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GH.TA 90

halfyearly report
jan 1990

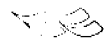
village water
reservoirs project
tamale
ghana



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INTRODUCTION

At this moment you start reading the second overall half-yearly report in this lay-out. This report is meant for all who are interested to have a quick overview (\pm 3hrs. reading for the average reader) of the Archdiocesan Village Water Reservoirs project funded by CEBEMO in the Netherlands. (like DGIS/CEBEMO officials, Archdiocesan officers, Government officials, and the general public). All activities and major results are summarized in this document. The specialist in one of the fields that the project is working in, like rural engineers, sociologist, Antropologists, economists, mechanical engineers, can find their satisfaction in the sectional halfyearly and quarterly reports. The most detailed information can be found in specific reports on certain issues like Village Water Supply reports, description of animation programmes and research reports made by the project.

These reports are most valuable to above mentioned specialists seeking for this information, the SAWA head office, project staff etc.

Interested readers can apply for those reports by filling in (do not forget your name please) the annexed charts at the back of the report. (annex 4). It has not to be denied that this report is published late; (June 1990) and should have been published current March at latests.

It finds its reasons in the fact that the understaffing in both Animation and Technical Sections were not yet resolved, resulting in late finishing of the sectional reports. (March). The Workshop report was finished already in January. Those section reports form the basis of this underlying report. The understaffing made it necessary that the author assisted the Technical section to design a dam (Yong-Dakpemyili) and supervises the monitoring of the water quality and well digging activities. "Voila" the reason that only in May time was found to finalise this document.

J. A. Vos
(Project Manager)

May 1990.

1

PROJECT EXECUTION

1.1 Programme

Since 1987 the Village Water Reservoirs has been working in the Northern Region of Ghana in order to improve the water supply of the villages situated in the so called horse shoe, a circle of \pm 50km radius around Tamale to the west, north and east. The south limit is formed by the Volta Lake.

The past semester was marked by the rainy season in which no reservoir building was carried out except for the first two weeks of July and and from the latter half of November onwards.

The animation activities were less intensive and were some time impossible because the roads were impassable.

In August and September the project paid orientation visits to 13 villages out of which villages were selected in December for the season '90-'91. A change in the programme, decided upon, during this semester is the higher involvement of the project in fencing.

The main activity was directed this semester on the lay-out of the compound, commissioning the workshop, the official opening of the project and the restarting of the work in the field in November.

Administrative activities were employment of staff, putting up the project proposal for '90-'94 plus its budget, budget monitoring, procurement of goods, finding houses to rent for senior staff, and refining the employment procedures and scaling of recruited staff. During this semester we received 8 applications for dambuilding and 297 applications for employment.

One senior Animator, one snr. Mechanic and one snr. Engineer could be recruited out of these applications but only the animator will start her work at the beginning of January and the others later.

In global terms the expectation is that after finishing the repairs on the constructions in Chirifoyili, Aseyili, Gbirimani and Dimabi, for \pm 4000 people in the new villages, reservoirs will be built. For the 90-91 programme and onwards, \pm 9000 people could be served. With more experienced staff and enough snr. staff the project can raise its production to 10,000 people/year after '90-'91.

Since September 1989, the well digging activities, formerly supervised by TASC, are attached to VWR. The only employee involved, Mr. Albert Monkonsoh, is a public servant detached from the Department of Rural Housing & Cottage Industries (DRHCI) who has worked closely together with the Archdiocese for more than 18 years now. This programme consist of rehabilitation of old wells and construction of new ones in villages through-out the Northern Region. The villages have to pay the costs and the aim is a self-supporting programme.

1.2. Area and Population.

The project started with the same villages of last semester to finish and improve on the constructions of the 1988-1989 programme.

The Animation activities were not extended to more villages than mentioned in the July report. A mistake in the number of people oc-cured in that report so a corrected table will be repeated here in table I.

Table 1: Project villages and population

Village	population		activity 2nd semester 1989	r e m a r k s
	1989	2000		
Chirifoyili	4730(6)	6930 ²	Aprons-spillway, health education aprons, spillway, filling. Health educ. /maintenance educ. aprons, fencing, Health/Maintenance education. fillings, spillway, fencing, maintenance programme.	will finish in Jan/Feb, 1990
Gbirimani	1700(2)	2500 ²		will finish in January, 1990
Aseyiyili	530(2)	700 ²		100% finished
Dimabi	1721(3)	2500 ²		will finish in January, 1990
	1990	2002		
Buyili	225	360 ³	Health Edc./design	
Gariziegu	950(3)	1520 ³	Health Edc./design	
Kpachiyili	337(1)	540	Social Survey	
Yong Dakpem- yili	1344(1)	2150	social survey	
Cheshe	753(1)	1205	none	

1. in brackets the number of subvillages concerned.
2. population 2000 calculated with 3% growth approximately per year.
3. population 2002 calculated with 4% growth per year.

The above mentioned villages are all Dagombas.

During the preparation of the project proposal 1990-1994, we calculated the growth of the population of the census of 1984 towards 2000, 2020 with 4% and the covering percentage of the project.

The results are in table 2.

Table 2 population in the horse shoe

	1984	2000	2020	2040
	x 1000	x 1000	x 1000	x 1000
Population	319	597	1,309	2,869
served by project ¹	0	138 ²	488 ²	974 ²
% of coverage	0	23	37	34
no. people using the project reservoirs	0	138	600	1.613
percentage coverage		23	46	56

- 1 until 1990 the design criteria was 30ltr/day/person, 1990, 50ltr/day/person.

2. The figures give the number of people with enough water.

After the design year more people will use the reservoir than the calculated capacity.

The conclusion is that around 2020 the coverage of people supplied with the enough clean water reaches its maximum coverage.

Further calculations show that around the year 2050 approximately 60% of the population will use V.W.R. project reservoirs but a large number of them will not be supplied with enough water.

If we look just up to the year 2000, only 23% of the population will be provided with enough and clean water. Twenty years later it will be up to 37% but 46% of the population will use the dams and over exploitation will occur then. Thus to solve the water problem of the horse shoe, several projects of V.W.R. size and type are necessary.

1.3. Approach and Procedures

As time goes on, the project policy is refined and adjusted. The main goal remains to stimulate a maximum participation of the recipient villagers. This is done by a 10% financial contribution, providing voluntary labour, shelter and food for the field workers and many contacts through our Animation Section to participate in the design of the reservoirs: The former 300/person contribution did not cover the 10% so we increased it to 1,000. An approximate figure of 9,000-15,000/inhabitant was calculated by the Technical Section being the costs for the first four reservoirs. More precise figures were not available at the end of 1989. The project demands from the villages that 40% of the amount should be paid before any survey can start. Construction will only start after the full amount has been paid.

To organise the labour a new system has been agreed upon and is described in the Animation halfyearly report. It consists of the following elements: The Technical Section plans one week ahead the needed labour. The site animator organises

with the village who should come and when. If people do not come they have to pay a fine of £1,000. When people don't come for three consecutive days, the entire work in the village will be suspended.

1.4. Rural Engineering Activities

In the two following sub-paragraphs the activities which respectively concern technical surveys and designs and constructions in the villages are reviewed.

1.4.1. Surveys and Design

The technical section makes surveys in the field of topography, soil, water quality and hydrology in order to gain data to make proper designs. Combined with the results of the surveys and activities of the Animation Section a good design can be made which results in a Village Water Supply Report (V.W.S.R).

Topographical

In the village of Gbirimani, a detailed survey was done in order to be able to reshape the main valley and avoid high water levels as observed during the 1989 rainy season.

Soil

No soil analyses have been performed.

Water Quality

The Technical Section half-yearly report did not give any detail on this issue. From August onwards analyses of the number of coliforms, p.h., turbidity and number of cyclops have been done on a monthly basis. The samples are taken from the dams, some wells and some traditional wells (improved as well as unimproved) in the villages of Chirifoyili, Gbirimani, Dimabi and Aseyiyili.

In Aseyiyili the sampling started only in November because before that date it was unaccessible. Dimabi was only included in the scheme from November onwards.

Hydrology

A measurement scheme was set up during the last semester. The recording was done in only two of the four villages. Lack of personnel was the major reason for not following the recording and in one village (Dimabi) the man charged with this work travelled while in the entire village (1,500 people) no person could be found who was able to read and write to take over the job. Two automatic level and rain recorders will be used next season to fill those gaps. For Yong Dakpemyili and Chirifoyili data have been recorded.

Designs

In order to correct construction failures and to describe the work that has to be finished on the Gbirimani, Aseyili and Dimabi reservoirs a 89/90 season work-report for those villages has been made. (see annexes T.S. report).

During a 5-week period the head of the Technical Section, back from leave in September, started to make the village water supply reports and finished Chirifoyili, Gbirimani, Dimabi and Aseyili. The animation section took part in the latter three.

New designs for the new villages have not been made during this semester. They have to be made during the coming months, and hopefully designs may finish before execution starts.

