MINISTRY OF WATER DEVELOPMENT, KENYA

MINISTRY FOR FOREIGN AFFAIRS, FINLAND

KENYA-FINLAND
WESTERN WATER SUPPLY PROGRAMME

KEFINCO
HELSINKI, FINLAND
KAKAMEGA, KENYA

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

ANNUAL REPORT

JUL 89 - JUN 90

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KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

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LIST OF APPENDICES

Note
Some items/figures which were more of estimates or were not exactly known during the preparation of Work Plan 1990 have been rectified in the Appendices. Such items include the expanded plan area of WSDP and number WTP's etc.

ABBREVIATION AND ACRONYMS

DDC	District Development Committee
DFP	District Focus Policy
DTH-Drilling	Down-the-Hole Drilling
FINNIDA	Finnish International Development Agency
KANU	Kenya African National Union
KEWI	Kenya Water Institute
KFPHCP	Kenya-Finland Primary Health Care Programme
KFWWSP	Kenya-Finland Western Water Supply Programme
MoCSS	Ministry of Culture and Social Services
MoH	Ministry of Health
MoWD	Ministry of Water Development
NGO	Non Governmental Organization
NMWP	National Master Water Plan
NWCPC	National Water Conservation and Pipeline Corporation
O & M	Operation & Maintenance
P.M.O	Provincial Medical Officer
WECO	Western College of Arts and Applied Sciences
W/S	Water Supply
WSDP	Water Supply Development Plan
WTP	Water Treatment Plant

GENERAL

The Kenya Finland Western Water Supply Programme, formerly known as the Kenya Finland Rural Water Supply Project in Western Province was started in February, 1981, jointly funded by the Kenya and Finnish Government. The third implementation phase was started in January 1989 and will be completed in December 1992. The Ministry of Water Development of Kenya and the Ministry of Foreign Affairs of Finland through Finnida have employed KEFINCO to carry out the implementation up to the present time. The Programme covers Busia District, parts of Bungoma, Kakamega and Siaya Districts.

From the initiation of the Programme to the end of the report period, the Programme has protected 1011 springs, constructed 932 Hand dug wells and 900 Borehole wells. In addition to this, the Programme has constructed, rehabilitated or augmented 25 water supplies or water treatment plants. These provides safe water for about 900,000 people. The total cost of the Programme to the end of phase III will be FIM 260 million approximately Ksh 1300 million. While the total cost of the third phase is FIM 140 million approximately Ksh 700 million.

The report covers the period between 1st July 1989 to 30th June 1990. The progress achieved were generally according to the approved work plan for 1989 and 1990. However, successful comparison of the progress achieved according to the work plans is not possible due to difference in the report period to that of budgetary, and work plan which covers the calendar year. It is recommended that the following Annual Reports to cover the calendar year in the same as the work plan and budget so that the three items can be appropriately synchronized and hence better compared.

1. EXECUTIVE SUMMARY

This report covers the period between 1 st July 1989 and 30th June 1990.The progress of work was in general according to the work plans for 1989 and 1990.

The preparation of the water supply development plan (WSDP) which was originally meant to cover the Programme area was changed to cover the District administrative boundaries of Kakamega, Bungoma and Busia Districts. The change increased the plan area and additional data especially for the area outside the Programme area was needed, requiring additional time to complete the plan. An interim report giving the background information on the WSDP was finalized in March 1990 and was discussed with the District authorities during a workshop held in May 1990. The recommendation and comments from the workshop is being incorporated in the WSDP.

The design of piped water schemes lagged behind in the beginning of the report period due to shortage of staff, concentration of staff in WSDP and also the undertaking of major revisions of schemes completed during the previous review period. However, the situation improved in later part of the report period. By 30th June, 1990, 18 schemes were at various stages of planning and design. The field investigation sited a total of 233 boreholes and test pumped 219 boreholes. Test pumping for low yielding handpump wells was usually 6 hours while for production wells with good yield was 24 hours. Ground water level measurements were carried out twice a month covering the observation point network in the Programme area.

