the sample area includes 314 families and 1,564 people. Just over a third (36 percent) are PLAN families. Twenty-three wells have been built in FY '82 or FY '83. All of these wells were visited. The area is hilly and homes are dispersed on the hillsides as much as half a kilometer apart. The total land area is roughly 300,000 hectares and because it is unsuitable for intensive agriculture and much of it unsuitable for any kind of crop production, it is one of the least densely populated areas of the SO. For map showing the location of the sample area see Figure 2.

4.2.2 Wet Sample (NOII)

For comparison, a sample of four pedukuhans was also chosen from a kelurahan which has fewer problem of access to water for agricultural purposes. Within the Kecamatan of Mlati is the Kelurahan of Tirtoadi. The four pedukuhans chosen were originally part of a Targer administrative unit and hence are all named Pundong. There are five Pundongs but the fourth is not included here because no wells have yet been constructed there.

Tirtoadi is a rice growing region and the availability of water for irrigation means that two rice crops may be harvested per year. While rice farming is the main economic activity, many men also work as wage laborers, on larger farms or are involved in construction as day laborers, as brick layers, welders, or carpenters. Women make mats, brown sugar, tempe or sell fruits and vegetables at local markets. Because Tirtoadi is closer to Yogyakarta than Triwidadi, the range of economic activities is somewhat broader. Access to wage labor and urban markets is more difficult in the drier areas.

Table 9: Summary Data for Wet Sample Area, NOII

<u>PEDUKUHAN</u>	<u># WELLS</u>	<u># PLAN FAM</u>	<u>TOTAL # FAM</u>	<u>TOTAL # PEOPLE</u>
Pundong 1	4	40	133	589
Pundong 2	4	14	63	254
Pundong	2	22	60	339
Pundong 5	<u>1</u>	<u>31</u>	<u>90</u>	<u>497</u>
TOTALS	11	107	346	1,679

4.3 Impact on Income

The population of the two sample areas is roughly equivalent though the area of Pundong is much smaller, covering only about 60 hectares, thus the population density is higher. The population data for both samples comes from the dukuh and is accurate since dukuh are required to report accurately on their communities to the government. In both samples, the average family consists of just under five people.

Income is difficult to estimate for families who have very small scale farms and who engage in considerable barter and non-monetary exchange. For PLAN's records, however, it is necessary to estimate family income to determine eligibility for enrollment and for annual progress reports. Case workers calculate income on the amount of land planted in different types of crops and on estimates of income from wage labor or marketing. The method, to be sure, is rough. However, an examination of data from PLAN files for the two sample areas indicates enough consistency that whatever bias exists appears to be regular and the data can be used to indicate trends.

In both sample areas, the FC folders were examined on all families with wells and income data for 1980, 1981, and 1982 were collected. Because of the need for comparative data, another sample was drawn from FDs without wells in the same pedukuhans. In the wet sample, there is less demand for new wells and the non-well sample was from adjacent folders in the sub-district office files. In the dry sample, the non-well comparison group is from a list of families who have requested, but not yet received approval for, wells.

The data are presented in detail in Appendix I, and are summarized in Table 10. The data presented here represent 75 families in the wet sample and is 21 percent of the total population of the sample area. For the dry sample, 57 families or 18 percent of the population are represented. All are PLAN families.

Table 10: Income by District, Well Ownership, and Year, in U.S. Dollars

	NOII (wet)		SOI (dry)	
	<u>WITH WELLS</u>	<u>WITHOUT WELLS</u>	<u>WITH WELLS</u>	<u>WITHOUT WELLS</u>
Income 1980	\$19.28	\$18.94	\$11.38	\$11.63
Income 1981	24.51	23.83	14.88	15.15
Income 1982	33.98	33.60	23.72	22.11
% increase in '81	.27	.25	.30	.30
% increase in '82	.38	.40	.59	.45
% increase 80-82	.76	.77	.108	.98
N of families	39	36	29	28

Based on these data, the following conclusions may be reached:

- a) People in drier areas have lower income than those in wetter areas.
- b) In the dry sample, the income of families with wells went up 108 percent between 1980 and 1982. The income of families without wells increased 98 percent.
- c) In the wet sample families with wells have slightly higher incomes in all years and income of both well and non-well families increased at about the same rate (76 percent and 77 percent).
- d) The income of families in the dry area has increased at a faster pace than that of families in wet areas.
- e) The income of PLAN families increases by at least 25 percent, and sometimes as much as 59 percent per year, whether they have wells or not. The largest income increase is among well owners in the dry sample.

The data indicate that there may be some impact on income when families in dry areas get wells. Keeping in mind that families participate in a variety of projects, any of which could increase income, the explanation may be twofold. Having access to reliable water sources may encourage families to keep more animals such as chickens and goats. Or, since women usually carry water, time saved by having a convenient source may allow them an additional hour or two per day to make mats or sell vegetables.

4.4 Health Impact

Data on illness and health are taken from three sources. First from the records of PLAN HWs of people hospitalized and deceased. Data were also collected from the FC folders in the four subsample areas. The dukuh and the kader gizi were also interviewed about illnesses and death over the past few months. Finally, records of the kader gizi were analyzed. These are presented in Appendix M.

In the wet sample area, there is a higher rate of death and hospitalization than in the drier area. For the period covered, there were three times as many deaths in NOII as in SOI (67 and 22, respectively). For children under five, the most frequent deaths in the NOII are stillborn infants. Respiratory problems are the second most common problem with infants. For adults, respiratory problems, including tuberculosis are the most common illness. Many people are diagnosed as dying of old age without further information. In the SOI area, measles is the most common cause of death for infants, and respiratory infections account for other deaths.

Data on cause of death is collected from the family who reports the death to the PLAN office and, therefore, may not be accurate. However, data on hospitalizations are collected by PLAN medical workers who are trained to recognize common illnesses and are more accurate. As shown in the tables, infants are rarely hospitalized. Children in the six-to-ten year age range often have tonsilectomies while for adults, accidents are the most frequent reason for hospitalization. Four cases of typhoid were reported in the SOI area and 10 in the NOII area (See Appendices K and L).

Interviews with the dukuh in the four pedukuhans in NOII indicate that four children died since January of 1982. Three died of colds (at eight months, two months, and five years). The fourth died because it would not eat. No deaths of children were reported by the dukah of the four SOI Pedukuhans.

Kader gizi weigh children under five each month. Appendix M shows the data and they are summarized in Table 11. The variability of the data indicates that children may not be weighed properly or weights are not recorded properly, especially in the Butul Kidul Pedukuhan where data are so different from that in other pedukuhans that it suggests improper weighing. In the wet sample area, especially in Pundong I and II, a very high proportion of the children fail to gain weight each month. There is no indication that there is a systematic improvement in the children's weight as measured by weight for age.

Table 11:

Percent of Children under Five Who Failed to Gain Weight by Pedukuhan

	NOII (WET)				SOI (DRY)			
	<u>P1</u>	<u>P2</u>	<u>P3</u>	<u>P5</u>	SABRANG KIDUL	KAYUHAN KOLON	BUTUL LOR	BUTUL KIDUL
AUG (81)	-	-	-	-	.40	-	-	.00
SEPT	-	-	-	-	.50	-	-	.03
OCT	-	-	.21	-	.51	-	-	.01
NOV	.70	.23	.16	.27	.74	.23	-	.03
DEC	.68	.20	.27	.31	.83	.50	-	.00
JAN (82)	.58	.39	.28	.31	.25	.30	-	.00
FEB	.55	.57	.28	.35	.31	.21	-	.00
MAR	.55	.67	.14	.48	.37	.23	-	-
APR	.43	.53	.35	.42	.38	.16	.36	-
MAY	.42	.60	.28	-	.12	.53	.37	.00
JUN	.42	.53	.39	-	.39	.25	.50	-
JUL	.42	.71	.19	.37	.64	.19	.52	.00
AUG	.52	.66	.21	-	.35	.14	.28	.00
SEP	.51	.55	.08	.33	.38	.26	.50	.02
OCT	.47	-	.31	.37	.57	.54	.36	.00
NOV	-	-	.55	.41	-	.26	.50	-
X	.52	.51	.26	36	44	.29	.42	.007

-Indicates no records kept that month.

Interviews and an overview of the data indicate that typhoid is more common in the wetter areas of NOII. As with any rural population, there are a large number of accidents. Respiratory problems are the main health problem in both areas and for infants, poor prenatal care leads to a high incidence of still-born babies. There is no evidence of change in the incidence of waterborne illness. Diarrhea is not reported to be a serious problem. This is largely because people do not consider it dangerous, not because it is infrequent.

4.5 Findings with Respect to the Technical Aspects of the Water Systems

4.5.1 Planning for Water Systems

The existing program for supplying water to PLAN families has had a minimum planning component. This is do in part to the criteria for selection of PLAN families and PLAN areas and due to staff limitation. Even though water is a top priority in PLAN programs the need for a safe water supply is not the principle factor in selection of a family to be affiliated with PLAN. Therefore water supply becomes a necessary but not determining factor in community development. Community versus individual systems have been planned and constructed based upon factors at the village level such as: availability

of groundwater, surface water or rainfall catchment, quantity of water required, seasonal distribution of water, and water quality. Planning for water systems is coordinated somewhat through two government agencies, the Department of Health and the Department of Public Works (INPRES). In many cases, though, several water supply projects sponsored by government and non-profit organizations are found within a PLAN area. There appears to be no governmental agency with direct responsibility for approval, inspection, and mapping of hand-dug wells.

4.5.2 Siting of Wells

For the most part, well locations are chosen based on convenience of use as informally certified by pawang's. Pawang's have special abilities to assist in siting wells similar to water diviners. Wells appeared to be sited close to existing wells, which for the most part are located in close proximity to the house or in other functional locations relative to traffic patterns and activity centers. No individual wells were found located on the edges of property even though such locations might appear to be better due to topography or surface geology.

Since the siting of an individual well by pawang has important societal and cultural value, it is unlikely any impact can be made in this area. It was found that in certain areas, such as the alluvial plains of rivers for example, that groundwater was usually universally available. These types of settings reduced the importance of the pawang's. In the regions of limestone outcroppings and hilly terrain the availability of groundwater is highly variable both in terms of depth and in terms of location within the property boundary. In these conditions the use of a pawang appeared to be of greater importance. An example was observed where three wells were dug without success and the fourth well, a success, was sited by pawang as a last resort.

Generally it was found that the occurrence of dry wells constructed by PLAN was no more frequent than dry wells constructed by individuals or other programs. This more or less says that the occurrence of dry wells is a community problem not an individual problem. Pawang's were used to site approximately 50 percent of the wells evaluated in this visit. The PLAN staff had identified the siting of wells in terms of finding water as their number one concern. Their concern was that of revitalizing dry wells or increasing their yield during the dry season.

4.5.3 Well Construction and Spring Development

The standard design and materials specification for hand-dug wells has been used in the field. The concrete casing rings are a half meter high and one meter in diameter and are a proven material for casing wells. These rings are relatively easy to install and are made of locally available materials. Some older community wells were observed that had brick linings. For the most part though this material and technique is no longer being used. The protection afforded by the one meter wall on the wells is sufficient for safety purposes. The bucket and pulley system used to draw the water is straight forward and easy to repair.

Some construction problems were observed where severe cracks were found on the apron surrounding the well. The cracks around the apron appeared to be due to fill material which had not stabilized before the concrete had been poured. These severe cracks were found all around the base of the riser protecting the well and over the apron in all directions. This in effect was not a protected well due to the potential contamination of the groundwater from surface water. This was the only well out of approximately 25 wells inspected that did not meet construction standard.

The manufacturing of the concrete rings was inspected and it appears that sufficient quality control is maintained at those locations visited to insure that the rings will resist normal erosion and corrosion processes. Several dimensions of rings are readily available ranging in diameter from 30 cm to one meter and ranging in height from 25 cm to one meter. Special problems existed in wells which had been developed and then later found to be dry during the dry season. Certain special techniques might have to be employed to develop these wells for use in the dry season. One potential problem was identified where loose unconsolidated material was being excavated in a dry well which set up a potentially dangerous condition in the well. The lower casings were not being fully supported as the sand was removed causing the bottom rings to slip.

Two PLAN spring development projects were inspected and found to be protected from surface water contamination. One was a subsurface spring which had been improved and protected. Shallow pumps, less than three meters, were used to extract the water. The platforms on which the pumps were mounted allowed excess pumped water to flow back into the well. This minor problem could be alleviated by adding a ridge adjacent to the well forcing this excess water to flow away from the well opening.

Another problem which existed at one site was the lack of storage of spring water. During periods of intense use, there was insufficient water to meet community needs. The water at this site moved through dissolution channels on a limestone base. The water level within the spring box does not fluctuate significantly with the rainfall. The yield of the spring is exceeded during the peak water demand hours. A means of collecting this spring flow during non-peak hours and storing it for peak use is necessary. Several suggested techniques for off-peak storage were discussed by PLAN technicians and the WASH consultant.

No covers were seen on any of the wells on this visit. Since all of the systems employed buckets for retrieving the water from the well, operationally it is easier to keep the well head open. It was discovered though, through interviews with villagers, that a closed container or a closed source of water is perceived as being less desirable than one which is open to the air and light.

4.5.4 Gravity Systems

Three gravity water systems were evaluated for their design, construction, and operation. The setting for two of these systems was somewhat similar. These systems were under the jurisdiction of the East Office and in the rugged limestone foothills adjacent to a 500 meter plateau. Both systems incorporated a

protected spring with 500 to 1,500 meters of distribution pipe over 200 to 250 meters of vertical descent. The third gravity system was under the jurisdiction of the North Office and located on the lower elevation of Mt. Merapi. The source was a diversion canal built by INPRES to supply irrigation and drinking water. This particular system had treatment processes to remove floatable material, coarse sediments, and some finer sediments. The system was composed of an inlet structure, a coarse screen, a jute thin layer filter, and a second coarse filter. Some separation of sediments also occurred in the second storage reservoir which was adjacent to the treatment structure.

Major design deficiencies were found in the location of treatment and storage structures in relation to the source of raw water. Two of the three systems had treatment-storage or storage at the raw water source. In one case the elevation of the top of the storage reservoir was significantly higher than that of the source of the spring. This results in an inefficient use of the storage reservoir. In one case only 40 percent of the reservoir volume could be used. If this storage volume is necessary then these hydraulic considerations must be considered and alternative sitings or designs should be implemented.

One of the gravity systems had a treatment compartment for removing floatable, coarse suspended material and possibly fine sediments. During the time of the visit to the site the raw water was not turbid. According to villagers the filtration process would be needed during the rainy season and for about a month after the end of the rainy season. A typical meteorological cycle would have a five-month rainy season and a seven-month dry season. The processes as designed and operated did not appear to be capable of removing suspended solids. The filtration and screening system was designed to be a horizontal process. The only element of the system which impedes solid movements in the channel was the thin bamboo reinforced screen in the middle section. The last section of the system is composed of three to five inch lava stones placed on the bottom of the chamber. The water does not have to flow through the layer since it only covers about one tenth of the depth of the chamber. It appears to this observer that the entire process was not functional nor capable of treating water. Significant sediment deposit was found in the piped system storage reservoir adjacent to the treatment process. It appeared that there had been no maintenance of any element of this system since construction.

Three pipe systems associated with three gravity systems were inspected. One of the gravity flow storage systems had two reservoirs in series located at approximately 500 meter intervals supplying water to clusters of houses. Supply pipes connect the reservoir over a distance of 500 meters. Taps were installed in the reservoir as community water supplies. These reservoirs were approximately two meters high by three meters by three meters with no cover.

4.5.5 Rainfall Catchment and Rooftop Collection

Seven rainfall catchment systems have been constructed by PLAN. One system was evaluated in the East Office and one in the Gunung Kidul Office. In both cases the systems had not been in service during a wet season to allow observation

of use and storage requirements. Several other rooftop systems were evaluated which had been constructed by INPRES, the RI's Department of Public Works rural water supply program.

The two systems which were evaluated had minimal directional control of rooftop runoff. Simple but effective diagonal extensions of galvanized metal and wood were used to either collect or direct rooftop runoff to the inlet part of the storage tank. No attempt was made to divert the first flush of the roof and to get rid of leaves and large objects. A collection well on top of the storage tank did have large one-half to one inch holes to screen large objects immediately before entering the storage tank.

The tanks were circular and reinforced by bamboo in one case and by chicken wire in the second case. The cement and bamboo tanks were approximately two meters high and two meters in diameter. The ferro-cement were approximately three meters high and two to two and a half meters in diameter. The bamboo reinforced tanks were smaller due to the inherent limitation of the bamboo as structural components of the ferro-composite material.

The outlet works for the storage tank is below grade to allow the tank to be drained. As a result, the protection appurtenance around the outlet work appears to be a collection point for surface runoff. Surface water can enter these collection boxes because the side-walls are grade level. This problem could be alleviated by extending the side walls 20 to 30 cm above grade, thereby diverting any runoff around the collection box.

Interviews with villagers indicated that the older runoff storage facilities in the communities were used continually even during the wet season. As the dry season begins the storage facility is still used resulting in an empty water storage container as the wells and springs begin to dry up. A definite education program needs to accompany any of these programs to insure that water is saved for critical periods. This appears to be an extremely difficult task considering the historical use patterns.

4.5.6 Handpumps

A survey and evaluation was made of handpumps installed by PLAN in the East Office region. These installations were in urban settings for the most part and were used by several families. The pumps had been installed at well sites which had been hand dug. PLAN has no wells and pumps which have been hand or mechanically bored. The only pump specified by PLAN is a pump common in Southeast Asia called a Dragon pump.

The Dragon pump is manufactured in Indonesia and is also imported from Japan. The cost of the pump is approximately \$35 to \$50 depending on whether it is imported and the number being purchased. Based upon interviews with the users, the vendors, and various PLAN workers the imported pump is constructed better and has fewer maintenance problems.