1.4.2. Constructions

The works took place in the following villages:

Dimabi

The dam for human drinking water has not been finished and has been prepared for the rainy season at more or less 2.4mtr. below its final level. An emergency spillway was made and, some protective measures have been taken to reduce the water flooding Dimabi Yakura, one of the sub-villages of Dimabi. In the last 5 weeks of December, the embankment was finished but not yet the gravelling and the spillway plus evacuation canal have not been excavated.

The cattle dam got a problem with piping. First the hole was closed with sand bags and an emergency spillway was made. The bags however still left water seeping through and thus creating a bigger hole. This forced us to open the dam and temporary close the hole.

In the very last week of December the work continued and approximately 150mtr. of the embankment rebuilt. Also the emergency spillway was closed. In January the spillway and the deviation of the main stream will be done.

Gbirimani

A heavy rain on 29th June (>130mm) caused the collapse of the Tolon dam. The resulting flood, added to the flood caused by the rain itself, overtopped the embankment of the dug-out. Erosion was the result. It appeared that the main valley was too much closed off by the deposited material of the cattle dug-out and the levels were higher than the map indicated made by the survey department. In July, the valley passage was enlarged and in December the main valley reshaped by pushing back the material to one side of the valley. Furthermore, the broken aprons were repaired, the back-filling of the wells redone and the fence made.

Gate house

A gate house for the shelter of the watchmen was built by the project masons with some help of the carpenters of the building unit of the Archdiocese.

Compound

During the rainy season the drainage system of the compound has been improved. Partly by the excavator and partly by hand labour. Also the final leveling and graveling of the compound has been executed. Some minor works are left to be done like finishing the ramp and a concrete gutter in front of the main store and laboratory. 74 Trees were planted around the compound.

Emergency relief

On the 25th of August the big dam at the water works in Tamale collapsed because of a silted up spillway causing severe damage to the G.W.&S.C water works and the electricity plant. The project assisted to clean up with the yard with a bulldozer and wheelloader for nine days. Also we assisted G.W.&S.C. by making an emergency spillway at the Buipela dam which was over topped on the night of 6th September. The total value of this relief operation was Ø740,000 paid by the project. The flood victims of the 25th August disaster were assisted by providing two trucks and 2 pick-ups for 3 weeks to the relief committee. This relief operation valued Ø665,325.

Aseyili

During the month of December the cracked aprons were remade and backfillings redone. The spillways were improved and earlier the population started to plant vetiver grasses on the embankments.

Lamashegu Dam

In order to be sure of having water to use for the tests of the HRF filter near the compound we repaired with a few hours of bulldozer work the Lamashegu dam which was broken during the rainy season. In December, the water was already so low and the pilot filter plant not yet ready so it is unlikely that we will be able to use this source.

In the following table is shown the estimate on the inputs costs during this semester for the various villages and activities.

Table 3

Investments In Projects
2nd Half-year of 1989

Name of Project	Cost of Equip. & Welldigging Units	Consumed materials	Extra Costs	Lab. In-put Viillage	Total
Housing Compound	119,000	56,500	-	-	175,500
Gbirimani	3,732,450	199,412	50,300	-	3,982,162
Dimabi DWD	990,400	403,880	-	39,800	1,434,080
" CWD	12,796,550	350,028	-	131,800	13,278,378
Aseyili	789,050	30,100	-	-	819,150
Lamashegu	581,800	221,160	-	77,800	880,760
Relief Assist.	36,000	-	-	-	36,000
1) GW & SC yard	606,695	-	-	-	606,695
2) Builpela Dam	133,800	-	-	-	133,800
3) Flood Victims	655,325	-	-	-	655,325
4) Employees	119,000	-	?	-	119,000
Buyili	-	-	-	5,000	5,000
	20,560,070	1,261,080	50,300	254,400	22,125,850

= DFL 138.283,56

1 DFL = Ø150

.../8.

1.5. Animation Activities

This paragraph is subdivided into two parts, 1.5.1. in which a description is given of the major developments in and on the preparation and development of the animation programme; 1.5.2. gives an over view of the activities in the villages. In this report the major outlines are given. For more detailed reading I refer to the Animation Section Half-yearly Report.

1.5.1. Programme Preparation And Developments

For the preparation phase executed in the villages, an elaborate social survey has been prepared and carried out in two villages; Kpachiyili and Yong Dakpemyili. Based upon this experience a shorter survey will be prepared. The elaborate social survey produced data ranging from the fields of, traditional views of diseases, water-use. economic activities, maintenance to remuneration of specialized skills in the villages. The results will be layed down in the Village Water Supply Reports (not ready yet). On-site-observations of water-use habits and the amount of water that is used by various households will start in February.

One member of the animation team was appointed to act as an intermediary between the Technical Section (T.S) and the villagers. New rules have been adopted to make the work more efficient. (see 1.3. Approach and Procedures).

Discussions with the various health institutions and the Water Steering Committee revealed that the project should be responsible for most of its health education programme. As much co-operation as possible between the health institutions and the project should be strived at. This means constant involvement in the development and evaluation of this education by the health institutions. Because of the just recently expressed wish at the National level of the Ministry of Health (MOH) to change the P.H.C. concept, it is not entirely clear which form this co-operation will take.

For the time being, arrangements have been made to do the training for the health education component at the health post in Tolon. Even if the Village Health Workers concept will be totally abolished this training still can take place.

The actual health education programme is composed of the following main topics:-

1. - health education during preparation and construction to;
 - interest villages in health education;
 - give insight why the project attaches such importance to clean water;
 - talk about some basic principles concerning water and diseases;
 - stimulate the villagers to participate in the p.h.c. programme.

2. - Health education as part of the maintenance training programme to;
 - stimulate a proper use of the water facilities;
 - improve the village organisation for maintenance;
 - improve the effectiveness of health talks.
3. - follow-up of health education and maintenance to;
 - guarantee a long-term involvement of the villages in the proper use and maintenance of their water facilities.

In the coming half-year the animation team will prepare additional health talks to be carried out in the villages. Together with the technical team and the health post, a plan will be made about how to do the follow-up visits for the health education and maintenance component of the project.

The project prepared a set-up for the maintenance programme, comprising of a technical (repairs, preventive measures) and a water hygiene/education (cleaning of facilities, discussions about proper water use, village approach and organisation) component. The first maintenance committees have been selected, training for the technical component has already started.

For the monitoring programme the animation team prepared a so-called guinea-worm survey. The aim is to visit every household in a village to collect data on the occurrence of guinea-worm and to estimate how many people use filter cloths. In the coming half-year more guinea-worm surveys will be carried out and the team will pay informal visits to the various villages to see whether and how the new facilities are used.

A calculation has been made that to execute this programme for 10,000 people per year a total of 1260 visits by an employee of the project should be made.

To be able to do all these activities the animation team should expand to 8-10 members. To be able to co-operate with the health institutions to do the health talks and to be able to set up a proper follow-up scheme for the maintenance programme, the section will need additional means of transport (double-cabin pick-ups). Much attention will be given to training facilities for the team members.

1.5.2. Activities in the villages

In this paragraph a summary is given of the activities performed by the animation section in each village in the period July-December, 1989. The villages are clustered according to the constructed reservoirs. Those readers who want a more elaborate description and discussion of these activities and particulars about the construction should refer to the "Village Water Supply Reports" (forthcoming).

1. Gbirimani and Tibogu

- preparation of meetings about the maintenance programme
- selection of maintenance committee
- discussions about fence, wellcovers.

Gbirimani

- guinea worm survey
- slide-show about use of buckets.

2. Dimaba

- preparation of meetings about the maintenance programme
- selection of maintenance committee
- first technical maintenance training (gullies).

Dimabi-Daboyni and Dimabi Yakura

- talk about the primary health care programme by the health educator of Tolon health post.

3. Aseyili and Adumbliyili

- preparation of meetings about the maintenance programme
- selection of maintenance committee
- first technical maintenance training (repairing gullies), planting grasses on damwall, fence)
- discussion of guinea-worm and what the villages have done about it thus far.

4. Chirifoyili area

Kpeninyili and Gbumbaya

- slide show on and discussion of guinea-worm
- story telling and song about guinea-worm

5. Buyili

- slide show on and discussion of guinea-worm
- story telling and song about guinea-worm
- discussion of technical alternatives (locations, separate cattle-water-place)
- talk about p.h.c. programme

6. Gariziegu, Shigu, Chagnayili

- discussions of technical alternatives (location, separate cattle-place, filter system)

Gariziegu

- discussions of possibilities of giving health talks at the school
- talk about pit latrines
- visit to several pit latrines (together with representative of MOH)

Sheigu

- slide show and discussion about guinea-worm

Chagnayili

- slide show on and discussion of guinea worm
- story telling and song about guinea worm

7. Kpachiyili and Nafram

- social survey

8. Yong Dakpemyili

- social survey

9. (together with technical section) orientation visits to 13 villages.

A few of the activities scheduled for the period July-December, 1989 have not yet taken place (see half-yearly section report July, 1989, page 18). This was partly caused by the heavy rains of the last wet season which made the roads inaccessible for a long time.