Water quality field and laboratory operations continued according to the work plan. Water quality officers at district level are now actively involved in water quality monitoring, inspections and training of the consumers of the importance of proper maintenance of the wells and their environment. Since the beginning of the year most of the piped schemes in the province have been monitored and recommendations on water quality improvement made to the relevant authorities.

The Programme has eleven micro computers all with hard disk, eight matrix printers and one plotter. All micro computers are supported by unbreakable power supply. The computerization of the follow-up methods and daily routines of the Programme proceeded according to the work plans.

Water point construction which include construction of new hand dug wells (shallow wells), and spring protection were done from the District bases. The total number completed during the review period were 158. In addition a total of 177 water point were

rehabilitated. Borehole wells for hand pumps and for production wells continued to be drilled using two Rotamec drilling rigs. A total of 141 boreholes were drilled during the review period. A total of 7 piped schemes were completed while 2 schemes are ongoing projects. The construction of piped schemes were delayed because of the financial situation and also the design capacity. Several buildings were constructed or rehabilitated during the report period. The maintenance of vehicles continued smoothly while operation of stores improved greatly due to decentralization and also computerization.

The water point section in the Operation and Maintenance Department has mainly dealt with handpump installations, pump repairs, training of Locational repairmen, changing of hand pumps, water point inspection, production of manuals and decentralization of spare parts delivery system.

In the piped schemes section progress was achieved according to the work plans. An Inventory of existing water supplies was done and data of mechanical and electrical equipment analyzed. The data was included in the water supply development plan.

Management and Personnel studies for the Ministry of Water Development staff to man the piped water supplies was completed in Busia and Bungoma Districts. Some studies are continuing in Kakamega and Siaya Districts.

In training, emphasis was laid on community training, which progressed well especially with the training of the women pump attendants. Staff training was strengthened and a lot of short courses and seminars were attended by the members of the MoWD and the Programme. Emphasis with staff training was still on the job training.

The community development section continued to involve all beneficiaries in all aspects of the water supply development including planning, design, implementation, operation, maintenance and management. The involvement of the local community has contributed in the acceptance of the water supplies as their own. During the period under review, public meetings were organized where awareness was created concerning siting procedures, the contribution in labour, material and maintenance requirements. The beneficiaries provided labour for investigations by use of the hand Auger Test drill methods. The outcome was commendable but has been limited due to unavailability of equipments.
The process of handing over of the completed water points to the community in an organized ceremonies was initiated and is progressing well.

2. PLANNING & DESIGN DEPARTMENT

2.1 WATER SUPPLY DEVELOPMENT PLAN

2.1.1 General

The preparation of WSDP started about one and half years ago with the original idea being to prepare a plan covering the Programme area only. During a meeting on WSDP held on 16th March 1990, it was decided that, the plan should cover the District administrative boundaries of Kakamega, Bungoma and Busia Districts. This change increased the plan area and additional data was needed especially for the area outside the Programme area; necessiting additional time to complete the WSDP. The WSDP is now expected to be completed by December, 1990.

An interim report giving the background information on the WSDP was finalized at the end of March,1990. The report was discussed with the District authorities during a workshop held between 8th to 10th May 1990, at Imperial Hotel Kisumu. The recommendation and comments from the workshop will be used in the preparation of the WSDP. Two members of the WSDP drafting team attended pilot courses organized by WRAP on `How to prepare a District Water Development Plan' during the report period.

2.1.2 Water Supply Sources

During the reporting period, discharge measurements for about 1025 springs throughout the Programme area have been done. Out of this number,information of 962 protected springs has been entered into a computer,when analyzed,spring potential distribution can be estimated. Generally the spring potential seems to be good or moderate within the Programme area. Only Northern Bungoma and Samia are rather poor in this sense.

Many hydrogeological parameters of about 753 borehole wells have been entered into the computer. Such parameters as water struck level, groundwater rest level, thickness of aquifer,thickness of weathered layer, yield, specific capacity and transmissivity have been included.Data of 848 shallow wells is in computer file.