All of the 18 pump systems observed though were operating and had been operating for up to three years. Each PLAN installation included a repair kit which included a foot valve, rubber diaphragm, and an insert cylinder for the suction column. Each of the PLAN families interviewed knew what the spare parts were used for and in several cases had done the repairs.

The pumps are usually installed by a villager who is known for his ability to install pumps. In some cases this person was the village water master. The cost for installing a pump ranged from \$20 to \$40. There were several cases, in the remote areas, where the PLAN client installed the pump with assistance from other village members.

4.5.7 Bathhouse and Latrines

Combined water supply and sanitation project made up about 60 percent of the PLAN projects evaluated. These projects included a protected hand-dug well, a bathhouse with a soakaway, and a latrine with a septic tank and leach field. The well was usually located in close proximity to the house, usually less than 10 meters, and a bathhouse and latrine were constructed on the same slab next to the well platform. The design of the bathhouse was such that water from the bucket at the well could be used to supply water directly to the bathhouse through a short pipe or opening into the bathing area. Water is stored in the bathhouse in a concrete container which has a 100-150 liter capacity. Water was then dipped out of this storage vessel and used for bathing. Included in this same structure and located adjacent to the bathhouse on the same slab was a latrine.

The latrines were not water sealed but water was used for cleaning. It appears that extra water was not used for transport of the solids to the septic tank other than the water used for cleaning. This two-compartment facility was constructed of brick and finished with mortar. The roof of the bathhouse-latrine was constructed of clay tiles, bamboo and palm fronds, and in some cases left open.

The bathhouse facility appeared to be used in almost all the sites visited except where drought conditions existed. It was difficult to ascertain whether this facility was the only bathing site used by the family members. Several interviews indicated that when people are in the field they would use the closest body of running water to prepare for praying or to wash prior to returning home.

The bathhouse appears to be used more frequently by women and children at mid-day and by the men in the early morning and evening. This is more of a casual observation rather than a carefully arrived at conclusion.

The use of a common slab for all three functions, water supply, sanitation, and bathing, could present a problem. It was observed at several sites that the slab was cracked and that drainage of the bathhouse water was not draining away from the well as planned. This problem can be minimized by expanding the foundation and/or by reshaping the finished cement. This last could easily be done with the use of a bubble level. For the most part the bathhouses appear to be draining as designed and did not evidence any major construction

problems. Several foundation problems were observed where severe cracks appeared in freshly poured concrete. In one case this was due to pouring the foundation on freshly excavated clayey soil from the well. The clay soil dried and shrunk causing differential setting.

Water from the bathhouse could be a potential public health problem. It is not usually considered the same level of risk as wastewater from the latrine. The soakaway is an appropriate way to handle the disposal of greywater. The soakaway pits are usually one to two meters in diameter and two to three meters deep filled with four to ten cm of rock with the top of the pit covered with jute and then covered with about 30 cm of soil.

Those soakaway pits observed were all more than 10 meters from the bathhouse and well. The use of greywater for ornamental purposes and for surface and subsurface irrigation was noted in several instances. The one ornamental use of greywater was a small fish pond approximately one meter by two meters. Several questions arose from FP staff concerning the health risk associated with this type of use. Compared to other risks with the use of water in Indonesia this one is minor. The question should be more one of resource rather than risk. If water is needed for rearing fish then there clearly is not enough water from a community bathhouse to supply the need. There is also potential problems from the detergents and surfactants found in the soaps. A safer and more acceptable use of greywater is as a subsurface irrigation water. Allowing this water to percolate through the soil to the root zone of vegetable and other plants would be an acceptable reuse of the water. Percolation through the soil allows for biodegradation of many of the compounds found in soaps such as detergents, oils, and grease.

Certain types of soil (those with a high clay content, for instance) also absorb phosphates and certain other compounds. The problems of potential pathogens in greywater needs to be considered in any design of a subsurface greywater system. Bacteria and viruses will not move via the water from roots into that portion of the plant located above ground level. (This mechanism is referred to as translocation.) It is possible though to have pathogenic bacteria and viruses attach to root crops or splash from the surface of the soil up unto the leaves and stems. In Indonesia this precludes the uses of greywater, for example, for cassava, potatoes, carrots, roots and tubers used as spices, etc. It could be used, though, for fruit trees, beans, and peas.

Septic tanks are used to treat the waterborne waste from the latrines. Wastewater then goes into a soakaway similar to, but separate from, the one which is used to dispose of the greywater from the bathhouse. Septic tanks are usually about one cubic meter in size with no internal walls, baffles or internal transfer pipes. Septic tanks are constructed of concrete, cement-brick, and clay tile. There were no septic tank systems being constructed during the period of this visit so inspection of construction techniques was not possible. The designs of wells, latrines, and septic tanks are standardized to a certain degree by PusKesMas, the Health Department, and INPRES. There has not been sufficient experience with septic tank systems to determine long-term maintenance requirements for the tank, the transfer tiles, and the solids accumulation in the tank.

4.5.8 Organization Factors within PLAN

Generally the staff is successful in implementing water supply and sanitation projects. The CD workers have an excellent working relationship with the clients. This, more than any other factor, is the key to the successes which were observed in PLAN projects. The fact that CD workers are interacting with community members in several sectors (water supply and sanitation, income producing, housing, etc.) makes this a most commendable and effective effort.

Exactly how much more technical information the CD worker needs is somewhat variable. Most of the CD workers expressed a need to have more technical information so they can offer alternatives and solve particular problems which periodically arise. The CD workers are more than capable of assimilating the technical information needed to implement the various projects they have proposed. The strongest role the CD workers can play is in the area of construction management and inspection of the facilities. This requires a close working relationship with the families and technical knowledge of building materials and equipment specifications.

The Senior technician in the main office is an important link in maintaining and improving these projects. The particular person in that position now has the interest and the capability of making a significant contribution to these projects. A considerable amount of time was spent with the Senior Technician and he was extremely responsive and interested in all aspects of water supply and sanitation. An important role he can play in implementing these projects is in the area of planning and training as well as being a source of technical information and advice.

An important factor in PLAN projects is that there is an opportunity for shared experiences between CD workers in the various offices. The sharing of these experiences can be used very effectively through an in-service training program. The Senior Technician can play an important role in coordinating these shared experiences by establishing open lines of communication between offices and teams.

There appears to be a need to increase the technical knowledge of certain PLAN staff members in the area of water supply and sanitation. The areas of greatest need appear to be in the gravity water systems, groundwater resources, and treatment technology. Secondary needs exist in handpump maintenance and basic plumbing.

Chapter 5

RECOMMENDATIONS

5.1 General Program Recommendations

Based on a synthesis of the data presented here and the evaluators quantitative assessment from interviews and time spend with the field staff, the following comments and recommendations are offered.

5.1.1 Planning

The program would benefit from setting long range objectives. "When projects are planned primarily on the basis of inputs, rather than both inputs and outputs, their eventual achievements tend to be assessed in terms of input measures. This, of course, is a fundamental weakness in project planning. Water and sanitation projects are not implemented primarily for the purpose of laying pipes or pouring concrete or even producing clean water. They are built to improve peoples health, to relieve them of the debilitating effects of excessive water hauling, and to improve their overall quality of life. Without a clear sense of the type and magnitude of benefits a given project can produce, the planner is unable to say with confidence what a proposed project has a high potential for success" (Warner 1981:132).

A considerable amount of research indicates that there is a positive correlation between socio-economic conditions and disease reduction (cf. Nerl, 1974; White, Bradley and White 1972; and Wolman 1963.) Few studies have shown a direct relationship between clean water and a reduction in disease rates.

Given that waterborne illnesses are not the most serious health problems in the Yogyakarta area, and that the most common illness, respiratory illness, is not directly amenable to change because of water supply. The following recommendations are offered:

- (1) While the health aspects of the project should not be eliminated, program objectives should be defined in terms of access and quantity of water rather than quality.
- (2) Data should be collected on the distance a family travels for water before and after the well or water project and also in the amount the family uses. This information could be incorporated into the SP with an estimate of distance to an alternative source and the amount of water a family uses in a day (for all purposes). A follow-up assessment could be made in one year to assess change. Priority should be given to those bequests from families farthest from a safe alternative water source.
- (3) The community should be involved in a long range planning strategy by which they assess all available water resources, their relative accessibility, quality, and dependability and develop along range strategy (perhaps for five years) outlining how they can improve

existing sources. They should be encouraged to elicit support from the RI for projects, using PLAN resources to stimulate community interest and cooperation in developing those resources to the maximum convenience of all community members. This would include some assessment of the relative advantage of public over private wells and also the possibility of developing distribution systems which would allow people to have water piped into their homes.

5.1.2 Program Management

Water is an excellent example of a project which benefits from the team approach which characterizes PLAN/Yogyakarta's policy of providing integrated services to the families. Each sub-district office has health, social, community development and education workers on the staff and their activities are coordinated through the sub-district Office Head.

At the same time, because water does not fall within a clearly defined "sector," it is not always certain who is responsible for what. This situation is intensified by the lack of clear objectives of the water projects. Historical precedent has led to the present system. Up to three years ago, PLAN had clinics and provided curative services to its families. Because of policy shifts from curative to preventive medicine, clinics were closed and many of those personnel transferred to the new community health program which is managed by two physicians on PLAN/Yogyakarta's staff. The physicians retrained the health workers to provide educational support to the RI community nutritional volunteer project. The HWS responsibilities are described earlier. At about the same time that HWS were being trained to work with children and women of childbearing age, CD workers began to work in more construction projects which involved water. Because wells and water projects require some of the same technical skills as building rabbit cages or bridges, the water project became identified with the CD workers. Thus, the wells/water project is almost entirely a CD project carried out by CD workers although it is almost entirely a CD project carried out by CD workers although it is written up as a PDO in the Health SPO.

At the present time, the water projects fall within the Health SPO but are implemented by the CD workers. If water projects are to continue as high priority for PLAN/Yogyakarta, and conversations with the current FD indicate that they will, the following suggestions should be entertained.

Recommendations:

- o Consideration should be given to either putting the head of the medical department in charge of the project, establishing an equivalent senior staff person, or assigning an Assistant Director (AD) to coordinate and manage the technical and educational components of the project at the Main Office level.
- o The present staff are to be commended for their dedication and commitment both to the principles of PLAN and to their concern for the families in their communities. Their professionalism in many respects compensates for

their lack of technical training which, for the most part, has been obtained on the job, through reading on their own, and in other informal situations.

- o That the on-going technical training program be expanded through Dian Desa, the local appropriate technology group, and that all CD workers and possibly HWs be provided with training in appropriate technology, geology, construction and materials.

5.1.3 Education

The educational component of the project is recognized by the field staff to be underdeveloped. Steps taken by the staff this far to identify areas in which education is most needed and the development of materials by a consultant are an important beginning.

Perhaps one of the problems of the educational component will be identifying appropriate PLAN staff to carry it out. Since the CD workers are generally in charge of well construction it might be appropriate for them to have a short presentation on locating and constructing wells and latrines. Health workers might have special presentations on specific aspects of water such as proper storage and transportation of water, proper disposal of children's feces, and so on. Educational workers might also be involved in setting up special programs although the educational workers are generally more concerned with technical training such as trade skills rather than general information.

Because water use customs in bathing and defecation are related to water sources, both the RI and PLAN have encouraged bathhouses, latrines with septic tanks, and wells to be built as a unit. This allows personal hygiene to be performed near the well but the units are designed so that waste does not contaminate the well. Communal latrines are built in some areas but maintaining them is always a problem since dirty latrines quickly fall into disuse. In rural areas, it was observed that even water latrines are often not used because it is inconvenient to walk from the fields or across the yard to use them. The use of latrines is greatest in those areas of relatively high population density, and then use is probably related to privacy rather than sanitation. In rural communities where houses are located some distance apart separated by bushes, fields, and canals, it is more convenient to defecate outside than to walk to the latrine. Some families have so little land that it is not possible to locate a traditional pit latrine a safe distance from their well.

During the time of this evaluation emergency water supplies were trucked to the Gunung Kidul area where reservoirs were filled with water from a spring nearer Yogyakarta. Residents were warned to boil the water for 15 minutes before drinking it but many were seen to put handfuls of dirt into the water to make the taste acceptable.

Some clarification is required as to what parts of an educational program would be CDW responsibilities and what part are HW. The implementation of this aspect of the program to date has been slow and initiated mostly by the FD.

Since there are community volunteers for other aspects of health, perhaps their roles in water education could be expanded or PLAN could train one or two people in each community to serve as the "water educators."

Recommendations:

- o Special educational packages should be developed for those communities where wells are to be built so that they are motivated before the wells are built and make the maximum use of them after construction. Information should also be made available about sanitary methods of drawing water, transporting it, and storing it in the home.
- o Because the educational component of the program is under development responsibility for its implementation needs to be made explicit.

5.1.4 Impact

At this point, it is difficult to assess the impact of the wells because the data are weak and the wells are new. There are some indications that the health impact of the wells is greater in the wet areas (NOII) while the impact is on income in the drier areas. This is an important consideration in setting project goals. Goals in one project area need not be the same as in another.

Recommendations:

- o In wet areas, priority should be given those families or communities with a history of waterborne illness, especially typhoid.
- o In drier areas, wells should be tied to income-generating projects where possible so that families who are participating in rabbit, chicken, or other projects receive wells first and make use of the water to improve their economic conditions.
- o Mechanisms should be set up to monitor the impact of the wells. This would include a pre-well survey of the community and a survey of the incidence of waterborne illness and a follow up at least a year later to determine whether the well has affected either health or income. Repetition of the community resource assessment form designed by Gearheart (See Appendix K) could be used.

5.1.5 Community Participation

At the same time that participation by community members strengthens the program and has important positive benefits for the maintenance of the wells, it also has within it problems which bear mentioning. When community members construct their own wells PLAN CD workers do not have full control over the project. They can recommend certain procedures or specifications, but if at the last minute the community decides to locate the well a few feet away from the original site, decides to use brick instead of concrete for the parapet or decides to make it larger in diameter, there is little that the CD worker can do.

Decisions by the community are sometimes constructive and improve the project, but some times changes are not improvements. In one case, for example, a group increased the diameter of the well to the point where short statured women and children cannot reach the rope in the middle without leaning dangerously over the well. In another case the community decided to use the materials donated by PLAN to construct eight wells instead of the original six and "stretched" the materials to construct eight although they may be less sound structurally.

A similar case was one where bricks were given for a well but the family used stone to build the well and used the bricks to construct a bathhouse which had not originally been planned. Misuse of materials is rare. In one case materials were given for a 12 meter well but the well constructed was only seven meters deep. Materials for five meters are missing and members of the community are afraid to speak out against the Dukuh whom they consider to be responsible. In another case the Dukuh was given responsibility for materials to build three wells. Only one was built but he argues that he used all the materials in the construction of the one well.

There is no institutional way to guard against such abuses. It is interesting to note that the few cases of abuse all involve Dukuh. The best safeguard is those members of the community who would benefit from the wells or who are aware of neighbors who are abusing PLAN assistance. With pressure from CD workers these situations are usually resolved.

This lack of "control" over the community can be frustrating for the CD workers who sometimes must stand by and watch while changes which are not necessarily improvements are made. These cases are not frequent and usually the results are not seriously detrimental to the end product but serve to point out one of the disadvantages of community participation from a programming point of view. In balance, the advantages of involvement far outweigh the disadvantages. The level of involvement of the beneficiaries of the wells is commendable. This involvement has important implications for the maintenance of the wells. Community involvement could, however, be strengthened.

Recommendations:

- o The community should be involved in assessing resources and clarifying their long range objectives with a view to using PLAN resources to stimulate community contributions to the projects as well as stimulating the RI to increase its contribution to the projects.
- o Women should be included in planning, construction, maintenance and education wherever possible. Although women are the primary water users, their participation in the projects at this point is very marginal. They should be particularly involved in the educational component of the program both in helping to design such a program and as the recipients of the information. Cultural norms probably prohibit overt participation in planning and construction, but their potential contribution in these areas should not be overlooked.

5.2 Technical Recommendations

5.2.1 Planning

1. PLAN staff should develop a planning approach to selection, implementation, construction, and maintenance of water system. A needs assessment would include a ranking of priorities in community health. For PLAN areas, location and condition of existing water resources should also be incorporated in planning.
2. PLAN staff should incorporate information currently available from the Provincial Public Works Department concerning groundwater resources. Information developed by consultants for the Provincial Public Works Department such as groundwater maps, locations of springs, and location of underground rivers should be used in the planning phase of water supply projects.
3. PLAN staff should develop an information collection system on existing water supply systems for use in future programs including:
 - a) Depth of wells in PLAN areas
 - b) Seasonal variation of water table in PLAN areas
 - c) Health factors as they relate to water supply and sanitation
 - d) Water use factors.
4. PLAN should integrate planning aspects of water supply development into development projects at the earliest possible time and develop an integrated approach for design, construction, and monitoring of these projects. This integrated approach should include the educational, health, and community development worker.

5.2.2 Siting

1. PLAN staff should make use of any available existing information on groundwater resources. This would include a survey of existing wells and information developed by the Public Works Department. Additional information might include the depth of the water table, seasonal variation of water table, type of soils found near the bottom of the well, and information on how the well performed during drought conditions.
2. A priority program for PLAN should be directed at the rehabilitation of existing community wells. Such wells could be a source of community contamination. Since they are known sources of water their impact on community health and development is significant. Community wells are traditional sources of water, and with the proper design, construction, and operational components can serve as excellent models.
3. A survey should be made of all well sites within a PLAN community to determine general condition and usage. This survey could be used by each team in developing work plans for future years and in assisting non-plan families in developing groundwater supplies.

4. A closer level of supervision should be afforded PLAN projects by the Community Development worker during the well construction period. Technical assistance in the area of well alignment, pump installation, would then be readily available. This construction supervision task would also increase the experience base of the Community Development worker.