1.6. Workshop

In the half-yearly progress report July '89 injustice has been done to a very important section of the project - the workshop. Even in chapter four "Project Organisation" the workshop was omitted. This will be rectified here and an apology is in its place.

This semester the main workshop was commissioned and the workshop section can now dispose of 3 facilities;

- a) main workshop at the compound
- b) container workshop (C.W.S) at the site
- c) mobile workshop (M.W.S) at 2nd site and main workshop.

At the main workshop, the administrative, logistic and construction activities and the major repair of the plant are executed. The C.W.S. and the M.W.S. at the 2nd site are used to do the regular maintenance of the plant. Except for the ramp and the pit in the workshop all infrastructure is ready now and the

equipment, airlines etc installed.

The arrival and taking into use of 6 new motobikes, increased the work at the workshop. At the C.W.S., an experienced mechanic plus an assistant mechanic are working but have to make much overtime to be able to maintain the plant without interrupting the work on the site.

The performance of the plant will be given in the following table 4. Especially the mechanic availability is an indication of the workshop efficiency. This figure is influenced not only by the speed and effectiveness of the repairs and maintenance done but also by the availability of spares. It is too expensive to have all spares in store here and a choice of what should be kept in store has to be made. Most often just that part which is not in store spoils.

The column efficiency is an indication of how effective the T.S. can organise the work. This is also influenced by factors even the best organiser cannot influence like: lack of the specific work to be done by that equipment; This is specially the case with the lowloader, water pumps and air compressors.

The table is in two parts, 1 for the 3rd quarter and one for the 4th quarter, because of the fact that the 3rd quarter is the dead season.

Table 4

UTILISATION OF EQUIPMENT
3RD QUARTER - 1989

NO. of Equip.	T Y P E	Total shift hours	Total operation	Mech. available	Eff. rate %	Mech. utilisation
1	Wheelloader 936E	489	150	100	95.5	30.7
2	Bulldozer D6H	440	3	100	100	0.7
3	Bulldozer D6H	440	28	100	100	6.4
4	Excavator 215	511	132.5	99.25	76.4	25.9
5	Compactor Bomag	437	34	100	35.8	7.8
6	Tipper DAF 1800	460	118.5	100	88.1	25.6
7	MPT DAF 1800	449	94.5	85.5	64.7	21.8
8	MPT DAF 1800	450	99	92.5	62.3	22.4
9	Motor Pump Tr3/J156	445	8.5	60.7	8.8	1.9
10	Motor Pump LV1/J70	452	13	100	4.9	2.9
11	Compressor IR	440	0	100	-	-
12	Compressor IR	440	3	100	3.1	0.7
13	Low Loader	445	38	100	36.9	8.5

4TH QUARTER - 1989

1	Wheelloader 936E	493	221	100	82	45
2	Bulldozer D6H	485	132	87	70	28
3	Bulldozer D6H	491	172	96	75	36
4	Excavator 215	498	220	100	83	44
5	Compacto Bomag	508	186	100	69	37
6	DAF 1800 Tipper	500	259	97	86	53
7	DAF 1800 MPT	507	271	95	87	55
8	DAF 1800 MPT	528	322	100	86	61
9	Motor Pump TR3/J156	480	0	100	0	0
10	Motor Pump LV1/J70	480	0	33	0	0
11	Compressor IR	486	91	88	47	19
12	Compressor IR	483	123	100	54	26
13	Low Loader	480	24	100	11	5
14	Compaction Plate	283	90	100	43	32

Note: Mechanical availability is the rate between total work hours and total work hours minus break down periods.

- Efficiency rate is the rate between work hours and total of hours that it could have worked if it had not broken down or was standing still because of weather or leaves.
(work hours/work hours + idle hours)

- Mechanical utilisation is the rate between total work hours and total shift hours minus break downs.

The spare parts have been moved to the workshop store as well as the special tools.

The machine workshop, tyre/battery workshop and the office room for the workshop manager and his assistant are being used now.

The comments made in the section report of the workshop reveal that the Mobile Workshop Van was not equipped in a good way. Infact, most of the items additionally fixed in it are not useful. Also the ground clearance is not enough for the very bad roads we meet.

Performed work

Apart from the normal maintenance and repairs, the workshop made several constructions for the compound and site.

They were: rehabilitation of two old tanks, one for water, the other for diesel, an apparatus to remove tyres from the rim, equipped two site containers with shelves, cupboard and mounts for tarpoline to fight the heat, work benches for the main workshop, welded ribbons on the teeth of earth moving equipment to let them last longer and adapted the lowloader with a cable compartment and special pulling device.

The designs were normally made by the workshop manager. Further more, the workshop manager co-ordinators all orders from the different sections to be placed as well as the reception of goods from containers coming in.

1.7. Additional Activities

In July, an end of year party was organised by and for project staff. The project supplied the drinks and food. The party was also attended by Martine Benschop of CEBEMO, Mark Attabeh and the evaluation team, Mr Alex Meerburg, Mr Von Asigre and Mr Ben Anamoh.

In August and September the T.S. and A.S. jointly made 13 orientation visits to the villages which requested for help. Although the condition of the roads were very bad in many cases, the villages could be reached; thanks to the fact that the A.S. had her Nissan Patrol Station Wagon 4WD and could even under rains transport the team of 6 persons.

During the works on the compound a volley ball field was made to stimulate the phisical health of the workers. A volley ball team was formed and a match played against a team from Vittin Estates which we won.

On 4th November, 1989 official commissioning of the project infrastructure took place. Many official from churches, ministries, villages and other organisations attended the opening. By means of slide show, video (many thanks for that to Fr. Clement) and photographs, all the activities and aims of the project were shown to the public. The opening drew attention of the papers in Ghana and later on in November it appeared on the National Television network. As a result, the influx of applications for employment and water supply increased.

1.8.

Results and Conclusions

The constructions at Aseyili, except for a future filtering system, have finished at the closure of this semester. In Gbirimani and Dimabi the works will finish in January or February, 1990. Chirifoyili will start soon and finish in February. This concerns mainly improvements on backfillings of wells, repair of cracked aprons and improvements of spillway with the exception of Dimabi Drinking Water Dam which was only partly finished.

In the coming dry season, 1990, the villages of Chirifoyili, Gbirimani and Aseyili will drink from their drinking water reservoirs. The Dimabi population has to rely on their cattle dam this year. This means that 7400 people have been served with drinking water and 1860 people rely on the Dimabi cattle reservoir totalling 9260 people. These reservoirs are designed for the year 2000 during which 12440 people can make use of these facilities. In the coming year, 5 new villages will be served totalling a population of 3609 people and in 2002 (design year) 5775 people. When the project serves more or less 9000-10000 people per year and a design period of 12 years, in 2020 23% of the population of the horseshoe will then be served. This figure grows until 2040 to 37% after which it will decline. Changing the design period to 20 years will surely positively influence these figures but not very much. Other institutions should come in too if all the problems of drinking water must be solved in the next 30-40 years!

The village contribution per head of a population has been raised to $\text{Ø}1000$ to reach the 10% of financial contribution. Not many topographical and soil surveys have been executed. The hydrology survey is only executed for 50% because of inaccessibility and lack of literate people.

The water quality survey was done in 2 villages till November and afterwards in 4.

Village water supply reports of the first four project villages (Chirifoyili, Gbirimani, Dimabi and Aseyili) are almost finished but not yet printed.

The compound lay-out has been finished except for some minor works and the building of the ramp is the only construction to be made.

This rainy season was a very wet one. Emergency relief was given to G.W.&.S.C. and the regional relief committee to a total value of approximately $\text{Ø}1.400,000$.

In total $\text{Ø}22.125,850 \pm \text{DFL } 138,286$, being the costs of equipment and materials, were invested in the villages. The labour input of the villages valued $\text{Ø}254,400$ which forms part of the above mentioned amount.

The A.S. made and tested out an elaborated social survey and will compile a new, shorter one based on the experiences. The A.S. continuously worked to set up new talks and programmes among which is the maintenance education programme.

A major important decision taken by the Water Steering Committee was that the Health education will remain under the project.

An estimation of visits was made and revealed the need for 8-10 staff and an extra vehicle to be able to serve 10,000 people with the complete programme.

The A.S. worked in total in 16 villages this semester.

Finally the main workshop is finished and taken into use by the mechanics. The ramp has to be built next year. The workshop manager and his senior assistant have their own office now. The workshop made several tools and adapted 2 site containers, the low loader and the teeth of the earth moving equipment. Furthermore, all kinds of T. Joints, strainers, Floaters and well rings are made. The container workshop is now transferred to the site. The efficiency rate of the main equipment is approximately 80%.

The project is expanding in activities but the number of people in new villages this year is rather low; 3600 people. This has its roots in the fact that rather small villages are selected and finishing of the four project villages of 1988-1989 takes up to January and February, 1990. End of this season a total of 12,800 people will be served and in 2002 18,215 people will still have a reliable water source.

The Animation Section keeps step now with the Technical Section, although the reporting is still behind.