The interpretation of this data is continuing. In this work computers have been applied both in producing different kinds of reports, sorting data, calculating correlations and plotting observations.

2.1.3 Water Supply Usage

Inventories

The aim of the inventory surveys of the existing water supply schemes in and outside the Programme area is to asses the water use as well as the operation and maintenance situation, including deficiencies (if any) and eventually to determine/recommend the appropriate rehabilitation measures and any other necessary improvements required.

Piped Schemes

There are altogether 76 piped water supply systems in Western province at present. The water supplies covers an area with an estimated population of 830,000. During the report period, the schemes were visited and surveyed and their technical and operational conditions analyzed.

The evaluation of the operational status of the piped schemes shows that many schemes are not functioning satisfactory. The major causes and the recommendations for remedial measures are given in WSDP 1990.

Point Source Water Supplies

Point source water supplies includes protected springs, dug wells and borehole wells. Most of them have been constructed as a part of the KFWWS Programme which, by end of March 1990, had constructed 2347 water points estimated to serve about 800,000 rural people in Western Province.
There are also a few point source water supplies which have been developed by individuals, self-help groups, institutions and NGO's.

All water points constructed by the Programme are communal and the users have contributed for the construction and are responsible for their operation and maintenance. The operation of the point source water supplies is normally reliable, since spring protection and hand pump technology without motorized power is used. However, some problems still, have been encountered:

The yield of hand dug wells proves not always sufficient for planned population. Out of the total hand dug wells about 10% will need deepening. This problem has been caused by fluctuating ground water levels and inadequate surveys when siting the wells.

2.1.4 Data Base

Use in Updating the Water Supply Development Plan

Computerized data base has made possible to get detailed areal information down to sub-location level. The main points in the existing computer data bases for WSDP are

- Population distribution and water consumption forecasts
- Water supply coverage
- Geological data
- Hydrological data, including water quality

Also preliminary plans to computerize socio-economic data in
- relation to water usage
- relation to health
- relation to various activities paralleling water consumption in locational - village level

2.2 DESIGN

2.2.1 Design Guidelines:

There are 30 guideline drawings which have been prepared for use in the Programme, some of which were MoWD standard drawings slightly modified to suit the needs of the Programme.

Although some drawings are standard in plan, further design and modification is necessary to fit a particular site. An example is a spring protection, whereby each spring has got its own unique topographical conditions and nature of flow etc. In such cases further design is necessary to suit site conditions.

2.2.2 Design of piped water supply schemes

During the report period 18 No. piped water supply schemes had been programmed for feasibility studies,preliminary and final design stages, out of which 10 were institutional water supplies mainly for Health Centres. The details are as shown in appendix 2.2.

2.3 FIELD INVESTIGATIONS

2.3.1 Geophysical Investigations

Shallow refraction seismic method was used in surveying the proposed sites of borehole wells. 12-channel seismograph ABEM Trio was in use until November 1989. In November the new 24-channel ABEM Terraloc Mk3 was taken into use. The new equipment records the signal in digital form and saves it into RAM-disks. The signal can be filtered and manipulated otherwise in the

office to achieve best possible results. The data is interpreted using a computer program.

During the reported period total of 233 borehole sites were surveyed. In June there was a breakdown of ABEM Trio seismograph and in January-February the output was very low due to an accident of the vehicle.

2.3.2 Hydrogeological Investigations

Test pumping

Test pumping of borehole wells was ongoing during the report period. A total number of 219 boreholes were test pumped. Duration of test pumping for low yielding handpump wells was usually 6 hours and 24 hours for production wells and good yielding holes. Also a test pumping contractor was working for the Programme.

To get information on storage capacity and on changes in water quality one long term test pumping was carried out.

Groundwater level measurements

Ground water level measurements were continued within the observation point network covering the Programme area. Measurements were carried out twice a month at each point.

2.4 COMPUTERIZATION

The Programme has eleven micro computers, all with hard disk, eight matrix printers and one plotter. Also there is one Canon X-07 8-bit pocket computer. All micro computers are supported by unbreakable power supply.