5.2.3 Well Construction and Spring Development

1. A follow-up evaluation of PLAN constructed wells should be done immediately after construction. In particular, this inspection should include any material or construction failures which might result in surface water contamination of the groundwater. PLAN staff should initiate a repair or reconstruction activity with the family before the wet season.
2. There appears to be no need to cover well heads either from a contamination or from a safety point of view. Wells are traditionally not covered in Indonesia.
3. The use of buckets, belted rubber ropes, plastic ropes, woven ropes, and pulleys appears to be an appropriate means for retrieving water from the well. It is recommended that plastic ropes be used whenever possible due to their availability and strength.

5.2.4 Rainwater Catchment

1. Design considerations for rooftop collection and storage systems should include a means to divert the first flush after the dry season to minimize contamination of the stored water.
2. If possible the outlet works from the storage tank should be above grade so that there is no possible way for surface water or stored water to contaminate the source. Even if some volume is lost by raising the outlet works, the precaution would be justified for health reasons.
3. An educational program should be initiated to optimize the storage of the last of the wet season water for use during the end of the dry season. At the present time it is viewed as a convenience not as a secondary source during droughts.

5.2.5 Handpump

1. PLAN should continue to use the Dragon pump manufactured in Indonesia or Japan. This type of pump appears to be a heavy duty pump with ease of operation, i.e., handle length, handle shape, outlet configuration, height of pump.

2. Pump selection should be standardized (which essentially has been done to date) to insure PLAN staff has uniform working knowledge of an acceptable system. All community development workers and health workers should be trained to inspect pumps, to make minor repairs, and to be able to replace common components.
3. An inventory system for identifying parts which fail and the rate of failure should be incorporated into each offices inspection and evaluation procedures.
4. A system needs to be established through the PLAN Credit Union for a repair and pump replacement fund. A percentage of the initial pump cost, approximately 25 percent, should be set aside for repairs and recapitalization.
5. A thorough evaluation of existing pumps in the PLAN/Yogyakarta office work area should be made. This evaluation coupled with a review of locally available pumps and replacement parts could be used for future pump projects. The evaluation of existing pumps should address the following factors:
 - o Maximum suction depth.
 - o Ease of operation, i.e., accessability of critical components, availability of parts, cost of parts, etc.
 - o Ease of maintenance, i.e., accessability of critical components, availability of parts, cost of parts, etc.
 - o Availability of technical back-up, i.e., PLAN technical assistant, pump vendors, Dian Desa, etc.
6. A training program should be devised to insure that Community Development workers and other identified PLAN staff members have the ability to install and repair pumps.
7. Develop training materials on pump installation and maintenance to pass on to PLAN families. This would allow them to be somewhat self-sufficient and would possibly allow them income opportunity.

5.2.6 Bathhouses and Latrines

1. The integrated drinking water supply (wells for the most part), bathhouse, and latrines should continue to be the scope of the sanitation project by PLAN. Since the potential spread of pathogens via water supply is multi-faceted, this integrated approach is the most strategic intervention.
2. The planning of these facilities should be directed more toward community or multiple family complexes. There tends to be a natural tendency within the Indonesian culture to share water supplies and bathing sites. In urban regions, significant multiple family use of bathhouses, latrines, and water sources are observed.

3. In all cases of combined systems the latrine compartment should be the farthest away from the well. This would place the nearest point of potential contamination three to four meters away.

The placement of the septic tank and soakaway should be such that there is a maximum of horizontal and vertical distance from the well and the groundwater surface during the wet season. A map should be made of each PLAN community to keep track of well sites and septic tank locations. A potential problem could exist if a soakaway is located uphill from an adjacent well.

4. Latrine compartments should be designed to be as light and open as possible. Several comments were made concerning the hesitancy of young children to enter and use a latrine because it is dark.
5. An overall education program needs to be implemented with these projects to alter community and individual sanitation and water use habits. The integration of community development and community health is closely tied to these two factors.
6. The construction of the concrete foundation pad should be carefully supervised by the CD workers to insure that there is proper drainage. This should be reinforced by specifically stating during the construction phase the importance of taking all drainage on the slab away from the well site.
7. It is recommended that roofs for the bathhouses not be encouraged. There appears to be no need for covering them. One exception might be in areas where population densities are greater. Culturally, shoulder high walls and barriers are quite acceptable. This would keep the unit cost of these facilities low and, in some cases, might increase their use.
8. It is recommended that latrine compartments be designed to allow for more light. This can be done in several ways. One way would be to construct an opened gabled roof. In the equatorial region an east-west orientation of the roof line would allow maximum light in the latrine. Another alternative would be to construct shoulder high solid walls, similar to the bathhouses, and to keep the area open above the point to where the roof beams begin. This would not only allow more light in the latrines but would reduce the cost of materials.
9. It is recommended that greywater only be used for subsurface irrigation of fruit trees or ornamental plants around the home-site.
10. The design and construction of the septic tanks appear to be standard designs as prescribed by RI. Some problems might occur where more than one family uses a latrine. It is recommended that the same analysis be made of the solids accumulation in the standard design septic tank to see if sufficient volume is available for decomposition and storage. Based upon a limited amount of information it appears that the septic tanks are too small for the number of people being served. It is difficult to make a recommendation on the maintenance of these systems because of the lack

of available sites to observe. When in doubt though, the septic tanks should be over-designed in terms of volume. It is highly unlikely that any meaningful septic maintenance program can ever be initiated in these communities.

11. It is recommended that dry composting latrines not be used in these areas. These systems work best in dry warm climates where water is not used for cleansing. If not properly constructed and maintained dry composting latrines can be source of contamination of food, water and clothing.

5.2.7 Organization Factors - PLAN

1. An in-service training program should be initiated with the CD workers and senior technician which would review and evaluate all existing projects. Introduction of training materials in the areas of pump installation and maintenance is a critical need of all CD workers.
2. In-service training should also be incorporated in the planning of water resource development. After the first step, recommendation 1 above, the review of all projects to date, a planning approach should be developed which would best serve all PLAN programs, similar to that suggested in Appendix E.
3. Certain key individuals should be sent to institutional training programs and/or short courses in water supply and sanitation. An example of the type of course would be the course Dian Desa will be presenting in April of 1983. The senior technician should be the person sent to these types of courses. He can then transfer pertinent information to the CD worker through an in-service training course.
4. A library of technical information on water supply and sanitation needs to be developed at the main office. Use of the Dian Desa library is strongly encouraged in that it is the best library in Indonesia on appropriate technology and water supply and sanitation. WASH will forward to PLAN a copy of books and reports which are pertinent, to be included in the main office library.

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APPENDIX A

Water and Sanitation for Health (WASH) project
Order of Technical Direction (OTD) Number 117
September 25, 1982

TO: Dr. Dennis Warner, Ph.D, P.E.
WASH contract Project Director

FROM: Mr. Victor W. R. Wehman Jr., P.E., R.S. *VWR*
AID WASH Project Manager
AID/S&T/H/WS

SUBJECT: Provision of Technical Assistance Under WASH Project Scope of Work
for USAID/Indonesia and Foster Parents Plan Office in Yogyakarta,
Indonesia

REFERENCE: A) Jakarta 14191, dated 20 Sept 1982

1. WASH contractor requested to provide technical assistance to USAID/Indonesia and Foster Parents Plan/Indonesia as per Ref. A, para 1. Contractor will contact USAID/Indonesia and Plan to obtain more complete scope of work before consultant actually travels to Indonesia. More complete scope of work must be approved by AID WASH Project Manager and will become a part of this OTD as Reference B.
2. WASH contractor/subcontractor/consultants authorized to expend up to twenty (20) person days of effort over a 3 month period to accomplish this technical assistance effort.
3. Contractor authorized up to 14 person days of international/domestic per diem to accomplish this effort.
4. Contractor to coordinate with ASIA/TR/HNP (G. Curlin), ASIA/PD/ENGR (H. Hasan), ASIA/PD Officer for Indonesia, Indonesia Desk Officer and should provide copies of this OTD along with periodic progress reports as requested by S&T/H or ASIA Bureau.
5. Contractor authorized to provide up to one (1) international round trip from consultants home base through Washington to Jakarta, Indonesia to Yogyakarta, Indonesia to Washington D.C. (for Debriefing) to consultants home base
6. Contractor authorized local travel within Indonesia as necessary and appropriate to accomplish this technical assistance effort. Costs not to exceed (NTE) \$900 without prior written approval of AID WASH Project Manager.
7. Contractor authorized to obtain secretarial, graphics, reproduction, or interpreter services in Indonesia as necessary to accomplish tasks. These services are in addition to the level of effort specified in para 2 and para 3 above NTE \$1200 without the prior written approval of AID WASH Project Manager.
8. Contractor authorized to provide for car/vehicle rental if necessary to facilitate effort. USAID/Indonesia and/or Foster Parents Plan/Indonesia is encouraged to provide vehicles if available and as much as possible.

9. WASH contractor will adhere to normal established administrative and financial controls as established for WASH mechanism in WASH contract.
10. WASH contractor should definitely be prepared to administratively or technically backstop field consultants and subcontractors.
11. Contractor to provide an overall final draft coordinated report to Foster Parents Plan/Indonesia and USAID/Indonesia (Health and FVO Offices) before consultant leaves Indonesia. Contractor to provide USAID with final report within 30 days of return of Consultant to the U.S.
12. New procedures regarding subcontractor cost estimates and justification of subcontractor and consultants remains in effect.
13. USAID/Indonesia and Foster Parents Plan/Indonesia should be contacted immediately and technical assistance initiated as soon as convenient to USAID and Foster Parents Plan Office in Yogyakarta.
14. Appreciate your prompt attention to this matter. Good luck.

WASH
Prog.
Dir.

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Department of State

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UNCLAS JAKARTA 14191

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EO 12356: N/A

SUBJECT: WASH SERVICES FOR PLAN

FOSTER PARENTS PLAN'S OFFICE IN YOGYAKARTA HAS REQUESTED THE SERVICES OF A WASH FUNDED SANITARY ENGINEER BETWEEN THE DATES OF OCTOBER 25 AND NOVEMBER 5 TO PARTICIPATE IN AN EVALUATION OF PLAN'S ONGOING AND IMPLEMENTED WATER PROJECTS. DETAILS OF PLAN EVALUATION ARE AVAILABLE FROM SHIRLEY BUZZARD OF THEIR WARWICK OFFICE. MISSION SUPPORTS THE REQUEST. MONJO

Received ST/H (Wickman) 9-23-82
Passed to WASH 9-24-82

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NOV 03 1982

WATER AND SANITATION FOR HEALTH (WASH) PROJECT
ORDER OF TECHNICAL DIRECTION (OTD) NUMBER 117
AMENDMENT No. 1
November 03, 1982

TO: Dr. Dennis Warner, Ph.D., P.E.
WASH Contract Project Director

FROM: Mr. Victor W.R. Wehman, Jr., P.E., R.S. *VWW*
A.I.D. WASH Project Manager
A.I.D./S&T/HEA/WS

SUBJECT: Provision of Technical Assistance Under WASH Project Scope of
Work for USAID/Indonesia

REFERENCES: A) OTD #117, dated 25 Sept 82

1. Para. 2 of subject OTD #117 (Ref. A) is cancelled. New para. 2 of
subject OTD #117 is now to read as follows:

"2. WASH contractor/subcontractor/consultants authorized to expend up
to thirty (30) person days of effort over a three (3) month period to
accomplish this technical assistance effort."

2. Nothing follows.

APPENDIX B

Social, Economic, Political, and Health Conditions in the Project Area

1. Social System and Political Organization

The island of Java is peopled with speakers of three different but related languages. Sundanese is spoken in West Java where the people tend to be conservative Moslems. Madurese is spoken on the nearby island of Madura and some parts of East Java. In the areas around Yogyakarta, the language is Javanese. Although the population is nominally Islamic, their beliefs are a blend of animism and Islam. Most men and school children are fluent in Bahasa Indonesia. This national language of Indonesia is a Malay language with many Sanskrit and Arabic influences. English is a required subject in secondary school but few people in rural areas have attained that level of schooling.

Javanese communities are highly organized hierarchical systems. The smallest unit is the pedukahan. This cluster of 50 to 200 homes is administratively under the jurisdiction of the dukuh, community headman. Dukuh are elected though the position often passes from father to son. The lurah is the administrative official of the next higher political level, the kelurahan which includes 10 to 15 pedukahan. Ten to twelve kelurahan are then collectively a kecamatan which usually includes about 40,000 people.

There is a strong sense of hierarchy in social class even though in rural areas there is relatively small difference in income between families of high social rank and those of lower rank. The families and kin of shopkeepers and village headmen usually constitute the upper strata because they own more land than others and because village headmen receive land or money as part of their compensation. Those people who are more peripheral to the village both geographically and socially are those with very small land holdings or none. Most observers say that the decision-making process for the entire community is in the hands of the upper strata with the poor and landless having little say in matters. In one village with 2,150 people, 40 men, all from land-owning families, made decisions about a village health insurance plan. These men represented only 10 percent of the families (Williams and Satoto, 1981).

The hierarchical nature of the system is an important consideration in any development project. Because community leaders and their families are representatives of the government in their communities they also represent the channel of communication. The community elite are also most apt to have access to government programs for agricultural improvement, health, and education. PLAN's programs work through this hierarchy but attempt to reach those members of the community who have the least access to programs and are the people who can most benefit from development assistance. At the same time, any program must be carried out through the established system of authority or it would inevitably fail.

2. Economic Conditions

The area around Yogyakarta is densely populated and most families (over 61 percent) live on farms of less than 0.5 hectares (1981, PLAN/Yogyakarta). In central Java the average household size is 4.04 people (RI, 1981). Although Javanese families are small by the standards of other developing countries, the severe land shortage makes any population increase of immediate economic significance. At current growth rates, the population will double in about 30 years.

Most PLAN families, who are the poorer members of their communities, derive their main income from their farms. Because the land has been subdivided over many generations, the typical landholding is not sufficient to support the family who owns it and further subdivision is nearly impossible. Young people seek employment in the modern sector economy although Indonesia, like most other countries today, is experiencing very high unemployment rates. The situation is doubly tragic for those young people from poor families who lack the education to compete successfully for jobs on the urban economy. Adults and older children who live on farms normally try to find work as laborers on larger farms or as day laborers in construction or domestic work.

The agricultural potential in different communities varies according to soil conditions and dependability of the water supply. In some areas, especially north of the city, the soil is more fertile and well watered. Here it is suited to the production of rice, Indonesian's dietary staple. In other areas, especially to the south and southeast, the soil is rocky, infertile, and poorly watered.

In fertile areas, a field may produce three rice harvests per year. In such areas, farmers usually retain rice grown on their small plots for their family's consumption. They grow additional crops such as sugar, tobacco, beans, peanuts, coconuts, sweet potatoes, papaya, mango, bananas, and vegetables for sale for cash to purchase consumer goods.

In drier areas where the soil is unsuitable for rice, the main crops are usually cassava and corn. Secondary crops of fruits and vegetables are grown and most crops are sold for cash to purchase rice. One kilogram of the lowest quality rice costs 190 Rp. (about US\$0.30) and a family of five consumes about 1-1/2 kilograms of rice per day. At 45 kilograms of rice per month the cost to

Household income is supplemented, where possible, through the sale of articles made for sale in the city of Yogyakarta, such as mats, or for local consumption such as tempe. This fermented soybean cake is an important protein source for people who can rarely afford meat. Most families live a day to day existence. Wage labor, when available, is paid daily. Savings are very small and tend to be used for ceremonies associated with circumcisions, marriages, funerals, and births, ceremonies which are central to the system of social status. Families and individuals are often emersed in a network of indebtedness with their relatives and neighbors as they borrow to meet the expenses of emergencies or, during some seasons, for basic subsistence.

The portrait which emerges from these data is one of a family deriving very small amounts of cash from the sale of a few eggs here, a few vegetables there. While they grow some of their own food, cash is necessary to purchase oil, clothing, matches, salt, and household items. The expense of sending children to school, in this context, is frequently considered an unnecessary luxury.

3. Education

Over 67 percent of the rural population have less than primary school education. Only 7.8 percent of the population (for the whole country) has completed secondary school (Government of Indonesia, 1981:26). The government is currently mounting a long-range program to provide adequate education for all children, and many schools are now under construction. Because of the present shortage of schools not all children are able to attend. Although 62 percent of the children enroll in elementary school, 40 percent of those never finish. Most students drop out before their third year (PLAN/Yogyakarta 1981:11).

There is strong pressure on a family to take children out of school. In 1976 it was estimated that 30 percent of the children in the age group of 10-14 were in the labor force (PLAN/Yogyakarta 1981:11). With increasing unemployment and urban migration, those with minimal education face reduced prospects for jobs. Yet for a poor family, sending a child to school requires cash for clothing or school supplies and removes the child from the potential wage-earning sector. While people understand the long-term advantages of schooling, the realities of survival often make long range goals less important than more immediate problems of survival.

4. Health Profile

Although the RI has undertaken an extensive primary health care program and community health centers are accessible to most Indonesians, resources are limited and many individuals are not aware that illness can be prevented or minimized with proper care. Much of the health promoter effort is directed toward educating people to take responsibility for their own health and to learn how to prevent illness. Because living conditions in rural areas are often unhealthy with dark, poorly ventilated houses, poor diet, and inadequate sanitary facilities, much remains to be done to improve the health of rural Indonesians. The more common illnesses are described below.

Respiratory Infections are the most commonly reported illnesses. This includes a very high rate of flu, colds, asthma, tuberculosis, and in some young children, whooping cough may be misdiagnosed as a cold. Respiratory infections, in combination with other problems such as gastro-intestinal infections and malnutrition, can be fatal to a child. Older people, particularly men, suffer from a high incidence of bronchitis, emphyzema, and asthma which may be undiagnosed tuberculosis or lung cancer.