2. RELATION ARCHDIOCESE - V.W.R. PROJECT

2.1. Aarchdicesan Development Committee (ADC)

The ADC met once this semester on 3rd November, 1989. The most important issues concerning the water project were:

- nomination of Mr David Millar into the WSC to replace Mr Jim Myers.
- during the discussion Mr D. Millar stated that according to him the co-opted members (the SAWA Staff) had together 1 or 2 votes. This was later on found not to be so (see minutes of WSC of 4:8:88 and endorsed in the ADC meeting of 30:8:89).

2.2. Water steering Committee (WSC)

The WSC met 3 times this semester on 18/10, 6/11 and 19/12. Because of the departure of Jim Myers, he was replaced by David Millar as a member of the WSC

The following issues were discussed:

- any new reservoir will be implemented only after a complete water supply report has been made.
- Mr Mark Attabeh in his function as chairman wanted to be kept regularly informed about the itinerary and work programme from the Technical and Animation Section.
- opening of project
- co-operation with health institutes. Several times.

In the meeting of 19/12 the WSC decided that for the next 3 years the project could not hand over the Health education because of:

- 1 the approach for this work is very intensive in the first year and this cannot be met either by MOH or by Holy Cross team
- 2 the Holy Cross team is still in a period of transition from the curative health care to primary health care
- 3 the Holy Cross focussed on the Holy Cross Parish
- 4 people from MOH cannot stay a period long enough to be able to do the work correctly (frequent transfers)

The decision was that the project should initiate the health and hygiene education and after 3-4 years some of the V.W.R animators will be transferred from VWR to the Archdiocesan health activities.

- no project equipment should be hired out even when it is paid for, except when the project cannot refuse.
- use of village contribution to pay rent and renovate houses for senior staff
- the procedure to follow when the performance of senior staff needs improvement

- a special meeting was held about what to do in the case of the senior animator. Later on the staff member decided to resign because it would harm the smooth operation of the Animation Section.

It was discussed who should be the direct employer: Bishop/project - no decision has yet been taken.

- The project proposal and budget for the project from 1990 to 1994.

Main points were:

- 1 the capacity design will be for 20 years in future
- 2 an extra truck will be included to realise at least a production capacity for 10,000 people a year
- 3 new offices are needed
- 4 houses for senior staff should be built
- 5 the fencing activities have to be included in the normal construction programme of the project
- 6 a maintenance unit to stimulate maintenance and repairs should be set up.
- 7 the project should insist on 10% cash contribution from the villages
- 8 the WSC will analyse every year if and when SAWA staff can hand over their responsibilities to senior staff after which for i.e. a year or shorter the SAWA exp. is an advisor.

- Selection of villages for 1990/91

7 villages with an estimated population of 7,600 people were selected. It is possible that to reach the 9000 people another village further away in another part of the horse shoe will be added. In the light of the delays with the start of new villages this season (up till 31/12 we only worked in last year's villages) it is not sure that all five new villages of this year (Buyili, Kpachiyili, Garisiegu, Cheshe and Yong) can be finished.

2.3. Primary Health Care

Important decisions have been taken concerning this activity. Several meetings with the MOH and Holy Cross team were held. Whilst in Sept/Oct it seemed to have a positive result in the form of a nurse who would be charged with the maintenance and hygiene education, later she withdrew because of several reasons. This all ended in the decision of the Water Steering Committee that it would be better that the project develops and implements all health education and maintenance education for the time being by itself. All parties involved (V.W.R., W.S.C., MOH and H.C. PHC unit) emphasize on necessity for a strong co-operation and involvement in the preparation of educational programmes by regular deliberations. For a comprehensive description of the contents of the health education programme and its purpose I refer to the half-yearly report of the Animation Section.

2.4 Parishes

Through the well digging activities the project has regular contacts with the Salaga, Saboba and Guseigu Parish. The main well digging activities are centered here this season. Also several contacts were made with Holy Cross Parish in relation to our work in Cheshe, Gariziegu and Yong Dakpemyili.

The project manager visited Damongo Parish to advise them on the repair of a little dam at the east entrance of Damongo.

2.5 T.A.S.C.

Good relations continue and exist between us and our neighbour TASC. We have continued to supply water and electricity. In relation to the electrical supply it was agreed that TASC pays 1/3 of the running cost of the generators. Although the electricity consumption is not being measured the feeling exists at VWR that TASC does not consume 1/3 of the electricity. While preparing the bill, the project will try to analyse what should be the correct percentage of costs charged to TASC.

2.6 National Catholic Service (N.C.S.)

No special remarks can be given on this subject. NCS delivers their services like handlings for exemption, visa, clearing of goods and communication services; post, radio and telex. NCS cleared container 10.

2.7 Tamale Archdiocesan Development Secretariat (TAMADEVS)

In the half-yearly report of July 1989 nothing was mentioned about TAMADEVS. The reason was that its co-ordinator, Mr Mark Attabeh, is also the chairman of the WSC. Regular contacts exist but it is difficult to point out in which function Mr Attabeh is then acting. It is most of the time in both functions at the same moment. Valuable pieces of advice and rich discussions on every aspect of the project activities are common and support given to the project staff to steer to the better interest of the project.

2.8 Others

The project attended a leadership course organised by the women and development project to analyse if the project could also use it in its work. The result was negative. (see A.S. Report)

2.9 Conclusions

The ADC was not very active this semester (one meeting). In the 4th quarter the WSC was highly involved in commenting on the project proposal for the next phase of the project.

Employment and dismissal procedures for senior staff was a main topic. A change of TOR of the WSC discussed several times but has not yet been realised.

Good and regular contacts exist with all the other persons within the Archdiocese like Bishop, Vicar General, other Priests, the Bursar etc but these are of no major importance to specify here. Furthermore contacts were made with various institutions.

3

EXTERNAL CONTACTS

3.1. Ministry of Health (MOH)

Several meetings were held with the District Medical Officer in connection with the set-up and programme of the health education. Also the Tolon health post as well as the Holy Cross phc unit are involved in these talks. No final programme has been established yet.

3.2. G.W. & S.C.

During this semester very intensive contacts were established just after the disastrous dam collapse in Tamale on August 26th. The project assisted G.W.&S.C. in desilting the water works compound for 9 days with an excavator and wheelloader. A week later, a rainstorm of more than 130mm caused overtopping of another dam in Tamale, the Buipela dam. But the damaged dam fortunately did not collapse. The GW&SC expressed their gratitude in words and writing and this assistance did grow the trust GW&SC has in our work.

3.3. A.C.D.E.P.

The project, through its Animation Section, assisted in two ACDEP meetings. ACDEP is making an inventory of the wishes and most felt needs of the various health and water projects in order to develop relevant training courses. The senior animator, who left in December, was a member of the sub-committee analysing this. The project did not participate in a week workshop for agricultural station managers because the content was not relevant to the project.

3.4. PNDC SECRETARIES

During the official opening, the Deputé Regional PNDC Secretary, the District Secretaries of Tolon and Tamale visited the compound and were comprehensively informed about the project. This event gave a very good insight to the representatives of the government in the Northern Region about the whereabouts of the project according to their statements.

All those officials congratulated the project for its achievements and forwarded their offer to assist the project in its work or to resolve problems.

3.5. Norrip

No specific contacts were made with Norrip except that several officials attended the official opening of the project.

3.6.

Others

The project visited two borehole projects (Wenchi and Bolgatanga). The head of the animation and head of the technical section made the visits and found them very fruitful. The half-yearly reports do not give any further information about the result. A short oral report was done by the Animation Section head and showed that good animation is essential to make any technical input in villages viable. Especially in the Upper West Region many boreholes did not function any more before the animation activities started there. It also was felt that mentality changes take long time before the population really accepts and implements new ideas. Starting in time with animation activities is very important and seek for procedures to be able to maintain them over several years although results cannot be measured at short intervals.

The project contacted the MOH which is setting up a guinea worm and bilharziosis laboratory with Danish help. We agreed that the laboratory would execute the monthly sampling as from January onwards against the additional costs they make. (see Annex 1).

In November Mr Wegelin from IRCWD Switzerland visited GW&SC and the project. The head of the Technical Section and the project manager together with the laboratory man attended a workshop on Horizontal Filtration, lectured by Mr Wegelin at U.S.T. in Kumasi. It was very useful and the project gathered new ideas from it. For more specific information I cannot refer to the half-yearly T.S. report because it is lacking.

The welldigger did for the programme of rural action (a GTZ-Norrip activity) a training of village welldiggers in December. More training courses are due to be organised in January. Also one training is planned for the Anglican Church.

Since November several contacts were made with UST of Kumasi but has not yet resulted in any specific action. For the moment, it was limited to exchange of information on activities of the project. It appeared that the university did not send any students out for practical periods. Students do a theses at the end of their 2nd year but the distance to Tamale would be a problem for UST to monitor such a project.

Sometimes lecturers can perform consultancy services outside but have to be con-ordinated by the head of department. Up to date, it was not possible to contact the dean to establish further co-operation. Contacts with several house owners were made to rent houses. To date, one rent contract has been established and oral agreements made for four houses.

3.7.