For the need of more computer time and for further computerization the Programme will purchase 3 micro computers in October 1990. Software used in the Programme for system development are dBase IV, Lotus 123 and GW-BASIC. Word processor is WordPerfect 4.2. Other existing systems will be programmed (except Systat statistical package). The main tool for system development is dBase IV.

Personnel for program development, system supervising and teaching is one expatriate system analyst.

2.4.1 Water Point Data Base

Water point data base serves planning and design, construction operation and maintenance and community and training departments. The main system responses only to the most common needs. For more specified needs some parts of the data are copied to independent

files and processed with other relevant information by Lotus 123, and special programs.

The data base is divided into the following subjects:
Boreholes, shallow wells, springs, water point locations, water quality, committee formations, committee fund usage, problems at water points, water point checks and repairs & maintenance at water points. There is also a plotting program where any water point parameter is plotted on its site by coordinates.

2.4.2 Seismic Observations

Observations of seismic investigations need mathematical manipulation for interpretation. Used tools for that are:
- seismic observation data plotting program
- interpretation program for electrical sounding
- interpretation program for seismic results

2.4.3 Stores

The systems will supervise stores. Goal is to achieve full control of incoming, invoiced and delivered material. Also stock balance and ordering levels will be available. System will also provide information for cost control.
Main elements are:
- item register
- supplier register (common with invoicing and order control systems)
- job cards
- goods received notes
- delivery notes
- store balance
- ordering level

2.4.4 Cost Control

Cost control system gives means to compare real costs to the budget and helps to build next budget. It also will give accurate prices for construction work and helps each section to understand and follow their costs.
Main elements are:
- cost control codes
- information from payroll and cash ledger
- reports to departments and sections
- reports to Finnida

2.4.5 Payroll

Computerized payroll reduces remarkable work at accounting section. It also serves as a personnel data base.
Main elements are:
- basic personnel information

- overtime calculations
- pay slips for employees
- department/section totals for cost control
- bank note break down
- connection to cost control

2.4.6 Accounting

Cash Ledger, all payments and money transfer are stored with Kefinco account numbers, Kefinco cost codes and Finnida codes. Monthly reports are produced for the Programme and Finnida.

2.4.7 Invoicing

System to control payment procedure in real time so that any time is known the status of any invoice including last payment date. Also forecasting of cash flow by unpaid invoices is possible.
Main elements are:
- delivery
- invoice
- approvement
- payment
- report of to be paid invoices

2.4.8 Water Treatment Plants

The main purpose of this system is to collect and update all relevant data about the 76 water treatment plants in the Programme area and existing devices in them. It will be easier to maintain and forecast problems.
The data bases are:
- water treatment plants
- pumps
- electrical motors
- maintenance and repair works for the motors

2.4.9 Revenue Collection

System will in first hand help Kakamega Water Supply on invoicing and controlling revenue collection. The basic elements of the system are:
- register of consumers
- meter readings
- invoicing
- revenue collection
- unpaid invoices
- history and forecast of consumption

2.4.10 Word Processing

Word processing is in effective use in all these computers. Ninety percent of typing work is done by computer. Eight

secretaries can and use WordPerfect. Also some other employees use WordPerfect regularly.

2.4.11 Others

Training

A plan for introductory six days computers courses has been made. Occasionally on computer training has been given to individual users of administration, planning and construction departments to manage specified tasks. A long term training plan must be implemented.

Manuals

User guides for each system developed in KFWWSP must be produced. User guides for ready made programs must also be acquired or produced.

System Documentation

Program lists and data base description are filed with description of system structure.

Cooperation with other organizations

Cooperation with MoWD, the NWCPC and other programmes in Kenya must be created onto continuous basis for coordination of system building.

2.5 WATER QUALITY MONITORING

2.5.1 Introduction

In the last twelve months water quality monitoring activities did not strictly follow the prepared programme. Frequently the monitoring activities were interrupted by incoming complaints and inspection of wells to be handed over to the communities. The sample collectors who also inspect the point water supplies mainly concentrated with the areas with the most complaints rather than visiting all the points in each location.