A 1980 survey of PLAN families was conducted to determine the most commonly occurring illnesses. This survey of 2,828 PLAN families was undertaken by medical students from Gadjadara University (PLAN/Yogyakarta, 1980). Table D-1 shows the results of their study for illness in children under five years old. Respiratory tract infections are more than twice as common as any other illness. The high incidence of eye problems is partially due to Vitamin A deficiency.

A similar survey done for the country as a whole by the RI Department of Health, shows that of 121,266 respondents, 11.49 percent had been ill within the 30 days preceding the interview (RI, 1981). For those respondents with diagnosable illnesses, the results are shown in Table D-2. These data also indicate that the most common illness is respiratory tract infections.

The incidence of respiratory illness follows seasonal patterns and is higher during dry seasons when there is dust in the air. While the data presented in these two tables are not strictly comparable because one covers the entire country and the other is concerned only with PLAN children under 5 years old, in both cases the incidence of respiratory tract infections is proportionately high. This point is important for the following discussion of water projects and the discussion of project goals because respiratory tract infections are only indirectly affected by water quality and quantity.

Skin Infections constitute the second most frequent illness. In hot, tropical climates, both bacterial and fungal infections are common. Children going barefoot often get cuts which are slow to heal. Insect bites become infected and young children often suffer from scalp infections and ringworm. The incidence of skin disease is easily reduced with improved hygiene. Although most of the people in the Yogyakarta area are Moslem and bathe twice a day, they frequently lack the money for soap. During dry seasons bathing is done with small amounts of water and in some areas becomes impossible. People often bathe in the same rivers used for defecation. The highly polluted water can easily lead to or exacerbate skin problems.

Eye Infections are also common, particularly among children. Trachoma, a virus, and conjunctivitis, a bacterial infection, are both spread easily on contact with dirty hands or by using the same towels. The incidence of eye infection is related to personal hygiene and thus increases in the dry seasons when water is in short supply. The conditions are exacerbated by dust in the air and the malnourished child's inability to throw off infection.

Table D-1: Relative Frequency of Types of Illness of Children Under Five Years in PLAN Client Families, in 1980.

<u>ILLNESS</u>	<u>PERCENT</u>
Respiratory Tract Infections	30.1
Skin Problems or Infections	10.2
Eye Problems	10.0
Diarrhea	8.2
Nose, Throat, Ear	6.0
Neuromuscular Problems	5.1
Deficiency Disease	4.5
Cardiovascular Disease	4.0
Dental Problems	3.1
Malaria	2.3
Surgery	2.3
Other	14.2
TOTAL	100.0

Table D-2: Relative Frequency of Type of Illness in Indonesia, 1980

<u>ILLNESS</u>	<u>PERCENT</u>
Respiratory Tract Infection	48.8
Skin Problems or Infections	10.5
Diarrhea	9.5
Tuberculosis	7.4
Cardiovascular Disease	7.2
Inflammation of Eye	4.5
Allergies	4.5
Disease of Muscles or Connective Tissue	4.4
Inflammation of Joints or Rheumatism	3.2
TOTAL	100.00 %

Among the common deficiencies is that of Vitamin A which leads to night blindness common in school children. Vitamin A deficiency accounts for 70 percent of blindness in Indonesia. At least 40 percent of the population suffers from goiter due to iodine deficiency, which is especially common in women. Iron Deficiency (anemia) affects 70 percent of the pregnant women and 40 percent of newborn babies. Acute malnutrition such as kwashiorkor or marasmus is uncommon though many children are weak from chronic shortages of essential nutrients in their diets which depend heavily on carbohydrates and are low in essential vitamins and protein.

Gastrointestinal problems are very serious in young children as severe diarrhea can quickly lead to dehydration and death. In rural areas children usually go without shoes and swim in canals or polluted streams all of which brings them into contact with the full range of intestinal parasites and diarrhea-causing bacteria. Intestinal problems, when they occur in an already weakened child, can quickly be fatal. For adults, as well, diarrhea is common.

The incidence of more serious waterborne illness is sporadic and increases dramatically during the early parts of the rainy season when ground water floods the surface of the ground and then carries fecal material into drinking water supplies and shallow wells. The incidence of these illnesses varies considerably from one community to another. A contaminated drinking source can lead to an outbreak of typhoid in which several community members may fall ill.

Although the data on the incidence of typhoid are not available for the country as a whole, one source reports that up to 40 percent of adults with fever lasting over five days were found to be suffering from typhoid (Rhode, 1980). Typhoid is more common among men, who may drink from polluted sources while working in the fields, and children, who are apt to drink from any convenient source. While vaccines are available to prevent typhoid, it is the policy of the Government to take corrective action against the cause and even in those communities with typhoid outbreaks community members are not routinely vaccinated.

Between July and December of 1982, PLAN health workers reported a total of 48 cases of typhoid. The disease is less common in the drier parts of PLAN work areas because people depend more on springs for water and springs are not as apt to be contaminated by surface water. NOII and SOI had the highest rates of typhoid. The distribution was about equal between the North, South, and East Offices.

Infant mortality rates are high, about 104 per 1,000 births, (RI, 1981:54-55) because of poor prenatal care and the lack of trained personnel for delivery. Although the family planning program has been successful in reducing the number of children per family and in making people aware of various methods of contraception, the typical married woman has 3.86 live births. For central Java the rates are lower than for other parts of Indonesia (RI 1981).

Children die in infancy due to diarrhea and childhood illnesses such as measles, whooping cough, and polio. Tetanus is common after home deliveries of babies. Mothers and children are anemic and lack the sound nutrition which helps to throw off colds and other minor infections. Although most women breast feed their children, there are an increasing number who use the bottle

and depend on infant formula. Programs are underway to provide basic immunizations to children but still polio, measles, whooping cough and tetanus take their toll. The major cause of death in children under five is a combination of diarrhea, malnutrition, and pneumonia.

Dengue fever, malaria, cholera and other vector-borne diseases occur though none are common in the PLAN working areas. Tuberculosis along with other respiratory illness, such as emphysema, occurs in older men and some women and is exacerbated by the high incidence of smoking. The average life expectancy is about 45 years, and one child out of four never reaches four years of age (RI, 1981).

Health problems in most rural Javanese communities are subtle and in some respects insidious because the deficiencies are not dramatic and one does not see children with swollen bellies or the reddened hair of serious malnutrition. Nevertheless, youngsters lead a precarious life with little reserves for shaking off common illness when they occur. With meager diet, poor sanitation, and very low incomes, tragedy can strike a family through death from an illness which would not be fatal in a better nourished individual. When the death is the head of the household, this can have devastating effects on the wife and children, forcing them to become dependent on other relatives or perhaps moving to the city where the mother may try to find work as a day laborer.

5. Water Resources and Water Usage Habits

Most rural families depend on a variety of sources for water since hand-dug wells may have fluctuating supplies of water depending upon the season, and when water is low they may have to use neighbors' wells or rivers for laundry, bathing, or even water for cooking or drinking. During dry seasons people may walk several miles and carry water in tin containers or plastic jugs. The ideal is to have a private well near the cooking area of the house. Because this is not always possible, families often share a well or use a public or community well. Although people are aware that river water is unsafe for drinking, sometimes there is no alternative source.

Water is usually stored in the home in pottery jugs which keep water cool through condensation. Because few special precautions are taken in transport and storage, water becomes contaminated even if the original source was clean. Traditional wells are usually unprotected and unlined. Debris often falls into the well and surface water easily runs into the wells. Children and animals may also fall in. Washing of clothes, bathing, and some food preparation may take place near the wells and greywater seeps into the wells.

In more rocky, hilly areas around Yogyakarta, wells can be used only about half the year. The rest of the year water is carried by hand from the rivers if there is any water in them. As streams dry up, carrying water can easily take two or more hours per day. Bathing, laundry, and other hygienic practices may be abbreviated.

Since the two main water problems are the availability and the quality the disposal of wastes is an important consideration. Even in those areas where water is abundant, it is severely contaminated. Because it is customary to wash with water after defecation, the easiest place to do this is in the

river. Thus rivers are used by many people for defecation. Using the river also provides a certain amount of privacy since one can squat in the water and have personal parts hidden from view. It is virtually impossible to visit any river and not find one or more people defecating in it at any time of the day.

In one study, 33 percent of the people said they defecated in the rivers. With a population of 80 million, this means that about 24 million people are defecating in the rivers each day.

For those who live some distance from rivers, a pit latrine may be used. They are often located near the wells because it is customary to carry a small tin or gourd of water to the latrine for cleaning. About 33 percent of the people have access to some kind of private or public latrine. The remaining 33 percent of the population defecate in bushes, ponds, ditches, and fields (RI 1981:17).

Bathing is an important part of the religious rituals of Moslems who are expected to pray five times a day and wash their hands, face, and feet before praying. Additionally, most people bathe in bathhouses both morning and evening. Traditional bathhouses are often bamboo mats in a semi-circle near the well where a person may take a bucket of water and use a gourd to dip water over the body. Women sometimes bathe at well side and are able to adjust their sarongs in such a way as to maintain modesty while bathing.

It is customary never to drink water which has not first been made into tea which means that it is brought to a boil. To kill many bacteria, however, water should be boiled for 15 minutes. While the custom of drinking only tea has beneficial effects, it is usually not boiled enough to kill all the contaminants. Boiling water requires fuel, and some families cannot afford to purchase charcoal or wood to boil water the necessary length of time. Also, people complain that boiled water has a bad taste.

APPENDIX C

EVALUATION FRAMEWORK FOR PLAN/YOGYAKARTA WATER PROJECTS

Objective of the Evaluation: To assess the effectiveness of the PLAN/Yogya wells/water project by answering the following questions:

- A. **Function:** The physical system and engineering aspects of the project:
- 1) Are the wells* appropriately located with respect to other physical features such as latrines, homes, etc.
 - 2) Are the wells maintained? What are the major repair or maintenance problems?
 - 3) What are the sources of contamination in the water?
 - 4) Are the wells constructed from the most economical and durable materials?
 - 5) Does the design of the wells contribute to cleaner water?
- B. **Process:** The use of the water system by members of the community.
- 1) Have the wells increased the number of people served?
 - 2) Have the wells increased the amount of water per capita?
 - 3) Who determines who will have wells? How do PLAN clients learn about wells projects and what motivates them to initiate a well project?
 - 4) Are wells built in conjunction with bath houses used differently than those which are built alone?
 - 5) What impact has the well had on the family, esp. the women?
 - 6) What is the extent and effectiveness of the educational component of the project?

* The term "wells" is intended to include other types of water supply systems.

- 7) What is the extent of community involvement in the construction and maintenance of the wells? What impact does community involvement have on well use and maintenance?
- 8) What are the water use patterns - amount and category of use - per person per day? How is it transported and stored? Who transports it and how much time is involved?
- 9) What are the sources of contamination after the water leaves the well?
- 10) Have there been social effects from the construction of the wells?
- 11) What is water used for in the household? What portion is for cooking, bathing, laundry, cleaning the house, etc. Is it reused? Boiled before used? Where is greywater disposed of?

Outcome: The impact of the project on the users:

- 1) Has there been a decrease in waterborn illness since the wells were installed?
- 2) Have there been other health effects such as a decrease in diarrhea or changes in weight-for-age of children?
- 3) Do people have access to more or cleaner water than they had before the well?
- 4) What is the local perception of the value of the wells?

The Methodology of the Evaluation: (Wherever possible comparative data from either before and after or from locations with and without wells will be used.)

1) Existing Sources of Data

- a. Data from water survey
- b. PLAN records of client families
- c. Reports from PLAN Medical Workers
- d. PusKesMas Records
- e. Weight-for-age records of Taman Giz:

2) New Data to be Collected

- a. Map magnitude of project - existing water sources, wells constructed, wells planned.
- b. Data on wells: who built it, depth, availability of water, people and families who use it, furthest distance anyone comes, seasonality, maintenance (Sample 100 wells or 10% of those already constructed).
- c. Observations at well-12 hours (or more) per well, ten wells.
- d. Participant-observation: Three periods of three days each to observe customs relating to water use and sanitation.
Alternatively, one week in one home or neighborhood.
- e. Interviews with the following:
PLAN social workers, medical workers, construction supervisors.
Well owners and well users, esp. women.
Non-well users.
Community Leaders in communities with/without wells
PusKesMas staff

YOGY

SAMPLE SPO FORM

PAGE 1

APPENDIX D

FY '82

FOSTER PARENTS PLAN INTERNATIONAL

DATE Marc. 1981

PRINTED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINE

I. General Information: Name of Sector DRINKING WATER (Priority 1)
Total of Sector Budget 88,920 at 55.88 per FC

II. Background

A. Local Conditions :

In the territory of Yogyakarta people face problems of several kinds in obtaining potable water of reasonable quality. Generally speaking the problem can be divided into :

- I. Rocky, hilly areas where wells are few in number
II. Other areas where there are wells but often in very poor condition. Besides these differences, also the influence of wet or dry season has a considerable impact on quality and quantity of the water available.

Ad I : In the rocky, hilly areas few families have wells because in general they are often impossible or too expensive. Another problem is, that in the dry season most wells become dry 2 months after the beginning of the dry season.

Conclusion : - in rocky, hilly areas few families have wells
- wells are useful for a period of 6 - 8 month only
- construction of wells is often impossible or too expensive due to the rocky composition of the land and the low level of groundwater.

In the dry hilly areas the amount of natural springs is restricted. People (and often the children) have to walk distances of 3 up to 8 km twice a day to get a bucket of water. Although the quality of water of these springs is fairly good, during the dry season only the bigger springs are still giving some water, while this amount of water is needed by more people (see Ad I). As a result of these conditions in obtaining water, people have to cope with serious consequences :

- a considerable time and energy is lost in obtaining potable water and during the dry season in getting water at all. This means time is not used productively and sometimes keeps the children out of school to do this tedious chore.
b increased incidence of skin diseases as fungus infections, scabies, and other sores, because it is too difficult to bath and wash clothes as frequently as is necessary to maintain minimal hygienic conditions.
c families with a water-closet W.C. cannot use them during the dry season. This is not contributing to the adoption of toilets as a medium for achieving better health.
d problems for peoples owning livestock to obtain water for their animals.

Ad II : The other areas often with a high population density especially lack wells. Public wells are often used by 30 up to 50 families, which is too much for the potential of the well in the dry season. Often public wells are not covered. Private buckets are used in getting water, and with such big groups of users there is often no clear responsibility for the maintenance of the well. This often causes a deterioration of water quality.

In some urban areas (often the slum areas of Yogyakarta) there are no private wells or public wells. In order to obtain water they use irrigation canals and rivers.

(continued, see page 2

A. Conceptual Description

Based on data concerning distance to water source, typhus and cholera within our areas and the recommendations of the Department of Health, PLAN will start water supply projects in selected villages of PLAN areas. Through the community PLAN will support initiatives for water-projects with technical assistance and the provision of construction materials. In the first stage of the project attention will be given to the future maintenance of the water supply by the community. The head of the village and L.K.M.D. will be responsible for co-ordination and supervision. Local Health Centres and Health Department will be responsible for an educational follow-up concerning proper use of the water supply systems and making the people aware of the danger of water-borne disease and unsafe water.

Regarding water pipe-systems : PLAN Yogya will only participate in water-pipe-projects when the government is contributing materials and funds. PLAN's assistance in these projects will be used for improvement of the system. PLAN's assistance will be a supportive one to the government in offering materials and funds for project improvements.

B. Community Participation and Leadership

Village leaders will be responsible for obtaining the co-operation of the Department of Public Works and the Department of Health. Village leaders, together with the L.K.M.D. will be responsible for organizing the community, to get the active participation of the Local Health Centre, to supervise the works for the project and to arrange the maintenance by the community itself. The community will contribute to the cost of materials and labor, depending on the socio-economic conditions of the community.

C. Summary of Significant Non-Plan Inputs

All unskilled labor will be provided by the community. The community will contribute to costs for skilled labor between 50% to 70%. Construction material present in the area like stones, sand or bamboo will be provided by the community.

The cost of all other materials will be financed for a minimum of 35% by the community.

The community will provide a meeting hall for information to be given by the health workers in the follow-up of these projects concerning their proper use, and health education.

... SUB-CATEGORY BY SUB-CATEGORY

PROJECT		a.	b.	c.	d.	e.	f.	g.	h.	i.	BUDGET TOTAL
No.	Name	Staff	Material	Supplies	Equipment	Transport	Consulta- tion	Land	Labor	Other	
13.41	Potable water	---	\$88,920.00	---	---	---	---	---	---	---	\$ 88,920.00
TOTAL			\$88,920.00								\$ 88,920.00

NOTE: Use only whole US dollars.

Continuation of page 1.

Rivers and irrigation canals in the more flat and consequently populated areas are often contaminated by fecal disposal especially during the wet season as a result of floods. During the dry season these rivers and irrigation canals have a poor quality of water and the water is unuseful for washing. In order to improve physical quality of basic life, additional water-sources as cubangs (tanks for storage rain water), covered wells, waterpumps and improved waterpipe systems are urgently needed.

B. Government program for watersupply.

In some rural areas the Government has already provided waterpipe-systems from the springs to the villages. These systems are designed by the Department of Public Works, under supervision of the Dokohu. Due to financial restrictions these projects are not wide spread. In the dry, hilly areas the government is a participant in the construction of cubangs, using the roofs of public buildings such as schools, clinics, etc. Although the basic idea for the cubang project is a good one, the percentage of people having cubangs is very low, and the type in use is too small for the waterneeds of a family for even 4 months. (8 m³ for 1 family for 4 months = 2000 liter for 1 month for 1 family = 400 liter for 1 family member for 1 month = 13 liter per day per family member. The W.H.O. minimum norm is 15 liter/day/person).