Conclusions

The external contacts are very diversified. The contacts with the key organisations like GW&SC and Norrip are not very intensive, but informal and good. The contacts with UST Kumasi and the University of Ghana, Legon are not yet operational.

The welldigging activities joined the project but was directed to preparation and training.

4.

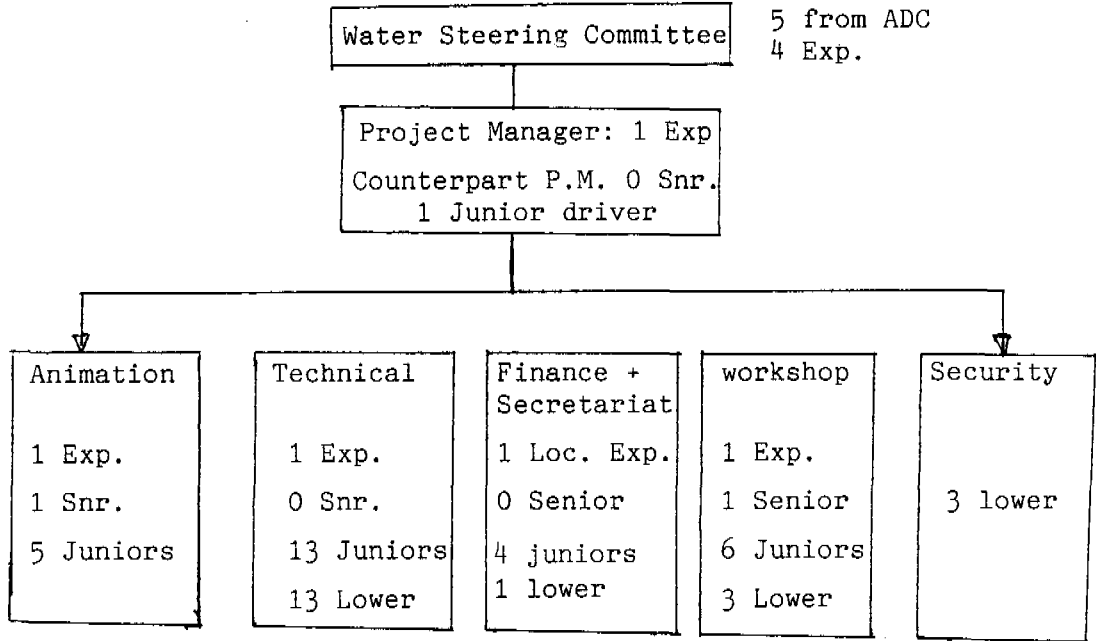
PROJECT ORGANISATION

This chapter deals with the internal organisation of the project. The changes of the organisation charts will be specified below as well as the actual and needed personnel.

4.1.

Management

The organization chart for the project is as below:



In total the actual staff is 5 expatriates and must be in future

	2 Seniors	8 Seniors
	29 Juniors	33 Juniors
	20 lower	21 Lower
	—	—
	56	62 Staff
	==	==

4.2.

Administration

No changes have been made during the last semester.

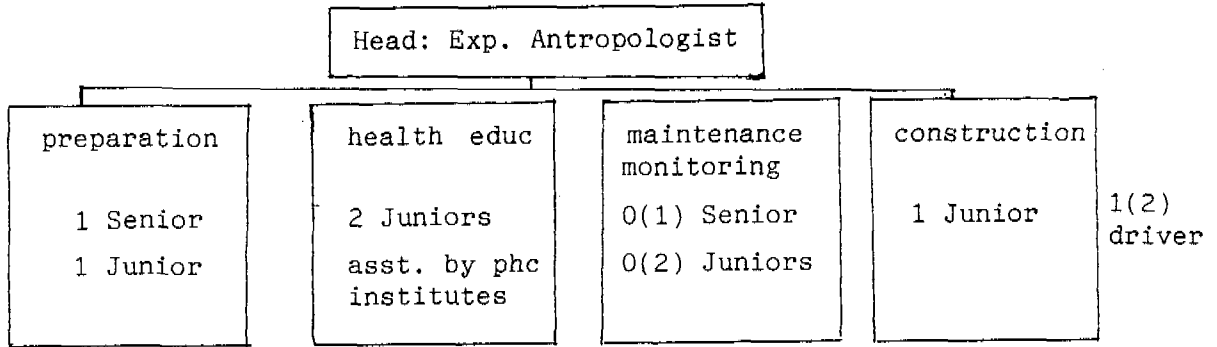
From the moment that the radio's will be installed in the different cars and on the sites and the workload of the bookkeeper increases, a radio operator/clerk will be employed. This will take place during the coming semester. The radio operator will also operate the photo copier and binding machine.

For the organization chart I refer to the former half-yearly report of July, 1989.

4.3. Animation

The number of workers in this section increased during this period from 3 persons in total to 7.

In the half-yearly report of the section a clear insight is given of the workload for the section requiring a new set-up of totally 11 people. The following organisation chart is presented below:



In brackets is the required number of personnel who will probably be employed coming semester.

The Senior, started earlier this year, will leave the project but a new Senior, Miss Fati Mumuni will start in January.

4.4. Technical Section

The new season with much work ahead led to the filling of vacancies. We employed a second foreman, the laboratory assistant, 3 assistant drivers, 1 pump operator, 1 plate compactor operator and 1 labourer. The only vacancies remaining are the two senior engineers, the operators of the compressor units and the third mason unit.

We have had several applications for the post of senior engineer and interviewed 4 people. We found two good candidates. One will start in February, the other is coming back from a mission abroad and will contact us in January.

The actual staff in the Technical Section totals 27 but it is planned to be 33.

4.5. Workshop Section

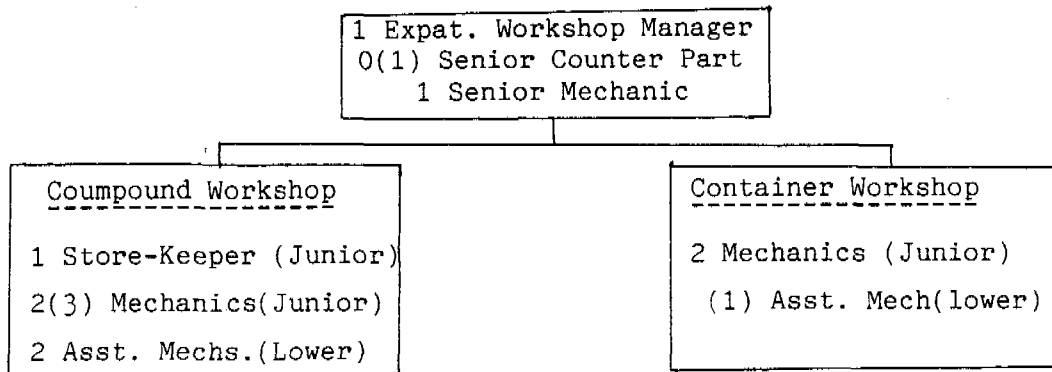
During this semester, a store-keeper and assistant mechanic were employed.

The senior mechanic is not performing so well that within a reasonable time he could overtake the workshop manager's tasks. On a contract basis we will try another candidate who has good credentials.

The half-yearly report of the workshop section brought to light that a further extension of the personnel is necessary. We need an electrical mechanic and another assistant mechanic. One assistant mechanic/welder performed so well that he was promoted to full mechanic.

The workshop organisation chart is given below:

Organigramme Workshop Section



NB: the numbers in brackets are the required numbers needed when the project is working at full capacity. In September we welcomed two trainees from Nandom Technical School to do their practical work. The Workshop was very satisfied and we will continue these trainings.

4.6. Infrastructure

The building activities of the Archdiocesan Building Unit were: The finishing of the main workshop, plastering, roofing and putting a door in the gate house built by the project masons, putting rain gutters on the two staff quarters, making the washing bay, finishing the water system and several crack repairs in the buildings. The ramp could not be finished because of the high ground water table which is the same for the pit in the workshop. The gutter in front of the entrance of the main store and laboratory has not been executed yet. The graveling of the compound is finished except for some minor works around the ramp which will be done later.

The bill for the telephone connection has been paid and regular pressure is put on P&T to establish the line. Up to date the connection has not been realised. Since December the water supply by GW&SC pipes is regular.

4.7. Purchase of Project Goods

The workshop manager monitors the ordering and taking the delivery of goods. A review is given in Annex 2, Orders and Delivery of Goods.

The total duration between sending off the containers by Jim Roth, DPA, and arrival at Tamale takes 2-3months for TAAP transported containers and 1.5-2months for CAP containers. The flow of incoming goods through DPA is generally satisfactory. Some times small orders delay and is mostly due to the supplier and not DPA.

4.8. Transport and Equipment

The motorbikes and 5th Nissan patrol station wagon arrived during this semester.

The mechanical use of the equipment was low during the 3rd quarter because of the seasonal stop of work due to the rains.

A new measurement was introduced; the efficiency rate.(see table 4 par. 1.7). This rate is normally not 100% because it is not always that there is work for every machine. Nevertheless, the rate can show improvement or deterioration of the efficiency of work planning by the technical section over a longer period.