2.5.2 Laboratory Operations

The total number of samples analyzed was 1290. This compares well with last year value of 1366, but most of the samples were collected during test pumping of new wells and inspection of wells to be handed over to the communities. The number of qualified technologists has remained two.

The chemical quality of the water from all the sources e.g groundwater, springs and surface water is quite acceptable and

hence more emphasis has been put on the bacteriological quality. Except for new wells, water quality monitoring activities concentrated on microbiological analysis.
The following is the microbiological data analysis of the samples analyzed.

Faecal Coli/100ml	Boreholes	%	Shallow wells	%	Springs	%
0	308	89.0	167	58.9	78	46.7
1-10	26	7.6	52	19.5	36	22.15
11-25	2	0.65	18	6.4	21	12.6
26-50	3	0.9	4	1.3	10	6.2
>50	6	1.95	38	13.9	20	12.4
Total	345	100	279	100	165	100

2.5.3 Field Operations

The areas covered during the report period is as shown below

District	Target area (Locations)	Covered area
Kakamega	12	12
Busia	12	12
Siaya	6	3
Bungoma	12	11

Though the area coverage appear comparative with that of first half of 1989 (90%) the actual number of wells inspected was less in 1990. This has been mainly due to poor mechanical conditions of sample collectors' motor bikes. The vehicle has been used in most cases.

2.5.4 Analysis of problems affecting the microbiological water quality in point water supplies

The total number of samples tested for microbiological quality was 789, out of which 236 were contaminated.

The most probable causes for contamination were as shown below

	BOREHOLES	SHALLOW WELLS	SPRING
POOR CONSTRUCTION	-	39	49
POOR MAINTENANCE	37	35	38
POOR SITING	-	38	-

3. CONSTRUCTION DEPARTMENT

3.1 WATER POINT CONSTRUCTION

3.1.1 Use of Local Contractors and Materials

The Water Point Contractors organized themselves during the reporting period and formed a self help group, called The United Western Civil Contractors Group. The Programme is having at the moment 17 contractors in Kakamega District, 10 in Bungoma District and 19 for Busia and Siaya Districts.

During the reporting period, the water point construction was decentralized to the Districts. The utilization of local materials has been started at the same time. The Districts purchase some of the sand, required for construction from Women Groups, active in the working areas.

The utilization of other materials e.g. blocks and rings is under development. Traditionally, communities supplied stones for spring protection and fencing materials for all the water points.

3.1.2 Construction of Shallow Wells

The construction of shallow wells has continued in the line established during the end of the second phase and first reporting period of this phase.

The utilization of hand drilling results at Shallow Well sites is still under development.

The construction of shallow wells progressed very well in Kakamega and Bungoma Districts. Busia and Siaya Districts have started the construction of shallow wells recently because of the latest establishment of Busia District Base. The production per District is in appendix 11.

3.1.3 Construction of Spring Protection

The Spring Protections have improved a lot when the design for each spring is done at the site.

During the reporting period, additional structures, as bath rooms, wash basins and cattle troughs have been constructed in connection with spring protection, thus increasing the acceptance and popularity of spring protection. The production is presented in appendix 11.

3.1.4 Construction of Borehole Wells

The drilling of the boreholes is the only activity in the water point construction, which is not decentralized into the districts. The main reason to this is limited resources.

The drilling has continued smoothly throughout the reporting period. Two experimental boreholes were drilled at Mukhobola Health Centre site to define different aquifers. The area, Southern Busia has been very problematic, technically very good shallow well area but a lot of iron in most of the shallow wells.

Boreholes slabs have been constructed in District Bases. The pump installation to boreholes is done partly by District Bases and partly by Mobile Teams of Operation and Maintenance Department. The coordination in pump installations has been strengthened to avoid delays in pump installations.

3.1.5 Rehabilitation of Old Water Points

The production in water point construction has been more on the rehabilitation side than in the new construction. The reasons to this have been in siting, community involvement and lack of resources in the beginning of the reporting period.