C. Up to the present time PLAN/Yoroya has undertaken projects that relate to water-supply.

Cubangs were constructed in the dry hilly areas, and wells and waterpumps in the urban and rural areas.

Although PLAN has provided material and technical assistance to the communities for drinking water projects in the past, relatively little attention was given to the importance of water to health by an educational follow-up aimed at making people aware of the affect of inadequate and contaminated water on the spread of water-borne diseases.

As we know, diarrhea of young children scores a high percentage and it is mainly a water-borne disease. During the wet season cholera and typhus epidemics are frequently caused by unsafe water supplies.
(see over page)

IV Other


DIRECTOR

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Continuation of page 3

In the dry areas illnesses such as worms and typhus are more frequent, due to inadequate water supply. A good water-supply depends on a good technical construction of the source (well, spring, cistern) and on proper use by the people. Health education will become an important part of our water-supply project and will be combined with our Health Program and our house-improvement project.

FY '82

FOR PARENTS PLAN INTERNATIONAL

DATE Mar. 11, 1981

UNITED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINE

I. General Information: Name of Sector Food for nutrition (Priority 2)

Total of Sector Budget ₹ 50,293 at ₹ 7.03 per FC

II. Background

A. Local conditions

Java is one of the world's most fertile agricultural areas, producing 2-3 crops per year in irrigated areas. However, at the same time malnutrition is wide spread, particularly among children under 5 and pregnant mothers. The major reasons are :

- 1) over population of land with resulting small landholdings per family
- 2) slow and incomplete introduction of new agricultural techniques and crops to compliment or replace traditional agriculture.
- 3) lack of knowledge about nutrition and balanced meals among the general population
- 4) low agricultural prices due to government price ceilings which reduce incentive to innovate or increase productivity.

The major nutritional problems are : PCM, Vitamin A deficiency, iron anemia, goiter.

B. Field Office Programming

Plan Yogya's programming to improve nutrition can be put into two groups ;

- 1) Increase the variety and quantity of food products produced in rural areas through support for agricultural activities. In many cases this involves working with the host government departments to introduce new crop varieties and types of fowl and livestock breeding and to support these activities after they are started.
- 2) Support for Taman Gizi or community child feeding programmes, initially started by the government and organized and run by the community. Nutrition education for mothers and group feeding for the children attempts to improve the nutritional levels in the home.

C. Government Planning and Support

In both areas of food programming Plan Yogya compliments the efforts of the host government at the national and local level. Many of the agricultural and nutritional projects carried out with Plan support were initially introduced and supported by the government departments of Health, Agriculture, Fisheries, and Animal Husbandry. In many cases the scope of these programmes is limited by lack of funding and motivation. Where possible Plan is attempting to motivate individual families and groups and providing them with funding support so that they can carry out the projects.

III. Narrative Description of Program Implementation

A. Conceptual Description

- 1) Plan is attempting to help clients and communities increase agricultural production so they can improve their own nutrition. Major efforts are in motivation, arranging for education and trainers and providing capital support by buying livestock, seedings, etc.
- 2) Plan provides supplementary feeding and education for underweight underfive children to help meet the nutritional needs of this high risk group. Hopefully as No. 1 above becomes more successful then the need for supplementary feeding support from Plan will decrease

B. Community Participation and Leadership

After training and provision of initial supplies eqpt, etc. all activities in this sector are carried out by Non-Plan personnel, meaning our clients or community members. Support for these activities comes from village leaders and local government department advisors...In many cases livestock projects are carried out by a group within the community. It could be a client group or a community group.

The community feeding programmes are organized by the local health centre, village leaders and community members. The village volunteers running the programmes buy and cook food and give nutrition education to mothers.

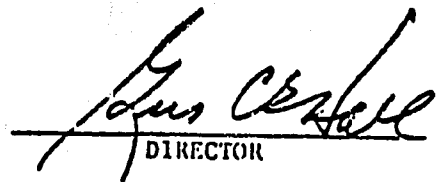
C. Summary of Significant Non-PLAN Inputs

Government Departments-provide training, support, supervision, evaluation, some training materials and vaccination etc.

Departments participating are Health, Agriculture, Fisheries and Animal Husbandry

University-specialist advisors in certain projects from Gadjah Mada University
Community- land, agricultural tools, financial input, animal sheds, materials and construction of fish ponds, labour.

IV. Other


DIRECTOR

A. Goal Statement:

To improve the food intake levels and nutrition of clients and non clients by increasing food production and supplementary feeding.

B. Significant Assumptions:

1. Government departments will be willing and able to support the programme
2. Activities to increase food production will be successful
3. Increased food production will be consumed rather than sold
4. Nutrition cadres and community members will effectively run feeding and nutrition education programmes
5. Increased food intake will improve nutrition and general health

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	INDICATORS		PARTICIPANTS			US DOLLARS		
					Target Popula- tion	Time Frame Begin End	Total PLAN	Non- PLAN	FCs	Budget	FC Unit Cost	
13.1	Feeding pro- grams & reha- bilitation	To provide iodized salt. See Iodized nutri- tional meals for feeding	Feeding: - for children under 5's	all areas	Feeding : under 5's Other : all family members	July 1981	June 1982	15,225	16,860	5,027	\$29,604.68	\$ 5.89
-73-		To provide cooking utensils To provide seeds	others: members of the family									
16.13	Livestock	To provide : - milking cows - ducks - chickens - rabbits - bees - chicken feeds - medicine for livestock	2 950 1800 60 40	all areas	Plans & non Plan	July 1981	June 1982	2265	1490	487	\$ 4,688.20	\$30.16
16.14	Fruits & Ve- getables	To provide: seeds: lamtorogung - winged beans	13% of Plan families	GKO	Plan fami- lies	July 1981	June 1982	7,500	-	1,500	\$ 2,400	\$ 1.60
16.16	Fisheries	To provide : - fish pond - baby eel - eel pond	4 147 kg 98	N.O. & S.O.	Plan + Non Plan fami- lies	July 1981	June 1982	700	122	140	\$ 3,600	\$25.71
								TOTAL	7154		\$50,292.88	7.03

NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

FY 82

FOSTER PARENTS PLAN INTERNATIONAL

DATE March 11, 1981

Yogyakarta

PRINTED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINE

I. General Information: Name of Sector HEALTH (Priority 3)

Total of Sector Budget \$ 240,691 at \$12.04 per FC

II. Background

A. LOCAL CONDITIONS :

- a. Protein Calory Malnutrition affects 40% of underfive children and 7% of lactating mothers.
- b. 73% of blindness is caused by vit. A deficiency, mostly among preschool children.
- c. Basic vaccination covers only 50% of the underfives
- d. School health programs only covers grade schools.
- e. Antenatal care, tetanus vaccination for pregnant mothers, delivery care and new born care is still inadequate.
- f. 40% of people in Yogyakarta suffers from goiter due to Iodine deficiency.
- g. Anemia is found in 70% of pregnant mothers and 40% newborns.
- h. 5% of Clinic Attendance is Tuberculosis positive.
- i. Lack of rehydration fluid (Oralite) for treating diarrhea.
- j. Lack of Dental Health and Oral Hygiene due to poor knowledge of the problem and limited services available.
- k. Manpower and funds of Local Health Centres is too limited to provide adequate support for their programs.
- l. Curative health problem is still a big burden for the families due to lack of health knowledge and financial capabilities.

B. FIELD OFFICE PROGRAMMING :

We have come up with priorities in Health for PLAN Yogya according to the background above. In the future PLAN Yogya, while continuing to provide support for curative services for our clients, will focus on preventive measures for mothers, underfives and other adults (clients and community). It is hoped that the program will be able to achieve good health for all PLAN families through preventive, promotive and curative services, and also affect the community where our clients live through preventive and promotive measures. For the proposed programs we have planned additional budget, manpower and transportation so the programs can be implemented.

C. HOST GOVERNMENT, PLANNING AND SUPPORT :

The Indonesian Government is increasingly involved with health programs at district (Local Health Centres) and village level, with mother and child as the first beneficiaries. Their priorities is in keeping with those listed above. As yet, they lack the funds, personnel and supervision etc. to adequately cover all areas. This is largely due to the disproportionate amount of funds and personnel tied up in hospitals in urban areas. PLAN health programs directly compliment the non hospital priorities and efforts of the Government.

III. Narrative Description of Program Implementation

A. Conceptual Description

Preventive medicine is our choice for achieving good health, because this approach has better coverage in terms of number of population served, and because of better possibilities in overcoming major health problems. This approach is primarily directed at assisting mothers and underfive children in improving and maintaining health status. Over the time the program will move on to the priority health problems of the more general population, such as goiter and that can be improved through preventive measures. It is true that this preventive approach takes a considerable time to show its impact, which means that in the mean time PLAN still takes responsibilities for helping the clients deal with curative health problems such as hospitalization.

B. Community Participation and Leadership

The program will have the participation of Local Health Centres, Community Leaders, Volunteer Nutrition and Health Cadres, Local Womens Association for Nutrition and Family Planning, Local School Teachers and Faculty of Medicine of Gadjahmada University in Yogyakarta. All of the above will participate in the training, implementing, monitoring and supervision of health programs such as monthly weighing programs, health education, medical worker trainings, school health program, child and mother care, family planning communicable disease control, improvement of hygiene and sanitation and safe water supply. Curative treatments and the filling of Child Nutrition Cards (KMS) plus the filling of PLAN Family Health Record will be done through the local Health Centres.

C. Summary of Significant Non-PLAN Inputs

Community : 2400 Volunteer Nutrition Cadres, provision of building for weighing programs.

Local Health Centres : Curative treatment for clients, and referral to specialists and hospitalizations ; vaccination and recording on KMS or FHR ; training, monitoring and supervision of nutrition programs ; examination and care of normal pregnant mothers and children with specific problems.

Government : trainers for medical workers ; facility to obtain KMS , vaccines, vit. A, Oralite and health education materials.
Gadjahmada University (Faculty of Medicine through Comprehensive Community Health Course) trainers for medical workers, consultation for PLAN health program.

Other sources : USAID, ADAB, CIDA (funds) ; UNICEF (KMS, VIT. A, purchase ; scales already used in established weighing programs).

IV. Other

This SPO form is being used to explain how PLAN/Yogya will spend the \$ budget in the FY '82.


DIRECTOR

A. Goal Statement:

To improve and maintain health status of all PLAN clients through preventive and curative health care in all PLAN areas by June 1982.

B. Significant Assumptions:

1. Medical Workers can properly train, motivate and supervise health programs.
2. Health Posts will operate properly to care for clients health problems.
3. Clients will respond to weighing programs, referrals, and use of KMS and FHR.
4. Nutrition Cadres will properly weigh, record, and educate during weighing programs.
5. Local Health centres will fill in KMS and FHR and provide curative services for clients.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	INDICATORS		PARTICIPANTS			US DOLLARS		FC Unit Cost
					Target Popula- tion	Time Frame Begin End	Total PLAN	Non- PLAN	FCs	Budget		
13.11	Feeding pro- gram & Rehabi- litation	Provide 4640 kg iodized salt	1720 families	GKO	Clients and non clients suffering from Goiter	7/81	3/82	2350	62.500	470	665.2	1.42
13.12	Dental Care Curative	To provide med- icine for 4 Kabupaten	720 children	4 Puskesmas in 4 Kabupaten	Children of clients and non clients	7/81	6/82	240	480	240	500	2.08
13.14	TB Control	To provide funds for 345 X-rays & 2 kinds of drugs for 282 TB patients	345	All areas	TB patients	7/81	6/82	345	-	345	24,685.8	71.55
13.15	Referral to Specialist	Payments to Specialists	600 client patients	All areas	Client's required care	7/81	6/82	600	-	600	5,000	8.33
13.16	Hospitalization	Partial pay- ment at client hospital costs	1000 client patients	All areas	Client's required care	7/81	6/82	1100	-	1100	50,000	45.45
13.22	Clinic Renovation	To build 5 rooms for Health Post	5	EO, GKO, NO	Clients in the area at the Sub Dis- trict Office	7/81	10/81	8333	1000	4166	4,500	1.08

NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

TOTAL 6921 85,351 12,332

A. Goal Stat

B. Significant Assumptions:

- 1.
- 2.
- 3.
- 4.
- 5.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	Target Popula- tion	Time Frame		Total PLAN	PARTICIPANTS		US DOLLARS		FC Unit Cost
						Begin	End		Non- PLAN	FCs	Budrec		
13.25	Existing Health Facility Support	Provide funds Client's health centre bill & equipment for Puskesmas & fees for Puskesmas Administration	625 & 26 health centre	All areas	Clients &	7/81	6/82	18625	120.000	10.625	14,000	1.31	
-79-													
13.26	Mobile Health Clinic	1 new Jeep for Program Supervisor + maintenance	All field program	All areas	Plan and non Plan	7/81	6/82	97500	213333	12.500	13,067.6	1.04	
13.30	Community Health promotor honoraria	Payment for 24 weigher to weight 2000 children under 5, for 4 months.	2000 children	All areas	25% Plan children under 5	7/81	11/81	3.200	-	1.600	768	0.48	
13.31	Preventive Dental	For education, examination, care flouridation & oral Hygiene	7400 school children	All areas	Plan and non Plan children	7/81	6/82	3500	3900	2900	9,921.2	3.42	
								TOTAL	27.625	37.756.8	1.37		

NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

A. Goal Statement:

B. Significant Assumptions:

- 1.
- 2.
- 3.
- 4.
- 5.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	Target Popula- tion	Time Frame		Total PLAN	PARTICIPANTS		US DOLLARS		FC Unit Cost
						Begin	End		Non- PLAN	FCs	Budget		
13.32	Pre and post Natal Care	Provide for 2500 Post Natal mo- thers, 2500 new born baby, 1875 pregnant mother and 8000 under 5 years.	All of & post natal- Mothers & new born & under 5	All areas	Plan client	7/81	6/82	14,875	-	10,500	24,736	2.36	
13.33	Family Plann- ing(FP injec- tion & steril- isation)	Provide FP in- jection for 295, and go female + 85 male sterili- sation.	470	All areas	Client	7/81	6/82	470	-	470	5,072	10.79	
13.36	Health promo- tion Training	Provide Training for 18 Plan Medi- cal Workers, 1040 school teachers, 96 medical kit, 15 weighing scales 2400 nutrition cadros.	80% and 3,601 workers	All areas	Plan and Non Plan	7/81	12/82	97,500	229,060	19,500	55,078	2.82	
13.40	Latrines	Provide 29 public bath houses and lavatory indi- vidual latrine	985	All areas	Client & non client	8/81	5/82	6,605	3,475	1,321	21,913.12	16.59	

NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

TOTAL

Goal Statement:

B. Significant Assumptions:

- 1.
- 2.
- 3.
- 4.
- 5.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	Target Popula- tion	Time Frame		Total PLAN	PARTICIPANTS		US DOLLARS		FC Unit Cost
						Begin	End		Non- PLAN	FCs	Budget		
13.42	Garbage Collec- tion	Provide 16 Garb- ge boxes and 4 par- bage carts	20	EO	client and non client	Nov. 1981	Jan. 1982	250	1000	50	800	16.00	
13.45	Drainage system	Provide water drainage system	1960 me- ters	EO, SO, NO	Plan & non Plan	July 1981	Feb. 1982	2750	13.750	550	19,860	36.1	

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NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

TOTAL 600 20,660 34.43

PROJECT No.	PROJECT Name	a. Staff	b. Material	c. Supplies	d. Equipment	e. Transport	f. Consultation	g. Land	h. Labor	i. Other	BUDGET TOTAL
13.11	Feeding program Rehabilitation	---	665.2	---	---	---	---	---	---	---	665.2
13.12	Dental Care Curative	---	500	---	---	---	---	---	---	---	500
13.14	Tb. Control Referral to Specialists	---	21,754.6	---	---	---	2,931.2	---	---	---	24,685.8
13.15	Hospitalization	---	---	---	---	---	5,000	---	---	---	5,000
13.16	Clinic Renovation	---	4,500	---	---	---	50,000	---	---	---	50,000
13.22	Existing Health Facility Support	---	---	5,200	5,304	---	---	---	---	3,496	14,000
13.25	Mobile Health Clinic	---	---	---	10,160	---	---	---	---	2,907.6	13,067.6
13.26	Community Health Promotor Honoraria	---	---	---	---	---	---	---	768	---	768
13.30	Preventive Dental	---	6,991.2	2,368	50	---	512	---	---	---	9,921.2
13.31	Pre and Post Natal Care	---	24,636	100	---	---	---	---	---	---	24,736
13.32	Family Planning	---	3,532	---	---	56	1,484	---	---	---	5,072
13.33	Health Promotion Training	---	4,069.6	50,248.32	168	512	80	---	---	---	55,078
13.36	Latrines/Urinals	---	21,913.12	---	---	---	---	---	---	---	21,913.12
13.40	Garbage Collection and Disposal	---	800	---	---	---	---	---	---	---	800
13.42	Health related home Improv	---	19,860	---	---	---	---	---	---	---	19,860
13.45	TOTAL		109,221.72	57,916.52	15,682	568	60,007.2	---	768	6,403.6	250,567

NOTE: Use only whole US dollars.

FY '82

FOSTER PARENTS PLAN INTERNATIONAL
YOGYAKARTA

DATE 12 MARCH 1981

Sample SPO Form

PRINTED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINE

I. General Information: Name of Sector HEALTH HOMES (PRIORITY 4)
Total of Sector Budget \$ 121,836 at \$ 88.99 per FC

II. Background

A. Village Housing Conditions:

For the greater part, the village houses in the Special Territory of Yogyakarta are of a traditional type, and many are several decades old. Living-conditions in this type of house are often poor and do not offer good conditions for healthy life.