Below a list of the rolling fleet and engines is given:

List of rolling fleet and engines as at 1:1:90

Description	brand	type	quantity
Wheelloader	caterpillar	936 E	1
Bulldozer	"	D6H	2
Excavator	"	215 C	1
Compactor	Bomag	172 d	1
Tipper truck	DAF	1800	1
Multipurpose truck	DAF	1800	2
Motorpump	Lister	TR3/J156	1
"	"	LV1/J70	1
Generator	"	27,12,7KVA	3 (1 TASC)
"	Yamaha	4.7 KVA	2
Aircompressor	Ingersollrand		2 (2 TASC)
4WD pick-up	Nissan	Patrol	2
4WD Station Wagon	"	Patrol	3
Motorbike	Honda	100	4
Motorbike	"	125 XL	6
Concrete mixer	Briggs & Stratton		3
Plate compactor	Bomag	BPR 50/55D	1

4.9. Conclusions

Although July, 1989 half-yearly report mentioned that the project was at the stage of stability, several changes in the set-up and final staff need have taken place. As was estimated that finally more or less 55 people would work in the project the forecast is now 62 people. I think that for the coming one or two years, this figure should not be changed. The project personnel should be trained and become a smooth turning team in which the different sections are fully performing a team work.

This means fulfilling the actual open places and try to get the maximum output of 9,000-10,000 people per year served with good drinking water.

5.

FINANCES

This chapter gives in par. 5.1 a review of the expenditure and balances as at 1:1:1990 extracted from the comprehensive financial report made by SAWA the Netherlands. Paragraph 5.2 will give an evaluation and explanation of the financial data. Paragraph 5.3 will give an idea of the expected expenditure of the 1st semester of 1990.

5.1. Financial summary of expenditure 1987 - 1989

Table 5 gives a summary which indicates that after 2.5 years of project execution 81.7% of the Budget is spent. The budgeted expenditure for the first semester of 1990 is DFL 548.079 out of a remaining fund of DFL 1,031,964.34 of which, the contingencies figure out DFL 26,099 and DFL 249,074.64 respectively.

On two codes the budget has been exceeded being inventory (420.1) DFL 10.300,- and means of transport (430) DFL 76.750,-. The exceedance of code 420.1 is unexpected for the staff in Ghana. The expenditure for the first semester was DFL 18,000 higher and for the 2nd semester DFL 15,500,- higher than expected. The exceedance comes from payments made in the Netherlands.

Table 5.

Financial Summary (in DFL)

Code	Description	1986 + 1987	1988	1989	Total	Budget Until 1:7:1990	Balance
211	Time costs SAWA	125,161.-	389,560.-	470,720.-	985,441.-	1,215,340.-	229,899.00
213	Mission costs	900.00	3,805.00	2,445.00	7,150.00	18,000.00	10,850.00
214	Expat training	1,500.00	-	-	1,500.00	2,000.00	500.00
215	Lodging	3,570.00	3,570.00	3,570.00	10,710.00	10,710.00	-
216	Reporting costs	1,650.00	2,250.00	3,382.49	7,282.49	16,000.00	8,717.51
218	Travel costs	1,644.00	1,923.00	684.87	4,251.87	9,200.00	4,948.13
241.3	Local staff	4,464.22	50,287.80	109,898.18	164,650.20	224,900.00	60,249.80
260	Handed out work	2,101.00	81,057.14	644.72	83,802.86	232,166.41	148,363.55
290	Miscellaneous	5,660.00	769.81	240.49	6,670.30	9,000.00	2,329.70
410	Building & Const.	283,204.54	219,114.18	18,471.21	520,789.91	569,117.40	48,327.49
420.1	Inventory	38,849.86	115,974.06	51,468.62	206,292.54	196,000.00	-/- 10,292.54
420.2	Equipment	631,383.11	719,498.39	208,843.48	1,559,724.98	1,588,382.60	28,657.62
420.3	Construction Mat.	57,400.55	43,423.14	90,105.96	190,929.65	265,000.00	74,070.35
420.4	Eg./Mat. Water/Wells	63,216.73	7,863.15	18,631.14	89,711.02	91,000.00	1,288.98
420.5	Eg. Surveys	40,777.57	56.02	4,832.95	45,666.54	46,833.59	1,167.05
430	Means of transport	174,076.03	1,273.68	75,394.02	250,743.73	174,000.00	-/- 76,743.73
510	Running cost off/WS	1,722.98	6,000.01	14,003.18	21,726.17	25,000.00	3,273.83
520.1	Fuel	1,960.37	48,345.09	40,412.49	90,717.95	255,650.00	164,932.05
520.2	Lubricants	1,524.19	9.86	20,452.02	21,986.07	64,000.00	42,013.93
520.3	Maintenance/Repairs	-	105,116.56	218,818.81	323,935.37	357,500.00	33,564.63
590	Various costs	-	-	8,476.77	8,476.77	15,250.00	6,773.23
800	Contingencies	-	4,689.64	-/-5,521.38	-/- 831.74	248,243.00	249,074.74
	TOTALS	1,440,766.15	1,804,586.53	1,355,974.02	4,601,327.68	5,633,293.00	1,031,965.32

The over-expenditure on means of transport (430) is accordingly the decision mentioned in the correspondence 13:4:1989 from SAWA to Cebemo and of 25:9:1989 from project to Cebemo both based on the decisions of the Water Steering Committee.

5.2 Remarks on expenditure

In this paragraph, a comment will be given on the respective codes where a comment is useful to explain under or over expenditure.

211 Time costs

In the first semester of 1987 one over expenditure of DFL3,181,- was made and will result in a similar over expenditure at 7:7:1990.

241.3 Local staff

The expenditure are considerably increasing, caused by the employment of new personnel and the improvement of senior staff conditions. Also the rent for houses of senior staff is paid by this code but will be covered by using part of the village contributions. These contributions until December 1990 (DFL 21,983.93) will be rebooked to this code. This will then avoid over expenditures.

260 Handed out work

After the decision of the WSC in September, 1988 to purchase own equipment this post is only charged for little handed out jobs. A considerable amount will remain at 1:7:1990.

410 Building and construction

A slight over expenditure will occur in the 1st semester of 1990 caused by the final payment to the White Fathers in the Netherlands of supervision fee. The final payment will be slightly more than the actual balance on 1:1:1990.

4201 Inventory

Unexpected expenditure totalling DFL 32,500.00 occurred during the year of 1989.

In Ghana, it is not known why this occurred. Still the purchase of a video equipment is foreseen totalling more or less DFL 15,000.- resulting in an over expenditure of DFL 26,000.-

4202 Equipment

In the coming semester another concrete mixer, one or two trench compactors should be bought. (DFL 25,000.-50,000).

4203 Construction materials

The balance of DFL 74,070.35 will not be used completely but for a large part by ordering materials for the end of the 1st semester and the starting of '90-'91 work season.

430 Means of transport

In Annex 3 a comprehensive explanation is given of the future activities of the project during which transport means are necessary.

In the coming semester no purchases are foreseen. The actual over expenditure was unavoidable to guarantee the implementation of the project and the employment possibilities of senior staff.

510 Office costs

The expenditure in 1989 of DFL 14,000 will continue almost in the same rythmn in 1990. An over expenditure of DFL 2,000-DFL 3,000 can be expected in 1:7:1990.

520.3 Maintenance and repair

The expenditure of 1989 on this code is approximately DFL 49,000-more than expected based on local expenditure and estimate prices of orders in the Netherlands. Most probably prices are under estimated (esp. DAF parts) and some late payments of order from 1988 are included in this amount.

It is expected that no balance will be left on this code at 1:7:1990.

Other codes

No comments are to be made on codes; 213, 214, 215, 216, 217, 218, 290, 420.4, 420.5, 520.2, 590 and 800.

5.3. Expected expenditure 1st Semester 1990

The following table 5 gives an estimate of the expected local expenditures and amounts involved in orders placed in the Netherlands.

Table 5.1 Expected Expenditure 1st Semester 1990

Code	Description	Local	Netherlands	Total
210	Time costs a.o.	28,000	240,000	268,000
240	Local Personnel	83,000	-	83,000
260	Handed out work	10,000	-	10,000
290	Miscellaneous	2,000	1,000	3,000
410	Building	4,000	50,000	54,000
4201	Inventory	6,000	18,000	24,000
4202	Construction Equipment	-	40,000	40,000
4203	Construction Materials	7,000	32,000	39,000
420.4	Equipt. Water Supply	1,500	3,000	4,500
420.5	Survey Equipment	-	-	-
430	Means of transport	-	15,000	15,000
510	Office costs	4,000	3,000	7,000
5201	Fuel	52,000	-	52,000
5202	Lubricants	12,000	-	12,000
5203	Maintainance & Repair	13,000	70,500	83,500
5900	Various costs	2,000	1,000	3,000
		224,500	473,500	698,000

6. OTHER PROJECT INPUTS

6.1. Back stopping from the Netherlands

From the SAWA Head Office the following backstopping came to the project:

- Finding of literature on several topics (Workshop, Animation)
- note on the annual run-off in small catchment areas
- several correspondences on HRF filters and a report on a study on HRF with the title 'Design of appropriate water filter on community level, possibilities for a HRF' SAWA publication.
- the editing of the project proposal for the 2nd phase 1990-1994 based on the data from the project and decisions made by WSC.