The rehabilitations have been concentrated into the locations where new water points are also under construction. The production is presented in detail in appendix 11.

3.2 PIPED SCHEME CONSTRUCTION

3.2.1 Rehabilitation of Piped Schemes

The Construction Department has concentrated in the rehabilitation of the water supplies, constructed by the Programme.

In Nambale, the Programme has provided a new generator while waiting for the electricity to be connected. Rural Electrification Programme is providing the electricity. In Sega, the rising main was modified so that there are no house connections directly from rising main.

3.2.2 Construction of Piped Schemes

Kapsakwony Gravity Scheme phases 11 and 111 were started at the end of the reporting period. The design has been modified to accommodate water supplies to a new Health Centre to be constructed in the supply area.

Funyula - Nangina Water Supply was nearing completion at the end

of the reporting period. The high lift pumps have not arrived yet and also electricity supply is not constructed.

A small piped scheme, utilizing a high yielding borehole, was constructed for St. Mary's Hospital and other institutes within the complex, at Mumias. The supply is part of the Ministry of Water Development operated Mumias Water Supply.

A similar water supply, utilizing two boreholes, was constructed for Mukumu Complex. This supply will boost Shitoli Water Supply, operated by National Water Conservation and Pipeline Corporation.

At Eregi Complex, an institutional water supply was constructed, utilizing three boreholes and two springs. This was partly rehabilitation, partly new construction.

Mukumu and Eregi Water supplies are outside the Programme area and those were agreed in Kakamega District Development Committee to be constructed within the 10% allocations, DDC can use for this type of works. Several Health Centres were provided with Water Supply during the reporting period. For Mautuma Health Centre, 2.5 km rising main was constructed, pump house constructed and the borehole was equipped with Diesel Engine driven borehole pump.

Works were carried out also at Sirisia, Naitiri, Matayos and Mukhobola Health Centres.

The construction of Piped Schemes is delayed because of design capacity and also because of the financial situation.

3.3 WORKSHOP

3.3.1 Garage

The fleet of motor vehicles has increased during the report period with 7 Subaru Saloons, 18 Land Rovers, 1 Sisu lorry, 4 Valmet tractors and 10 Suzuki motor bikes.

Four new Land rovers were handed over to MoWD District Water Engineers within the Programme Area. One old reconditioned lorry and five old reconditioned Land Rovers were also handed over to MoWD.

The total number of KFPHCP vehicles at the end of report period was 34, which are serviced and maintained by KFWWSP.

The service and repair of KFWWSP and KFPHCP vehicles has continued basically in the main garage in Kakamega through the report period.

Service garages have been established in Bungoma and Busia

district bases.

The summary of cost for the Programme vehicles is presented in appendix 12.

Tachographs have been installed to nearly all KFPHCP vehicles and to the new KFWWSP vehicles.

The valuation of tachographs and the action according to the valuation reports has kept the operational costs of the vehicles at acceptable level.

3.3.2 Metal Workshop

Metal workshop has been shifted to the mechanical section

3.3.3 Mechanical Store

The computerized store control system has guarantied the smooth operation of the garage as before.

3.3.4 Construction Stores

Construction stores have been divided into four units.

- construction material store
- pipe store
- handpump store
- drilling store

Stores which have decentralized into the district bases are operating as a combined unit of different stores.

3.4. ALTERNATIVE WATER SOURCE CONSTRUCTION

Only Rain Water Harvesting has been completed at Eregi and Kibabii.

3.5 HANDING OVER OF PIPED SCHEMES AND WATER POINTS

Final handing over of Ukwala Water Supply to the Ministry of Water Development was done after one year's maintenance period. Other schemes will be handed over to water undertakers, when the necessary Operation and Maintenance Manuals are completed.

3.6 CONSTRUCTION OF BUILDINGS

3.6.1 Office Augmentation

The construction of a new office block was completed in November, 1989.

3.6.2 Laboratory

The laboratory was substantially completed during the reporting period but a few installations remained to be completed before the laboratory could be occupied .