General types/descriptions of these houses: --

1. Often no foundation and/or cemented floor: often houses become damp, which results in damaged to the walls made of natural materials (wood, bamboo), while the earthen floor is an area for parasites.
2. These houses often have neither windows nor glass roof-tiles. Therefore these houses are dark and damp, and lack ventilation which makes it difficult for the houses to dry out - especially during the 6-month rainy season.
3. These houses are not divided in different rooms, consequently the big space of the house is used for several functions: cooking in the same space with storing of firing-wood, stabling of sheeps, goats, chicken, ducks, which is not supportive for good sanitation.
4. Often there is no bath-house or lavatory. Even where wells exist and are in use, the lack of lavatory facilities leads to contamination of the water supply and spreads diseases and parasites.
5. Under such housing conditions it is very difficult for families to improve their health status. During the wet-season often inside the house and direct environment of the house are muddy and wet both. Storage of food like rice and corn in these houses is often impossible. Insufficient ventilation in combination with smoke from the cooking-fire will cause respiratory-problems and eye-irritations/infections. Young children in the house on the groundfloor often suffer from worm infestation.

B. Village Houses Restoration By The Government.

During last year there was a survey on the living-conditions for whole Indonesia, executed by the Kantors Sensus and Statistik. This survey reflects the increased attention given by the government to the living-conditions of the individual villagers. Also there have been some efforts by the government to start a village home improvement project.

Although the government is restricted in the efforts, due to lack of funds and organizational-staffing and coordination problems, the general concept of the governments village house improvement project seems to be accepted by the community on the village-level and to make -out very well. Within this concept the improvements will be done through P3D (Perintis Pemugaran Perumahan Desa = village house improvement organization), which involves several government resources as Department of Public Works, Department of Community Development, and the local Social Village Committee (L.K.M.D.).

Home improvement projects were positive and supported by local communities.

C. Village Houses Restorations by PLAN/Yogya during last year.

PLAN/Yogya has given assistance to house improvement projects in the past. This assistance seems to fit in very well with the approach followed by the government. (continued, see page 3).

III. Narrative Description of Program Implementation

A. Conceptual Description

PLAN will start this project with emphasis on the understanding and awareness of the meaning and the importance of a good housing-situation. Often this first stage of the project, which will be done in close co-operation with the head of the village, L.K.M.D., local health cadre, Departments and other key-persons in the community, will receive assistance from PLAN to initiate home-improvement. Selection will be done together with the local authorities and will be done on a one by one basis or within the model of a self-help co-operation for house-improvement. PLAN will provide materials such as cement, bricks, glass-tiles, wood, window- and door-frames and in some special situations skilled labour. Repairs will be done in stages, depending on the situation and priorities of needs.

B. Community Participation and Leadership

As described under A, the community will participate as much as possible. The execution of community (PLAN-families) will be responsible for getting support from the head of the village, L.K.M.D. and other government department and services, that should assist, coordinate and supervise. The community has to supply the self-help as much as possible, and materials such as bamboo, sand, or stone, that can be found in the area, are supposed to be supplied by the community itself. Participation and leadership will be demonstrated in an attitude of solidarity of the community.

C. Summary of Significant Non-PLAN Inputs

Community: - volunteer skilled and unskilled labour.
- to supply materials available in the area.
- to arrange the preparation and realization of the project.
- to be responsible for all details of the projects except direct financial matters.
- to be responsible for educational follow-up concerning good sanitation in co-operation with village health workers.

Head of the village: - to co-ordinate the participants in the project.
- to give moral support needed for completion of the project as proposed.
- to prepare place and other facilities for meetings, provision of information etc.

L.K.M.D. : - to integrate this project as well as possible with other community projects concerning health and sanitation.

Continuation of page 1: II. Background, C.

Community and government both appreciate the efforts of PLAN/Yogya to encourage active village participation in home-improvement projects. Village participation consists mostly of providing building materials and voluntary labour, both skilled and unskilled.

The houses renovated with PLAN/Yogya's assistance in the past seem to meet the goals for healthier and more comfortable living-conditions as described in the PDO's of FY '81.

IV Other


DIRECTOR

DESCRIPTION OF SECTOR GOAL

A. Goal Statement: to assist communities in becoming aware of a healthier housing situation, provide materials and technical input to improve their houses and to assist them in a follow-up on this project in order to achieve a healthier situation for themselves and their children in the future.

- E. Significant Assumptions :
1. Communities can select properly families who need house-improvement.
 2. Head of the village can take care of community participation.
 3. Government Department can provide sufficient information and support.
 4. Communities can follow-up this project with others such as home gardening.
 5. Department of Health can take care of future contamination of wells, etc.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	NAME	Objectives	Magni- tude	Target Area	INDICATORS		PARTICIPANTS			US DOLLARS		
					Target Popula- tion	Time Frame Begin End	Total PLAN	Non- PLAN	FCs	Budget	FC Unit Cost	
15.45	Health-Related Home Improv/Repair.	To improve the families with material and some labor cost, so that they could afford a healthy place to live in.	1369 houses	PLAN Yogya program area.	PLAN fami- lies' houses.	July 1981	June 1982	1369	-	1369	\$121,836.	\$88.99

NOTE: Use only whole US dollars except in unit cost where calculation should be carried to the nearest cent.

TOTAL 1369 — \$121,836.888.99

4. DISTRIBUTION BY SUB-CATEGORY

PROJECT No.	PROJECT Name	a. Staff	b. Material	c. Supplies	d. Equipment	e. Transport	f. Consultation	g. Land	h. Labor	i. Other	BUDGET TOTAL
13.45	Health Related Home Improv/Repair	-	\$ 118,836	\$ 1,920	-	-	-	-	\$ 1,080	-	\$ 121,836.
TOTAL			\$ 118,836	\$ 1,920					\$ 1,080		\$ 121,836

NOTE: Use only whole US dollars.

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FY 83

FOSTER PARENTS PLAN INTERNATIONAL

DATE February '82

PRINTED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINE

I. General Information: Name of Sector Health

Total of Sector Budget \$ 747,473 at ~~37.10~~ per FC
706,000 37.11

II. Background

A. Local Conditions

In Java protein calorie malnutrition is estimated to affect 40% of the under 5 population and 7% lactating mothers. There is also a considerable problem with Vitamin A deficiency which causes about 70% of all blindness in Indonesia. 70% of pregnant mothers and 40% of new born children suffer from iron anemia. Approximately 40% of the population of Yogya suffers from varying degrees of goiter. Lack of information and knowledge about nutrition and balanced diet is evident. Diarrhea and tuberculosis are major illnesses. 24% of under 5 deaths are related to diarrhea and 5% of TB clinic attendance is found to be TB positive. Lack of knowledge about sanitation, hygiene and the use of rehydration fluids makes the problem more severe. TB case finding is weak and only about 50% of under fives have received vaccination for TBC.

Dental and oral hygiene is still unsatisfactory and little training and treatment is available, particularly to those living in rural areas.

Local Government Health Centres are still limited in manpower, facilities and supplies and are generally unable to properly carry out both curative and preventive extension programmes. Consultation with specialists and treatment in hospitals remains a very heavy financial burden for poor families.

The government family planning programme in Indonesia is very active and widespread but overall results in slowing population growth have been disappointing due to the lack of motivation and education regarding limiting family size. This is further affected by the large percentage of the population in the child bearing age group.

Housing conditions of the poor are generally unsatisfactory. Windowless houses with dirt floors, no separate kitchen and with poor roofing produce many health related problems and a most uncomfortable and sometimes dangerous existence.

Water and sanitation conditions require a great deal of improvement. A survey of 15,000 of our clients carried out in December '81 found that over 39% of our client families take drinking water from ditches, rivers, ponds or rudimentary wells. The distance that water must be carried to the home varies greatly but can be up to 5 km over rough terrain. Many homes lack even the most basic waste disposal facilities. Many of the latrines in use are often a threat to the local water supply, as most lack a septic tank or sealed catchment.

B. Field Office Programming

The programming for FY '83 will concentrate on consolidating the new health programmes instituted in the past one and a half years. This involves maintaining and upgrading the existing preventive health programme through village nutrition and weighing posts. Greater efforts will be made to help these posts become more self sufficient by encouraging them to raise capital to maintain their feeding and other projects.

A. Conceptual Description

The PLAN Yogya health programme has curative and preventive aspects with our emphasis placed on the latter. Support for curative care is given for hospitalization, specialists and TB because we believe clients can not develop if they spend virtually all their income on paying such bills. Preventive programmes receive the greatest support because improvements in personal, family and community health conditions can have a lasting impact and reduce the incidence of need for curative treatment. Preventive efforts can not only reduce mortality, but greatly improve the quality of life.

B. Community Participation and Leadership

Preventive health care programmes demand a great deal of community participation.

* It is anticipated that the Nutrition and Weighing posts in all our working villages, becomes self sufficient within 6 months of receiving PLAN support. Work and promotion is carried out by village volunteers. In housing, water and sanitation projects, labour as well as a portion of the necessary materials is provided by the community. Design, implementation and supervision of the health projects is often carried out by village or committee leaders.

C. Summary of Significant Non-PLAN Inputs

Community : Volunteer nutrition cadres, land and building for activities, contributions of food, cooking materials, labour costs, locally available materials.

Government: Puskesmas support for training, supply, and supervision of nutrition cadres, curative care for patients, approval of project designs, referral to specialists, partial support for TB costs, hospitalization.

University: Specialist advisor for certain projects.

Other sources : funds from CIDA, AID, ADAB, and materials from UNICEF. The input from these sources is a significant percentage of the PLAN health budget.

All cadres trained in the past year will receive upgrading training from PLAN and Puskesmas staff. New training about oral rehydration and vaccination will take place. Support for Puskesmas, hospitalization etc will continue as in the past. Greater funds and effort will be devoted to water supply and sanitation in the coming year. The water survey of clients carried out in Dec. 1981 will be the basis of our planning. Considerable AID funds will supplement those from MA&S. Home improvement also receives greater emphasis and more of the purchasing of supplies will be carried out by the individual family rather than through centralized purchasing. This allows families to look for good prices and select exactly what is needed for their home. *and allows for more participation, education, etc.*

C. Most Government Planning and Support

The national and local government departments are aware of the health problems listed above and have instituted a variety of programmes to combat them. However, resources, trained personnel, facilities, transportation, etc are very limited. This is partly due to the disproportionate amount of funds and personnel (tied up) in hospitals and other urban facilities. The major facility serving the rural population is the Puskesmas or community health center. The Puskesmas staff is charged with the responsibility of providing curative treatment and also for setting up and maintaining preventative programmes. They are able to cover only a small percentage of the population they are supposed to serve and require extensive assistance in helping the rural population to care for many of its own health needs through preventive programming. The vast majority of PLAN health programmes are carried out with the cooperation of the Puskesmas and PLAN supplements their resources.

Yogyakarta FY 83

de to 14 June 82

2. Goal Statement: Improve health status of ...
3. Significant Assumptions:
1. Cur workers (Medical, Agriculture and Education) will be able to train and motivate clients and supervise the ...
 2. Government will be able to support the programs.
 3. Clients respond to nutrition programs, referrals and use of KMS.
 4. Nutrition cadres and community members will effectively run feeding and nutrition education programs.
 5. Hygiene and sanitation programs will improve living condition of clients.

HEALTH

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	PROJECT NAME	OBJECTIVES	INDICATORS				PARTICIPANTS			US DOLLARS			BENEFIT		
			MAGNITUDE	TARGET AREA	TARGET POPULATION	TIME FRAME BEGIN	TIME FRAME END	TOTAL PLAN	NON-PLAN	FCs	FCs UNIT COST	UNIT COST	A	B	C
13.12	Dental care curative	To provide dental equipment for rural dental clinics	4 sets	4 Kecamatan	rural population	July	June	16,000	25,000	2,500	1.60	4,000	4000		
13.14	TB control	screening+treatment of TB patients	500 patients	all areas	suspected+proved TB cases	July	June	500	0	200	125.00	25,000	2000	2000	2000
13.15	referral to specialists	support for specialist consultation.	2500 clients	all areas	clients	July	June	2500	-	2500	4.00	10,000	5000	2500	2500
13.16	hospitalization	support for hospital payment.	1,500 cases	all areas	clients	July	June	1500	-	1500	26.70	40,000	20000		
13.25	existing health facility support	material support for community health centers	32 centers	32 kecamatan.	clients + community	July	June	120,000	120,000	20,000	.75	15,000	5000	5000	5000
13.50	Promotor Ponoraria	PLAN office weighing post assistance	24 workers	12 offices	clients with under five children.	July	June	600	-	600	.42	250	250		

NOTE: Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

Yogya FY 83

DESCRIPTION OF SECTOR GOALS

ok by 1/21 June 82

HEALTH

- A. Summary
- B. Significant Assumptions:
- 1.
 - 2.
 - 3.
 - 4.
 - 5.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

PROJECT	OBJECTIVES	INDICATORS			TIME FRAME		PARTICIPANTS			FCs UNIT COST	BUDGET	PRIORITY		
		MAGNITUDE	TARGET AREA	TARGET POPULATION	BEGIN	END	TOTAL PLAN	NON-PLAN	FCs			A	B	C
13.31 Preventive dental	set up and maintain school dental programs.	20 schools	all areas	elementary school students	July	June	2000	2500	2000	4.00	8,000	4000	2000	2000
13.33 Family Planning	provide sterilization & injectable contraceptives	1000 + 1000	all areas	women child bearing age	July	June	2000	-	2000	2.50	5,000	3000	1000	1000
13.40 Latrines	To construct individual+community sanitation facilities	850 latrines + bathtubs	all areas	PLAN clients	July	June	7050	1500	1175	59.57	70,000	50,000	10,000	10,000
13.41 Potable water	To build & repair wells and water systems.	2510 wells + reservoirs	all areas	PLAN clients	July	June	15470	9100	2510	81.03	203,528	130,528	50,000	23,000
13.45 Home improvement	To repair and improve homes.	2546 homes	all areas	PLAN clients	July	June	12500	none	2546	101.33	255,000	105,000	66,500	86,500
13.01 13.02											56,047 11,175			
											67,222			

Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

706,222

DESCRIPTION OF SECTOR GOALS

HEALTH

- A. Goal Statement: Improve health status of clients and communities.
- B. Significant Assumptions:
1. Our workers (Medical, Agriculture and Educational) will be able to train and motivate clients and supervise the process.
 2. Government will be able to support the programs.
 3. Clients respond to nutrition programs, referrals and use of KMS.
 4. Nutrition cadres and community members will effectively run feeding and nutrition education programs.
 5. Hygiene and sanitation programs will improve living condition of clients.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	PROJECT NAME	OBJECTIVES	INDICATORS			TIME FRAME		PARTICIPANTS			US DOLLARS			PRIORITY		
			MAGNI-TUDE	TARGET AREA	TARGET POPULA-TION	BEGIN	END	TOTAL PLAN	NON-PLAN	FCs	FCs UNIT COST	BUDGET	A	B	C	
13.12	Dental care curative	To provide dental equipment for rural dental clinics	4 sets	4 Kecamatan	rural population	July	June	16,000	25,000	2,500	1.60	4,000	4000			
13.14	TB control	screening+treatment of TB patients	500 patients	all areas	suspected+proved TB cases	July	June	500	0	200	125.00	25,000	9000	8000	8000	
13.15	referral to specialists	support for specialist consultation.	2500 clients	all areas	clients	July	June	2500	-	2500	4.00	10,000	5000	2500	2500	
13.16	Hospitalization	support for hospital payment.	1,500 cases	all areas	clients	July	June	1500	-	1500	26.70	40,000	20000	10000	10000	
13.25	existing health facility support	material support for community health centers	32 centers	32 kecamatan.	clients + community	July	June	120,000	120,000	20,000	.75	15,000	5000	5000	5000	
13.30	Promotor honoraria	PLAN office weighing post assistance	24 workers	12 offices	clients with under five children.	July	June	600	-	600	.42	250	250			

NOTE: Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

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DESCRIPTION OF SECTOR GOALS

HEALTH

A. Goal Statement:

B. Significant Assumptions:

- 1.
- 2.
- 3.
- 4.
- 5.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	PROJECT NAME	OBJECTIVES	INDICATORS		TARGET POPULATION	TIME FRAME		PARTICIPANTS			US DOLLARS			PRIORITY		
			MAGNITUDE	TARGET AREA		BEGIN	END	TOTAL PLAN	NON-PLAN	FCs	FCs UNIT COST	BUDGET	A	B	C	
13.31	Preventive dental	set up and maintain school dental programme.	20 schools	all areas	elementary school students	July	June	2000	2500	2000	4.00	8,000	4000	2000	2000	
13.33	Family Planning	provide sterilization & injectable contraceptives	1000 + 1600	all areas	women child bearing age	July	June	2000	-	2000	2.50	5,000	3000	1000	1000	
13.40	Latrines	To construct individual+community sanitation facilities	850 latrines + bathhouses	all areas	PLAN clients	July	June	7050	1500	1175	59.57	70,000	50,000	10,000	10,000	
13.41	Potable water	To build & repair wells and water systems.	2,750 wells + reservoirs	all areas	PLAN clients	July	June	17,000	10,000	2750	81.09	223,000	150,000	50,000	23,000	
13.45	Home improvement	To repair and improve homes.	2,750 homes	all areas	PLAN clients	July	June	13,500	none	2750	101.33	280,000	105,000	75,000	100,000	

NOTE: Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

SAMPLE SPO FORM

FY '83

FOSTER PARENTS PLAN INTERNATIONAL

DATE FEBRUARY 1983

PRINTED NAME OF FIELD OFFICE

SECTOR PROGRAM OUTLINEI. General Information: Name of Sector COMMUNITY DEVELOPMENTTotal of Sector Budget ~~120,466~~ at ~~5.98~~ per FC
114,000 5.99

II. Background

Economic development in Indonesia has followed three paths : public, private and through cooperatives. Though the government has given special attention to the development of cooperatives, such attention still needs to be given to this kind of economic growth.