6.2. Training

The training and courses mentioned in the July, 1989 report have been implemented. The courses were very much appreciated by the staff concerned.

Ongoing is the English training for some of the animators and Dagbani training for the A.S. Head. Several employees who had to use motorbikes for their work are trained by two of our drivers.

Last but not the least in every section on-the-job training has been implemented.

6.3. Seminars

In November the Head of T.S., the Project Manager and the laboratory technician attended a one day workshop on Horizontal Roughing Filtration. It was held at the Kumasi University of Science and Technology. The workshop and the discussions with the Lecturer, Mr M. Wegelin, were very interesting. It initiated the final plan on how to put up the pilot plant for an HRF.

7. PLANNING

7.1. Animation Section

The setting up of new education programmes and the improvement of existing ones is a continuous process.

The following plans have been adopted:

- revised social survey to be finalised in February.
- gain more insight in water-use patterns and quantity
- numbers of cattle and animals
- evaluation of actual organisation of village labour at the middle and end of construction season
- development of health talks
- working out the village approach and organisation component of the maintenance programme and a first try out in March - April, 1990.
- programme for the technical training at the dam site
- monitoring activities as:
 - guinea worm survey
 - observation of how wells and aprons are kept clean

Table 6 gives the summary of the activities in the different villages

Table 6. Planned Activities

Village	Activity Preparation		HE	Main-tenance	Const.	Monitoring
	Social survey	Discus-sions				
Gbirimani			x	x		x
Tibogu			x	x		x
Dimabi			x	x	x	x
Aseyili				x		x
Adumbliyili				x		x
Gariziegu			x	x	x	
Sheigu			x	x	x	
Changyili			x	x	x	
Buyili			x	x	x	
Yong Dakpemyili	x	x	x		x	
Kpachiyili		x	x	x	x	
Nafram		x	x	x	x	
Cheshe	x	x	x		x	
New Villages	x*	X*	x*	x*	x*	

* Depending on when the rains will start, construction of a reservoir may start in one or a few of the 'new' villages as well. The social survey should be started in part of the villages in which the project will work next dry season.

7.2. Technical Section

A lot will depend on the availability of senior staff. The actual head of section will leave the project in May. It is hoped that SAWA will be able to send the successor already in April so that a good handing over is possible.

Table 8 gives a summary of activities per village for the first 18 weeks.

Table 8

Village	Work	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Dimabi	Embankments CD+HD	2 <u>Cu1</u> 4																	
Gbirimani	Wells, fencing, well aprons, clearing, valley, fencing	2 <u>CU2</u> 5																	
Chirifoyili	Well aprons, downstream slope embankment, improvement spillway	5 <u>CU2</u> 10																	
Carishiegu	Entire construction	5 <u>CU1</u> 12																	
Buyili	Entire construction	5 <u>CU2</u> 12																	
Kpachiyili	Entire Construction	10 <u>CU 2</u> 18																	
Yong Dakpenyili OR Cheshe Or Yepiligu	Entire Construction	13 <u>CU 1</u> →																	
Buyili	Finish plans	2 — 5																	
Carishiegu	" "	2 — 5																	
Yong/Cheshe/Yepiligu	" "	5 — 12 — 16																	
New Selected Villages	Top & Soil Surveys	5 — 16																	
Workshop	Pilot HRF plant	2 — 5																	
Yong	experiment HRF	6 — 15																	

CD = Cattle Dam

HD = Human Drinking Water Dam

CU = Construction Unit

7.3. Workshop Section

The planning of the workshop is rather simple. The work of the mechanics is the normal maintenance and repairs if necessary.

Special activities are:

- Construction of pilot Horizontal Roughing Filter on the Multi-purpose truck loading platform.
- Overhaul of 2nd generator (the Tasc generator) as soon as the part book is in.
- Construction of winch installation on rollers
- Putting windows and louvers in the gate house
- Re-arrangement of electrical phases to the different buildings of the compound.

7.4. Management

Priorities for the management are:-

Finding Senior Staff - 2 Engineers as soon as possible

Recruiting an accountant - in April/May

Getting houses to rent for Senior Staff 2 in January, 2 in February, 1 in March, 2 June

From April onwards any start on dam building should be preceded by a complete technical document and animation field work should be in pace with TS work.

From next season onwards (November 1990) any new reservoir building should be preceded by a complete water supply report.

Last but not the least: the new proposal for phase II (90-94) must be worked out, discussed and accepted by the Funding Agency before 1/7/90 in order to guarantee a smooth continuation of the project..

List of annexes

1. Agreement between MOH, GW Laboratory and VWR
2. Orders and delivery of goods
3. Needs of means of transport
4. Apply carts.

AGREEMENT BETWEEN THE MINISTRY OF HEALTH AND THE VILLAGE
WATER RESERVOIRS - ARCHDIOCESE TAMALE - NORTHERN REGION
- BEGIN FROM JANUARY, 1990

The Ministry of Health/Danish Bilharziasis Laboratory Guinea Worm Project, hereafter referred to as Ministry of Health, on the one hand,


and

the Village Water Reservoirs hereafter referred to as the Arch-Diocese of Tamale, on the other hand,

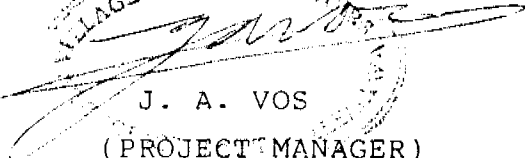
agree under the responsibility of MOH

1. to take care of the sampling of the presence of cyclops in wells and snails (Bulinus and Biomphalaria species)
2. Village Water Reservoirs to make incentive payments for sampling of Village Water Reservoirs and wells to be charged to the project on monthly basis
3. Logistical support (transport etc ...) to be provided by Village Water Reservoirs for the said samplings
4. Village Water Reservoirs to provide, on quarterly basis, a list of reservoirs and wells to be sampled
5. Ministry Of Health to provide, the Village Water Reservoirs, together with the report, a bill on a monthly basis.

for M O H


MR. V. ASIGRI
SENIOR BIOLOGIST AND HEAD
PARASITIC DISEASES UNIT
MINISTRY OF HEALTH
TAMALE N/R.

for V-W R


VILLAGE WATER RESERVOIRS
J. A. VOS
(PROJECT MANAGER)

ANNEX 2.

Orders and delivery of goods per 1/1/90

Date	Order	Description	Codes	Section	Remarks	Amount DFL
	98	Automatic level, Tripod leveling staff etc.	2601	Techn.	In process	7,000.00
	99	Spares for Refrigerator	5203	Workshop	Arrived Cont. 10	38.50
5-5	100	Polaroid film/fire Ext-inguishers	5203	"	Arrived Cap68/Cap66	236.30 1,000.00
5-5	101	Spares Dozer D6H and Excavator 215	5203	"	In process	335.88
5-5	102	Mr B Brown spare Concrete mixer	5203	-	Arrived	Ø40,920.00
18-5	103	5000hrs. spare for Dozers D6H	5203	Workshop	TAAP 19 Arrived	22,000.00
11-5	103A	LuboilGamma 50 600ltr.	5202	"	Arrived	Ø219,000.00
18-5	104	5000hrs. spare for Excavator 215	5203	"	TAAP 19	25,000.00
15-5	105	Water meter	4100	Build	Arrived	250.00
3-6	106	Galvanized Pipe ½"&1"	5203	Workshop	"	1,100.00
19-6	107	Rain gutter	4100	Build	Cap 67	1,800.00
19-6	108	Halogen lamp drillbits oct.	5203	Workshop	"	2,279.00
13-7	109	G.B.M Relais injector Brake l-ing	5203	"	Cap 68	4,452.00
13-7	110	Monster toolbins-thred bar	5203	"	"	1,292.40
13-7	111	Fuel Pump	4201	"	"	1,500.00
13-7	112	Umatrac startmot part-seal kit	5203	"	In process	1,500.00
13-7	113	Honda carburator repair kit e.t.c.	5203	"	TAAP 18	450.00
13-7	114	Br Keith1600axle shaft			Cap 68	836.00
13-7	115	Hondabike spare parts	5203	"	TAAP 18	650.00
13-7	116	Morter	4201	Lab.	Cap 68	151.90
16-8	117	Generator solenoid switch	5203	Workshop	"	580.00
17-8	118	Tie-Rod Ends Nissan	5203	"	"	1,250.00