PLAN Yogya is assisting poor families to improve their standard of living, thus contributing to better family and community welfare. By means of cooperatives, needy families can organize themselves into meaningful economic or social groups, which allows them the opportunity to accumulate funds and/or other resources for a specific purpose. By generating capital, each group has the potential for using their resources and group effort for a productive or welfare purpose, either for the family or the community. Cooperatives can stimulate and promote the habit of saving and using money wisely. It also promotes a sense of self-confidence and human dignity, as the families take more responsibility for their own development, and help themselves overcome their economic and social problems.

In order to stimulate the process of Cooperative-Credit Union development, PLAN provides training for those families wanting to participate in such programs. For those Cooperatives/Credit Unions that are already existing, PLAN provides technical assistance and necessary guidance.

PLAN assists in the Community Development sector with projects other than Credit Unions. These projects will concentrate on the development of rural infrastructure by assisting with bridge construction and road improvement. This will improve communications among different communities so that produce can more easily be marketed, and there will be better access to schools, health centres, etc.

A. Conceptual Description

- PLAN will continue its support for developing Credit Unions by means of training community members, and offering additional support to already existing cooperatives by providing guidance and technical assistance.
- PLAN will improve rural infrastructure to enhance communications among communities, making markets, schools and other facilities more easily available.

- leadership training \$2,000 ??

B. Community Participation and Leadership

- Though PLAN will assist in the setting up of Cooperatives/Credit Unions, the continuation and development of these programs are the responsibility of the community.
- For infra-structure projects, the community will assist by providing all the unskilled labor, and in some cases, providing some necessary materials.
- Community leaders will assist in the design and implementation of projects.

C. Summary of Significant Non-PLAN Inputs

- The Government is supporting the development of Credit Unions and Cooperatives by setting up small-scale industries, and also providing some training activities.
- There are some local organizations (Yayasan) that offer training and assistance to farmers who want to learn income-producing skills.
- The Government is improving the infra-structure by constructing and improving main roads.

A. Goal Statement: To improve human and physical resources of client communities.

DESCRIPTION OF SECTION GOALS

- B. Significant Assumptions:
1. Credit Unions will increase the social and economic well being of clients + community.
 2. Clients and communities will be motivated to participate in Credit Union activities.
 3. Credit Unions will facilitate cooperative development.
 4. Improving rural infrastructure will facilitate social and economic development.
 5. Leadership training will increase self-reliance.

*Yogya FY 73 C.D.
data reference
(change)*

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

NO.	PROJECT NAME	OBJECTIVES	INDICATORS			TIME FRAME		PARTICIPANTS			US DOLLARS			PRIORITY		
			MAGNI-TUDE	TARGET AREA	TARGET POPULA-TION	BEGIN	END	TOTAL PLAN	NON-PLAN	FCs	FCs UNIT COST	BUDGET	A	B	C	
15.15	Infrastructure	To improve small roads, bridges, etc.	4 roads 9 bridges	all areas	rural communities	July	June	10,500	15,000	1,750	14.29	25,000	12,500	5,000	7,500	
15.21	leadership training.	To develop local leadership.	250 people	all areas	potential leaders	July	June	200	50	200	10.00	2,000	-	2,000	-	
15.30	Co-op/ Credit Union	To promote community cooperative dev't.	7,000 participants	all areas	PLAN communities	July	June	35,528	10,000	5,921	3.13	18,534	1,034	14,000	3,500	
15.01												51,575				
15.02												16,891				
												68,466				
												144,000	82,000	21,000	11,000	

NOTE: Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

114.5

DESCRIPTION OF SECTION GOALS

- A. Goal Statement: To improve human and physical resources of client communities.
- B. Significant Assumptions:
1. Credit Unions will increase the social and economic well being of clients + community.
 2. Clients and communities will be motivated to participate in Credit Union activities.
 3. Credit Unions will facilitate cooperative development.
 4. Improving rural infrastructure will facilitate social and economic development.
 5. Leadership training will increase self-reliance.

C. Listing of Project Objectives Directed at Goal Attainment and Budgetary Information

PROJECT		INDICATORS					PARTICIPANTS			US DOLLARS			PRIORITY		
NO.	NAME	OBJECTIVES	MAGNITUDE	TARGET AREA	TARGET POPULATION	TIME FRAME		TOTAL PLAN	NON-PLAN	FCs	FCs UNIT COST	BUDGET	PRIORITY		
						BEGIN	END						A	B	C
15.15	Infrastructure	To improve small roads, bridges, etc.	4 roads 9 bridges	all areas	rural communities	July	June	10,500	15,000	1,750	14.29	25,000	12,500	5,000	7,500
15.21	Leadership training.	To develop local leadership.	250 people	all areas	potential leaders	July	June	200	50	200	10.00	2,000	-	2,000	-
15.30	Co-op/ Credit Union	To promote community cooperative dev't.	9,500 participants	all areas	PLAN communities	July	June	48,000	15,000	8,000	3.13	25,000	5,000	15,000	5,000

NOTE: Use only whole US Dollars except in unit cost where calculation should be carried to the nearest cent.

PEDOMAN PENGISIAN KWESIONER SURVEY TENTANG SUMUR.

UNTUK DIPERHATIKAN:

1. Kwesioner ini bertujuan mengetahui PENDAPAT MASYARAKAT/PENERIMA bantuan PKAK dibidang perbaikan sarana sumber air. Karena itu, SEMUA JAWABAN responden hendaknya direkam sebagai input untuk perbaikan usaha PKAK di bidang ini.
2. Hendaknya diusahakan agar jawaban yang pendek atau kurang jelas dapat ditelusuri lebih jauh agar menjadi gamblang maksudnya.

PENJELASAN TENTANG PENGISIAN KWESIONER:

1. Lokasi : Kelurahan, Kecamatan.
2. Responden : Klien, Kader, Pak Lurah, Guru dll.
3. Pemilik : klien, masyarakat, sekolah dll.
4. Sumber air lain : belik, sungai, sumur pompa, sumur lain dll.
5. Jarak : dalam meter/Km., ditambah komentar tentang kondisi jalan.
6. Kapan dibangun : bulan dan tahun pembangunan selesai.
7. Berapa yang bekerja : ditambah keterangan "tukang" atau masyarakat.
8. Kedalaman : dalam meter, setelah selesai dibangun.
9. Yang merawat : pemilik sumur, panitia khusus dll.
10. Air kurang : Jumlah air yang dapat diambil, berapa lama air dapat diambil dalam jangka waktu sehari (24 jam).
11. Kurang air atau lebih lama : misalnya karena antrian pemakai sumur.
12. Tentang penyakit dapat ditelusur dengan bertanya apakah ada yang sakit dalam 1 bulan terakhir.
13. Kesulitan yang dihadapi : pemakai harus entri, timba sering rusak, tali sering putus dll.
14. Pemanfaatan selanjutnya : misal ditambah kamar mandi, atau kamar mandi ditambah jumlahnya dll.
15. Mengapa sumur dibangun : karena jumlah air kurang, karena belum ada sumur dll.
16. Siapa yang menentukan lokasi : pawang, Lurah, PKAK dll.

CATATAN TAMBAHAN:

1. Hendaknya para pewawancara berhati-hati agar tidak mempengaruhi atau mengarahkan jawaban responden, meskipun juga perlu menjaga agar jawaban responden tidak ngawur dan melentur.
2. Catatlah jawaban-jawaban responden di sebalik kertas kwesioner, jika ada hal-hal yang perlu dicatat tetapi tempat tidak mencukupi. Ini terutama perlu untuk jawaban atas pertanyaan-pertanyaan No. 4- s/d 14.

QUESTIONNAIRE "SURVEY ABOUT WELLS"

1. Location _____
Respondent _____
Owner _____
2. Number of user _____ families _____ persons.
3. Is there any other source of water near here? Yes/No
If yes, name the type _____
Name the distance from this well _____
4. When was this well completed? _____
How many weeks did it take to build? _____
How many persons worked to build it? _____
How deep is the well? _____
5. Who takes care of this well? _____
6. Since it was built/improved, does this well always have water all year long? Yes/No
If no, how long is it dry? _____
How long is the water reduced? _____
7. Compared to before the well was built/improved:
Does it have more water or less? why?
Is the water now cleaner or less clean? why?
Is it easier or less easier to get water now? why?
8. Compared to before the well was built/improved:
Is diarrhea less now or more? why?
Is typhoid/cholera less or more? why?
9. What are the problems faced after the well is built/improved?
10. What is the planning to increase the usefulness of the well?
When is the planning going to be implemented?
11. Why was the well built/improved?
12. Who pointed this location?
13. What is the assistance received (from PLAN)? material/cash
14. From whom do you know that PLAN helps build wells?
SW/CD/MW/EW/Neighbors/Others (specify)

EXPLANATION ON HOW TO FILL IN QUESTIONNAIRE

1. Location: Kelurahan, Kecamatan
2. Respondent: client, cadre, lurah, teacher, etc.
3. Owner: client, community, school, etc.
4. Other source of water: spring, river, pumps, other wells, etc.
5. Distance: in meter
6. When built: year and months completed
7. How many built: specify skilled or unskilled labor
8. Depth: in meter after completed
9. Who takes care of: owner of well, special committee, etc.
10. Reduced water: quantity of water could be taken, length of water cannot be taken in days, etc.
11. Less water after completed: maybe because more users, and people have to wait in line, etc (longer vs. easier)
12. Diarrhea/typhoid: try to ask if anybody got sick in the past months/2 weeks/ now, etc
13. Problems: people have to wait in line, bucket and rope broken, etc.
14. Future plans: adding bathrooms, or adding more bathrooms to existing one, etc.
15. Why is well built: water is scarce, no well available, distance, etc.
16. Who points location: pawang, PLAN staff, village leader, etc.

NOII with Wells

APPENDIX G

<u>FC #</u>	<u>INCOME</u>			<u>OCCUPATION</u>	
	1980	1981	1982	Father	Mother
16790	31.98	31.98	55.38	Odd jobs	-
17720	23.99	27.18	-	Cigarette vdr.	-
18392	16.00	20.93	26.87	Farmer/ farm worker	Farmer/ farm worker
17632	20.11	21.70	33.19	Farmer/ odd jobs	Farmer/ farm worker
17758	19.32	31.98	46.16	Farmer	Farmer
18399	18.58	22.30	31.61	"	
18446	22.37	20.77	39.52	"	"
17055	15.99	22.38	31.61	Farmer/ brick layer	Mats
17882	15.99	10.78	18.97	-	Laborer
18587	22.39	30.40	38.73	Farmer/ brick layer	Farmer
16798	19.19	25.58	33.19	Farmer	Markets duck eggs, veg. etc
17047	22.53	28.78	39.52	Cartman/ Farmer	Mats
17325	11.19	15.99	23.71	Laborer/ farmer	Mats/ tempe
18609	19.99	30.38	37.94	Brick layer	Mats/ducks
17195	18.39	20.78	31.61	Farm laborer	Farm laborer
17158	21.53	31.98	55.81	Brick layer	Mats
18958	15.38	20.79	-	Project laborer	"
18298	21.59	27.18	39.52	Coconut juice farmer	Brown sugar
16853	18.46	23.77	26.87	Shoe laborer	Farmer/ Mats
18611	16.77	24.62	31.61	Farm & fruit seller	Sells fruit
18647	19.19	21.58	26.87	Farmer	Sells veg.
16881	20.78	22.39	30.03	Welder	Market
18295	22.39	25.58	39.51	Farmer/ brick layer	Mats
16780	22.54	38.38	-	"	Farmer
16925	15.99	19.19	28.45	Farmer	"
18433	18.39	20.80	25.59	Brick layer	Farmer/ rug maker
18309	19.19	27.99	32.31	Brick layer	Died 1979
17580	20.13	20.96	-	Farmer	Farmer
17206	23.97	32.00	-	Makes bamboo shades	"
16977	18.89	25.59	47.42	Farmer/ chickens	Mats

NOII without Wells

FC #	INCOME			OCCUPATION	
	1980	1981	1982	Father	Mother
17254	13.85	17.59	23.71	Farm laborer	-
17203	16.77	20.93	23.71	Farmer	Rice/veg.vdr
16749	23.99	31.98	41.10		Mats
16847	16.10	20.79	31.61	Farmer	Farmer
18634	15.99	25.58	31.61	"	"
17326	22.37	27.18	37.94	Roof tile maker	"
17877	9.60	19.39	18.97	Farmer	Mats
17665	25.57	31.98	47.42	Cart driver	
17053	14.49	14.50	18.97	Farmer Roof tiles	Mats
17166	12.08	17.59	30.03	Brick layer	"
18647	19.19	21.58	26.87	Farmer	Sells veg.
19038	15.99	23.98	31.61	Farmer brick layer	Mats
19077	16.79	19.20	25.29	-	Farmer Mats
20024	-	17.59	31.61	Odd jobs Farmer	Mats
20178	18.39	24.00	34.78	Farmer	Farmer
20182	-	19.19	34.77	"	-
24890	-	14.40	23.71	Brick layer	Sells fruit
20063	-	25.59	33.19	Farmer	Mats
17258	15.99	19.19	30.77	"	"
11894	20.80	28.79	34.77	"	Sells snacks
18468	25.59	33.59	55.32	Brick layer	Farmer/Mats
18947	19.65	22.39	36.92	Farmer	Sells coconuts
20188	22.37	28.00	47.42	"	Mats
20027	21.59	23.99	37.93	Bamboo screens	Sells herbal drk.
17051	22.93	27.19	37.94	Farmer	Mats
16840	27.19	36.80	46.15	Electric installer	Tempe
17383	16.00	19.33	23.71	Farmer	Farmer/mats
18000	17.60	24.78	-	Farmer	Mats
16795	25.59	30.00	37.94	"	Sells porridge
24809	19.19	28.78	39.52	"	Mats

SOI without Wells

FC #	INCOME			OCCUPATION	
	1980	1981	1982	Father	Mother
17440	9.66	12.79	20.15	Farmer	Weaver
17456	9.83	16.00	21.34	-	"
19094		12.82	15.01	Farmer	"
19093	8.04	9.59	15.11	"	"
18054	7.99	9.59	12.65	"	-
19625	12.00	12.80	17.39	"	Weaver
18061	16.85	21.80	26.86	"	Sells veg.
19597	12.00	13.59	18.96	"	Weaver
19604	11.20	11.63	17.38	"	Sell tomatos
19064	12.77	12.80	18.96	"	Sell flowers
19248	8.00	17.59	32.31	"	Laborer
18435	9.6	12.79	26.08	"	Laborer
18239	11.19	16.78	25.38	"	Make mats
18228	14.39	17.59	34.62	"	Sell veg.
18300	17.71	19.19	21.54	"	Sell veg.
18272	7.20	16.00	18.96	"	"
18258	17.58	19.19	32.31	"	Weaver
18210	14.39	22.38	23.85	"	Makes brown sugar
18219	14.48	17.40	23.85	"	Mats
18236	10.40	11.99	20.55	"	Sells firewd
18143	13.60	13.59	21.33	"	Mats
18332	9.6	11.20	18.97	"	Weaver
18575		12.60	21.60	"	"
17108	10.4	16.79	26.16	Carpenter	"
17109		14.40	28.45	Farmer	Makes brown sugar
17171	14.39	23.41	23.98	Carpenter	Weaver
17222	9.60	15.19	19.16	Farmer	Farmer
18666	8.00	12.80	16.19	"	Weaver

N =	25	28	28
M =	\$ 290.87	\$ 424.29	\$ 619.10
X =	\$ 11.63	\$ 15.15	\$ 22.11
% inc.1 yr.	-	30%	45%
% inc.2 yrs.	-	-	98%

SOI with Wells

<u>FC #</u>	<u>INCOME</u>			<u>OCCUPATION</u>	
	1980	1981	1982	Father	Mother
17234	11.20	11.20	10.27	-	Weaver
17238	6.44	15.99	30.77	Farmer	"
17453	10.95	17.59	28.77	"	Soybean Cake
17496	15.17	15.17	28.86	"	Weaver
17537	11.46	11.20	22.13	"	"
17680	5.95	20.45		"	"
17735	15.56	16.80	26.88	"	Soybean Cake
17793	12.59	15.99	23.99	"	Weaver
17988	6.43	9.59	18.45	"	"
17996	12.79	12.79	25.29	"	Makes brown sugar
19568	12.82	17.60	23.70	Farm laborer	Sells ice
19577		9.00	20.55	Peasant	Makes brown sugar
19619	15.99	20.80	33.85	Farmer	" "
19648	10.39	14.39	17.60	Peasant	Weaver
20225	10.40	12.00	17.39	Farmer	Farmer
21640		16.79		"	Weaver
17240	8.85	14.40		"	Sells iadah
17243	13.66	16.00	26.08	"	Weaver
17590	11.47	22.53	30.76	Carpenter	"
17657	14.50	15.99	32.31	Farmer	"
17922	10.79	19.19	23.71	"	"
19601	6.40	9.60	11.85	"	-
19586	8.78	10.40	22.12	Farmer	Mats
19593	20.79	23.99	29.60	Peasant	"
19650	9.59	11.06	13.84	Farm worker	"
17662	11.67	15.20	24.00	Peasant	Mats
16928	8.80	11.20	24.00	"	Soybean Cake
17242	9.05	12.00	23.70	Farmer	Farmer
18133	14.39	16.79	22.45	"	Mats

N =	27	29	23
M =	\$307.48	\$431.70	\$616.92
X =	\$ 11.38	\$ 14.88	\$ 23.72
% inc.1 yr.	-	30%	59%
% inc.2 yrs.	-	-	108%

NO FY83

Office Sub. #	SP Number	Type Project	No. Wells	PLAN	Comm.	PLAN	Non PLAN
17	13.41/NI/CD/03/83	Well BR/latr.	1	661.00	140.43	21	34
19	13.41/NII/CD/01/83	Wells BR/latr.	4	1,283.40	285.25	12	4
20	13.41/NII/CD/02/83	Wells BR/latr.	1	640.20	140.62	6	2
25	13.41/NII/CD/03/83	Well BR/latr.	2	1,081.80	281.25	9	5
26	13.41/NII/CD/04/83	Well BR/latr.	4	1,098.44	312.50	11	5
27	13.41/NII/CD/05/83	Well BR/latr.	1	612.97	140.63	6	3
28	13.41/NII/CD/06/83	Well BR/latr.	2	957.50	250.00	9	4
29	13.41/NII/CD/07/83	Well BR/latr.	2	1,217.34	375.00	12	6
30	13.41/NII/CD/08/83	Well BR/latr.	2	1,141.56	201.25	12	5
31	13.41/NIII/CD/03/83	Well BR/latr.	4	2,891.25	750.00	67	96
32	13.41/NI/CD/04/83	Well BR/latr.	1	517.66	125.00	21	40
33	13.41/NI/CD/07/83	Well BR/latr.	1	661.17	140.63	8	13
52	13.41/NI/CD/09/83	Well BR/latr.	2	1,220.31	250.00	15	40
53	13.41/NI/CD/11/83	Well BR/latr.	1	622.50	140.63	7	14
62	13.41/NII/CD/09/83	Well BR/latr.	3	1,368.75	312.50	17	-
64	13.41/NI/CD/14/83	New well	3	1,915.08	421.88	22	40
73	13.41/NII/CD/11/83	Well BR/latr.	2	1,091.88	281.25	14	10
74	13.41/NII/CD/12/83	Well BR/latr.	2	1,991.88	281.25	8	6
75	13.41/NII/CD/13/83	Well BR/latr.	2	985.00	234.38	8	6
76	13.41/NII/CD/14/83	Well BR/latr.	1	593.13	93.75	4	3
77	13.41/NII/CD/15/83	Well BR/latr.	3	1,236.09	312.50	15	8
			48	\$23,788.91	\$5,470.70	304	344

EO82 - Water

Office Sub. #	SP Number	Type Project	# Project	PLAN	Comm.	Beneficiaries	
						PLAN	Non PLAN
01	13.41/E3/CD/01/82	Water pipe/tap	804m	1,870.40	400.00	75	375
25	13.41/E3/CD/04/82	Spring pipe	1500m	3,058.00	400.00	152	300
48	13.41/E3/CD/03/82	Well	1	356.00	108.00	7	
49	13.41/E2/CD/05/82	Well Pump	1	177.20	32.00	7	
53	13.41/E2/CD/08/82	Well	1	180.80	40.00	4	3
54	13.41/E2/CD/09/82	Well Pump	1	133.76	26.00	4	3
55	13.41/E2/CD/10/82	Well/BH latr.	1	344.00	88.00	12	78
57	13.41/E2/CD/12/82	Well pump	1	142.56	24.00	12	78
59	13.41/E2/CD/14/82	Well repair	1	160.00	32.00	4	7
60	13.41/E2/CD/15/82	Well pump	1	129.44	24.00	4	7
69	13.41/E2 /CD/18/82	Well/BH latrine	1	378.40	88.80	7	2
70	13.41/E2/CD/18/82	Well pump	1	128.32	24.00	7	2
76	13.41/E2/CD/20/82	Well/BH latrine	1	648.16	218.02	13	25
91	13.41/E1/CD/14/82	Well repair	15	2,088.00	960.00	37	150
126	13.41/E2/CD/27/82	Well repair	3	550.60	220.00	10	9
130	13.41/E1/CD/20/82	Well repair	7	1,036.80	560.00	7	0
163	13.41/E2/CD/26/82	Well pump	1	103.28	24.00	3	0
172	13.41/E2/CD/16/82	Well repair	13	1,948.00	400.00	26	10
180	13.41/E1/CD/23/82	Well repair	15	2,193.60	360.00	15	-
182	13.41/E1/CD/25/82	Well repair	5	702.56	260.00	5	
192	13.41/E2/CD/EO/82	New wells	2	320.16	94.40	6	10
194	13.41/E2/CD/32/82	New well pump/L/BH	2	1,270.88	434.40	21	
198	13.41/E3/CD/36/82	Well repair	2	388.48	76.80	6	4
208	13.41/E3/CD/27/82	Well repair	1	183.20	48.00	3	-
215	13.41/E1/CD/28/82	Tape recorder	1	136.00	-	-	-
			81	18,628.60	4,942.42	447	1,063
				X 229.98			1,510
				per project			\$12.33

E083 Water

Office Sub. #	SP Number	Type Project	# Project	PLAN	Comm.	PLAN	Non PLAN
05	13.41/E2/CD/01/83	Well repair	10	3,102.00	784.00	51	48
15	13.41/E2/CD/02/83	Well repair	5	888.16	320.00	6	5
18	13.41/E2/CD/03/83	Water pipe	1500m 1	3,718.40	800.00	40	50
19	13.41/E2/CD/06/83	Well/pmc BH/Latr	1	1,099.20	500.00	35	30
32	13.41/E2/CD/03/83	Wells pumps	2	340.30	54.70	12	25
34	13.41/E2/CD/05/83	Well repair	13	2,654.68	625.00	29	10
45	13.41/E1/CD/07/83	Well repair	7	801.16	328.13	7	-
57	13.41/E1/CD/11/83	Well digging	18	2,826.56	984.38	15	3
58	13.41/E3/CD/08/83	Well repair	13	2,770.31	625.00	20	10
78	13.41/E2/CD/15/83	Well pumps	2	550.00	207.80	7	23
83	13.41/E2/CD/14/83	Dig wells	2	409.69	293.00	3	-
84	13.41/E3/CD/12/83	Well repair	19	3,429.68	1,250.00	35	10
95	13.41/E3/CD/14/83	Well repair	3	415.63	117.15	10	25
			96	23,005.77	6,889.16	270	239
				X 239.64			= 509
						\$45.19	

EO FY82 Sanitation

Office Sub. #	SP Number	Type Project	# Project	PLAN	Comm.	PLAN	Non PLAN
154	13.40/E1/CD/22/82	Latrine	7	224.00	192.00	7	-
199	13.40/E2/CD/35/82	Well/BH latrine	1	381.60	160.00	10	19
			8	605.60	352.00	17	19
				$\bar{X}=75.70$			=36
						\bar{X}	16.82
EO FY83 Sanitation							
01	13.40/E1/CD/01/83	Well/BH latrine	3	1,358.40	480.00	15	15
12	13.40/E2/CD/01/83	Well/BH latrine	2	933.00	400.00	15	20
35	13.40/E2/CD/04/83	Well/BH latrine	4	1,755.62	468.00	27	10
54	13.40/E2/CD/07/83	BH/Latrn repair	2	803.51	156.25	30	25
55	13.40/E2/CD/08/83	Latrines	4	296.88	125.00	4	-
56	13.40/E2/CD/09/83	Well/BH Latrines	1	675.54	234.37	9	10
67	13.40/E2/CD/07/83	Well/BH Latrines	2	768.75	390.62	15	10
68	13.40/E1/CD/06/83	Well/BH Latrines	1	739.16	234.38	27	107
70	13.40/E2/CD/11/83	Latrines	11	601.00	171.00	11	-
79	13.40/E1/CD/13/83	Well/BH Latrines	3	956.25	234.38	21	15
80	13.40/E1/CD/15/83	Well/BH Latrines	1	342.18	78.13	5	25
31	13.40/E3/CD/14/83	Well/BH Latrines	1	546.87	117.18	13	10
			35	9,777.16	3,089.31	192	247
				\bar{X} \$279.34			N = 439
						\bar{X}	\$39.58 pp

GK082

Office Sub. #	SP Number	Type Project	No. Wells	PLAN	Comm.	PLAN	Non PLAN
04	13.41/GKI/CD/01/82	Well repair	20	1,824.00	1,448.00	80	60
05	13.41/GKII/H/01/82	Well repair	25	6,280.00	4,000.00	25	100
31	13.41/GKIII/CD/03/82	Well repair	26	2,121.60	1,079.40	38	2
36	13.41/GKIII/CD/05/82	Well repair	31	2,824.96	1,393.76	45	5
56	13.41/GKI/CD/03/82	Well BH/latr.	9	7,834.40	1,440.00	70	30
75	13.41/GKI/CD/07/82	Well repair	5	456.00	320.00	15	10
85	13.41/GKIII/CD/08/82	Well repair	36	2,400.80	2,197.60	56	52
92	13.41/GKII/H/09/82	Well B-house	24	5,568.00	2,112.00	24	98
106	13.41/GKIII/CD/10/82	Well repair	1	194.00	128.00	8	9
107	13.41/GKIII/CD/11/82	Well repair	20	2,000.48	1,579.20	34	8
110	13.41/GKII/H/10/82	B-House Well rpr.	28	6,216.00	2,160.00	28	0
129	13.41/GKIII/CD/14/82	Well repair	39	3,379.84	1,248.00	39	-
130	13.41/GKIII/CD/5/82	Well repair	1	240.00	83.20	12	23
			265	41,339.60	19,189.16	474	397
				X\$ 156.			1,268
							X = \$32.60
50	13.40/GKII/H/03/82	Latrine Covers	153	1,713.60	1,101.60	82	71
60	13.40/GKIII/CD/02/82	Latrine	1	649.60	649.60	58	0
86	13.40/GKIII/H/03/82	Latrines	42	484.51	336.00	42	-
111	13.40/GKII/H/10/82	Latrines	100	1,065.60	960.00	100	-
120	13.40/GKII/H/11/82	Latrines	85	1,115.20	272.00	71	14
121	13.40/GIII/H/09/82	Latrines	216	2,308.96	1,744.00	216	-
			597	7,337.57	5,063.20	569	85
				X 12.29			X = 654

APPENDIX I

<u>Illness</u>	<u>- 1</u>	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16 +</u>
Respiratory	6	6	1	1	3
Digestive	1	2	1	-	3
Typhoid	1	-	1	-	5
Accidents	1	-	1	1	2
Heart	-	1	-	-	2
Tuberculosis	- (1)	- (2)	-	-	4 (3)
Other	<u>10</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>12</u>
TOTAL	19	11	4	2	31 = 67

- 1). 9 stillborn, 1 chickenpox
- 2). kidney disease
- 3). 10 old age, kidney disease, neurological disease

TABLE _____

DEATHS BY AGE GROUP FOR PLAN CLIENTS, NOII
January - October, 1982

<u>Illness</u>	<u>- 1</u>	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16 +</u>
Respiratory	1	1	1	-	5
Accidents	-	-	-	-	2
Tuberculosis	- (1)	1	1	-	1 (2)
Other	<u>4</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>5</u>
TOTAL	5	2	2	0	13 = 22

- 1). 0 stillborn; 3 measles
- 2). old age, 3 mental disease, hepatitis

TABLE _____

DEATHS BY AGE GROUP FOR PLAN CLIENTS, NOII
January - October, 1982

Illness	APPENDIX J				
	<u>- 1</u>	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16 +</u>
Respiratory	1	-	-	-	1
Digestive	-	1	-	-	1
Mental	-	-	-	-	1
Heart	-	-	1	-	2
Typhoid	-	1	3	2	4
OB/GYN	-	-	-	-	3
Accident	- (1)	- (2)	3	2 (3)	4 (4)
Other	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>2</u>
TOTAL	2	3	7	5	17 = 34

- 1). Premature
- 2). Convulsions
- 3). Tetanus
- 4). Goiter, tumor

TABLE ____
HOSPITALIZATIONS BY AGE GROUP, NOII PLAN CLIENTS
January - October, 1982

Illness	APPENDIX J				
	<u>- 1</u>	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16 +</u>
Respiratory	-	-	1	-	2
Digestive	-	-	-	-	2
Mental	-	-	-	1	-
Typhoid	-	-	2	-	2
OB/GYN	-	-	-	1	1
Accident	-	- (1)	- (2)	- (3)	3 (4)
Other	<u>-</u>	<u>1</u>	<u>3</u>	<u>2</u>	<u>6</u>
TOTAL	0	1	6	4	16 = 27

- 1). Malnutrition
- 2). 3 Tonsillitis
- 3). Tooth Abscess, tonsillitis
- 4). Measles, tumor, cancer, hemorrhoids, hepatitis (2)

TABLE ____
HOSPITALIZATION BY AGE GROUP, NOII PLAN CLIENTS
January - October, 1982

APPENDIX K

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	SOI
							% Failing to gain
Oct. 81	39	-	-	-	30	30	
Nov. 81	39	16	8	6	3	34	23%
Dec. 81	40	20	19	10	4	38	50%
Jan. 82	40	21	9	2	1	30	30%
Feb.	40	26	7	4	1	33	21%
Mar.	40	23	7	3	1	30	23%
Apr.	40	18	4	6	0	25	16%
May	39	12	15	11	0	28	53%
June	39	19	9	8	0	36	25%
July	39	18	7	3	0	36	19%
Aug.	39	15	5	10	0	36	14%
Sept.	39	12	6	5	0	23	26%
Oct.	34	7	12	2	1	22	54%
Nov.	36	15	6	1	1	23	26%

Kayuhan Kulon

KADER GIZI RECORDS

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	% Failing to gain
July 81	34	-	-	-	-	30	
Aug.	32	15	10	4	0	25	40%
Sept.	32	16	16	-	-	32	50%
Oct.	32	15	16	1	-	31	51%
Nov.	35	6	17	0	-	23	74%
Dec 81	35	5	24	9	-	29	83%
Jan. 82	57	32	13	3	5	52	25%
Feb.	57	31	14	12	1	45	31%
March	56	37	16	11	-	43	37%
April	56	27	17	13	-	44	38%
May	56	34	5	12	-	41	12%
June	33	19	12	4	-	31	39%
July	33	10	18	5	-	28	64%
Aug.	33	16	9	1	-	26	35%
Sept.	33	16	10	6	-	26	38%
Oct.	33	11	15	7	2	26	57%

Sabrang Kidul

KADER GIZI RECORDS

SOI

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	% Failing to gain
Aug. 82	51	41	0	10	0	41.0	
Sept. 82	49	39	1	9	0	40.02	
Oct. 82	49	36	0	13	0	36.00	

Butuh Kidul

KADER GIZI RECORDS

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	% Failing to gain
April 82	40	6	4	8	1	11	36%
May 82	40	4	6	3	6	16	37%
June 81	40	7	9	2	2	18	50%
July 81	40	8	10	1	1	19	52%
Aug. 81	40	9	8	2	11	28	28%
Sept. 81	40	12	13	6	1	26	50%
Oct.	40	13	9	13	0	25	36%

Butuh Lor

KADER GIZI RECORDS

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	% Failing to gain
Oct. 81	28	11	3	4	0	14	.21%
Nov. 81	21	11	2	3	4	18	.16%
Dec. 81	21	11	4	1	0	15	.27%
Jan. 82	28	11	7	3	7	25	.28%
Feb.	27	18	7	0	0	25	.28%
Mar.	27	19	3	5	0	22	.14%
Apr.	28	13	7	5	0	23	.35%
May	28	15	6	2	0	26	.28%
June	28	14	9	3	0	25	.39%
July	29	17	4	7	0	22	.19%
Aug.	29	11	3	13	0	16	.21%
Sept.	29	11	1	13	0	16	.08%
Oct.	29	11	5	6	0	23	.31%
Nov.	29	8	10	4	0	25	.55%

KADER GIZI RECORDS

Pundong III

Population: 60 families: 339 people

Births since Jan. 3

Deaths since Jan. 1: reason/age 8 months/cold? typhoid

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	% Failing to gain
Oct. 81	29	0	0		23	23	-
Nov. 81	29	6	3	14	2	25	27%
Dec. 81	29	9	6	10	4	19	31%
Jan. 82	29	10	6	12	1	17	35%
Feb.	29	11	10	8	0	21	48%
Mar.	29	7	5	16	0	12	42%
Apr.	-						
May	-						
June	31	4	3	0	1	8	37%
July	32			0	0	27	-
Aug.	38	15	11	5	7	33	33%
Sept.	39	18	12	10	2	32	37%
Oct.	39	16	11	12	0	27	41%

KADER GIZI RECORDS

Population P.V. 497 people 90 families

Births since Jan. 9

Deaths since Jan. 2

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	NO II
							% Failing to gain
Nov.	51	9	21	21	45	30	70%
Dec.	51	11	23	21	45	34	68%
Jan.	52	13	18	20	1	31	58%
Feb.	52	9	11	21	0	20	55%
Mar.	52	14	17	32	0	31	55%
Apr.	52	17	13	29	0	30	43%
May	52	19	14	22	0	33	42%
June	52	22	16	37	0	38	42%
July	52	8	6	29	0	14	42%
Aug.	52	18	20	30	0	38	52%
Sept.	52	20	21	6	10	41	51%
Oct.	53	19	17	3	0	36	47%

KADER GIZI RECORDS

Pundong 1

133 Families: 589 people \bar{X} family size: 4.43

12 Births in 1982 Jan.-Oct.

Month	# Under 5	# Gaining	# Same or less	# Not weighed	# Weighed 1st time	Total weighed	NO II
							% Failing to gain
Nov.	22	13	4	5	0	17	23%
Dec.	24	2	4	5	2	20	20%
Jan.	28	11	7	10	3	18	39%
Feb.	32	6	8	4	2	14	57%
Mar.	32	5	10	5	2	15	67%
Apr.	32	7	8	2	0	15	53%
May	24	6	9	8	4	15	60%
June	24	7	8	9	3	15	53%
July	24	4	10	3	2	14	71%
Aug.	24	4	8	5	2	12	66%
Sept.	24	4	6	14*	1	11	55%

KADER GIZI RECORDS

Pundong 2:

63 Families: 254 people \bar{X} Family size: 4.03

4 births since January 1 death: 5 yr. old died of cold

*absenteeism due to women in fields harvesting