ANNEX 2.Continued. Orders and delivery of goods per 1/1/90

Date	Order	Description	Codes	Section	Remarks	Amount DFL
21-8	119	Laboratory Chemicals	5900	Lab.	Cancelled	
21-8	120	" Equipment mixer	4201	"	In process	11,550.00
12-8	121	Bomag Compactor BPR 5C/550	4201	Technical	Cap 68	14,500.00
26-9	122	Culture medium lab.	5203	Lab.	In process	60.00
26-9	123	Ribbon for printer computer	5203	Office	"	100.00
29-9	124	Paper/catridge black	5203	"	"	4,000.00
29-9	125	Spares Honda 125 motor bikes	5203	Workshop	"	9,000.00
29-9	126	Spares Honda 125 motor	5203	"	"	1,000.00
29-9	127	Fuel injection pump DAF	5203	"	"	15,000.00
29-9	128	Tyres Hekla BV DAF/ Nissan PU	5203	"	"	6,000.00
2-10	129	Monster Welding rod cut ting device	5203	"	"	4,900.00
3-11	130	Copier A3+paper+spares	4201	Office	"	8,000.00
3-10	131	Nissan 160 spares shock-absorber	5203	Workshop	"	6,500.00
4-10	132	Schakel Veiligheden Kast + spares	5203	"	"	280.00
11-10	133	Monster earth clamp pliers etc	5203	"	"	3,000.00
11-10	134	GBM spares DAF 1800	5203	"	"	1,700.00
24-10	135	Filter cloth to filter cyclops	4203	Technical	In process	1,000.00
1-11	136	Monster waterpump nip- ples etc	5203	Workshop	"	8,000.00
2-11	137	Urgent Brinkm & Hiemeyer Lister	5203	"	Arrived 17-11	1,000.00
1-11	139	Vink Montage Roller Uitlyn plant	5203	"	In process	220.00
6-11	138	Small Bomag BPR 50/55D spares	5203	"	Arrived	3,500.00
7-11	140	Mobil Accra Lub.Oils	5202	"	"	21,743.550.00
21-11	142	Fuel pump complete 601-40650	5203	"	Arr. DHL	523.18
14-11	141	Odum 10"x2"Standard L.	5203	"	In process	1,000.00
30-11	143	DAF Spares	5203	"	"	2,500.00

ANNEX 2. Continued Orders and delivery of goods per 1/1/90

Date	Order	Description	Codes	Section	Remarks	Amount DFL
30-11	144	Lister LV1 HR3 pump	5203	Workshop	In process	3,800.00
5-12	145	Diesel Goil	5201	"	Arrived	1,400,000.00
6-12	146	Excavator spares	5203	"	In process	1,400.00
6-12	147	Yamaha generator spares	5203	"	"	150.00
6-12	148	Const. Materials folie screen	4203	Technical	"	6,500.00
8-12	149	Briggs&Strattob spares	5203	Workshop	"	100.00
8-12	150	Monster Rags Tarpualin	5203	"	"	5,500.00
18-12	151	Blomm esteyn Calculators	4201	Tech&Admin	"	700.00
21-12	152	Spares Backfill Tampers	5203	Workshop	"	900.00
22-12	153	Monster Bosch Flex drill etc	-	B.Brown	"	600.00

Annex 3

Means of transport

Means of transport

Presently, 5 Nissan Patrol cars are available.

1 mobile workshop which always has to be ready for emergency assistance.

1 Nissan Wagon for Project Manager

1 Nissan Pick-up for Technical Section

1 Nissan Wagon for Animation Section

1 Nissan Pick-up shared by Technical, Workshop and Administration Section (although little used by the latter).

(see table on the next page)

The needs for the technical section are 40 days full use of the car. With 22 days a month, this will imply 2 cars. This leaves in the present situation, the 2nd pick-up 1 day/week available for the workshop. Combining trips on 1 day can close the account.

When analysing the transport needs of the Animation Section it is clear that more than 1 car is needed.

On several occasions, transport can be arranged with the motor-cycles and at this very moment with only 1 team functioning the transport needs are covered. However, we proceed to employ 1 senior more, and expectedly in February/March, a second team will be in operation. The prospects that primary health care institutes can assist in the health education and maintenance training activities are not many. This means extra work for the Animation Section.

-halfyearly report July-Dec'89-

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VILLAGE WATER RESERVOIRS

TAMALE GHANA

I am interested to receive the following documents:

- Technical halfyearly report 2nd semester 1989
- Animation " " " " "
- Workshop " " " " "
- Water Supply report of village:
- Others

Name :
Address :

make it black to get the wished document

VILLAGE WATER RESERVOIRS

TAMALE GHANA

I am interested to received the following documents;

- Technical halfyearly report 2nd semester 1989
- Animation " " " " "
- Workshop " " " " "
- Water supply report of village
- Others

Name :
Address :

make it black to get the wished document

Post
Stamp

SAWA - Consultants
Schoolplein 7
3581 px Utrecht
The Netherlands

Post
Stamp

Village Water Reservoirs
Archdiocese of Tamale
P.O. Box 163
Tamale. Ghana

TRANSPORT NEEDS DAYS PER MONTH MAINLY NOVEMBER - JULY

Section	Activity	till 6/90	till 90/91	
T.S	a) Supervising sites norm. 2 villages	15	20	norm. full days
	b) Top	4	6-8	
	c) Soil	2-4	4	" " "
	d) Water+water quality (bact. + GW)	2(town) 6(field)	10/4	" " "
	e) Hydrology			(combined with A; B & D (almost no sepa- rate moving
	f) Transport of small mats.	8	10	
	g) Techn. maint.+ monitoring	5	12	
W.S	a) getting mats. from town	8	10	no full days
	b) maint., repairs on site & staff supervision	15-20	15-20	
A.S.	a) Village visit norm 2teams/d	22	22	norm. till 2pm
	b) 3rd team(3rd parties asst. project	6	10	" " "
	c) 4th team(if health educ + training)	10	22	
	d) visits to phc inst. etc	town after- noon		Combined or when returned from field
Admin.	a) visit for field	7	8	
	b) " to Kumasi/Accra etc	5	5	
	c) in town(bank,Tamadev.etc)	1-2x/day takes 2-3 hrs.	various	
Well- digging	transport of small materials	1-2	2-4	

An extension of staff-two (2 extra above the already mentioned is not feasible in the next months

When the primary health care institutes assist, then more vehicle transport will be needed.

There is some allowance for the Project Manager's car and no combinations can be made with the mobile workshop for personnel transport because when working on 2 sites it will be needed 3-4 days/week.

The actual transport needs up to June will be as follows:-

T.S. - 2 cars mainly pick-ups but for soil, water hydrological and water quality; it is also personnel transport. Combination with a 2WD double cabin can be made.

A.S. - 1 car in full operation for personnel transport and several times a month a second car (16 days/month) will, be needed. The latter is caused by either the need to take along the slide apparatus or the distance on very bad roads. The women working in the section (hopefully soon 4 instead of 3) cannot drive 50km on roads like to Asseyili. Car transport is needed when third parties assist the project like women and development, forestry etc. So a second car (i.e. 2WD double cabin) will be needed.

W.S. - For material transport 8 days a month, a pick-up will be needed. If T.S. is in full use of 2nd pick-up they will get into problems.

Administration - Currently their needs will be covered by the Project Manager's car but when the Project Manager travels into the field (7 days/month and to Accra etc) they need to use other cars.

Well-digging - It is clear now that transport problems will occur. While finding solutions the execution of work in the field will delay from time to time.

Concluding the above, it is clear that at a short interval an extra car (i.e. double cabine 2WD) is needed. The alternative is to slow down the production of the project and accept that several hundreds of people more will suffer problems than if we invest DFL 25,000 more in transport in 1990.

For further activities when the project should reach its maximum speed the needs are as follows per month:-

Technical Section - 52 full days and 6 partial days.

Animation Section - 32 days and 22 days for phc assistance transport.

Workshop Section - 15 - 22 days mobile workshop + 10 days pick-up

Administration - 13 days plus various two transport.

Well-digging - 2-4 days pick-up.

Presently, the transport needs are not fully covered and when a car is in maintenance or brokendown (P.M. car now at 85,000km) activities have to be delayed or cannot be executed.

In future:

Technical section needs - 2 cars (pick-up) + 14 other days (personnel transport)

Animation Section needs - 1 car Saloon + 10 days extra (personnel trip)

		+ 1 car for PHC assistance (maintenance health education)
Workshop needs	- mobile workshop	+ 10 days extra car (pick-up)
Administration needs	- 1 car personnel trip	- 13 days full + rest various
Well-digging	- -	<u>4 days pick-up</u>
Totals	5 cars	15 days pick-up + 24 days personnel trip.

the actual fleet will be enough to foresee the full day's needs but remains 15 days pick-up transport, 24 days personnel transport, plus the transport needs for maintenance and follow-up health education T.S. h. + A.S. c 34 days/month.

Three extra cars are needed then: 1 pick-up + 2 double cabine pick-ups all 2WD.

Because of the involvement of the project in maintenance health education + technical maintenance when the primary health institutes cannot provide transport facilities, (MOH cannot and Holy Cross only when they get extra funding), this activity will have to be covered by the project. So a third car will be needed, still you have to improvise a lot. To assure a smooth operation at short term 2 cars should be bought. Either 2 by project or 1 by project and 1 by primary health care Holy Cross (1 pick-up + 1 double cabine).

Then before the start of 1990/91 work season, the third car could be purchased (1 double cabine).