3.6.3 Kakamega District Base

All the buildings were completed and taken into use.

3.6.4 Bungoma District Base

All the works were completed and the District Base has been in use since September, 1989.

3.6.5 Busia District Base

District Base was completed in December, 1989 and has been in use since then. 3-phase electricity is not yet connected.

3.6.6 Provincial Workshop

The rehabilitation of the Ministry of Water Development Provincial Workshop was started in June, 1990.

3.6.7 Reinforced Concrete Elevated Tank

The 50 m3 tank was completed at the end of June, 1990. The design of the tank was revised so that the space under the tank is also utilized. The tank is going to have 25 m2 store and 25 m2 office space. The finishing of these facilities are ongoing.

4. OPERATION AND MAINTENANCE

4.1 COMMUNITY OPERATED WATER POINTS.

4.1.1 General

Installations of handpumps is largely done by construction department and to a small extent the water point section of the O&M. The mobile teams install pumps on wells whose installation depth are very deep thus requiring the deep well pumps, that are cumbersome for the contractors to handle at the moment. Installations done between July 1989 and June 1990 are shown in appendix 4.1.

4.1.2 Training of Locational Repairmen

The two mobile teams continued to operate where the local maintenance system is not yet established. Each team comprised five people; two of them KFWWSP employees and three trainees. Trainees undertake on the job-training with the mobile teams for three to four months. These teams work in the Programme area attending to the faulty handpumps.

Locational repairman and the pump attendants have also continued to serve their communities in maintenance activities of the handpumps in their various locations. More of them will be recruited and trained so that every location is covered, thereby reducing the work-load on two mobile teams. The aim is that they will eventually replace the mobile teams in maintaining the point source water points.

Similarly there is scheduled programme to rehabilitate the Iron Removal Plants and train their attendants accordingly.

Having done repairs the mobile teams and the locational repairmen charge the well committees the costs of labour and spare parts used.

The table shows the repairs that were done during the report period.

	KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
Repairs	179	112	187	93	570
Invoiced Sh	38,918	25,130	32,850	16,105	113,003
Paid Ksh	20,207	11,025	20,963	10,610	62,805
Perc.paid %	52	44	73	52	55

NIRA AF 85	5	5	4	5	19
AFRIDEV	2	3	18	1	24
NIRA AF 76	83	41	57	14	195
NIRA AF 83	4	1	1	-	6
INDIA MK II	85	62	107	72	326
TOTAL	179	112	187	92	570

4.1.3 Changing of Handpumps

The changing programme of handpumps continued to be done by the mobile teams. Some were done by the contractors who after doing deepening and reconstruction works, changed the AF 76 pumps to the AF 85 types.

The number of pumps changed by the mobile teams are as follows:
1) 74 pieces AF 76 pumps were changed to AF 85, 63 dug well and 11 borehole
2) One AF 85 pump changed to AFRIDEV,
3) 45 pcs India MK II pumps changed to AFRIDEV.

The NIRA AF 85 handpumps are now the most commonly used in the Programme area. They are more durable compared to the other types, easy to dismantle and reassemble which is an advantage for maintenance purposes.

AFRIDEV pumps are also relatively easy to dismantle and reassemble. It does not have corrosion problems because the pipes used are of P.V.C. material.

For the INDIA MK II handpumps, the main problem has been breaking of piston rods, wearing out of valves and ball bearings.
Changing of INDIA MK II to AFRIDEV was slowed down to unavailability of P.E.H. pipes for the rising main.

NIRA AF 76 and AF 83 pumps have been experiencing problem of teflon bearings and valves wearing out, and piston rod breakages.

However these two pump types are being replaced by the NIRA AF 85 and AFRIDEV types.

4.1.4 Water Point Inspection

The table underneath shows the number of water points per location inspected for preliminary and final handing over to the communities.

LOCATION	PRELIMINARY	DATE
South Ugenya	24	12.09.89
Ukwala	24	14.09.89
West Ugenya	19	19.09.89
North Ugenya	10	19.09.89
West Bukusu	28	23.11.89
East Marachi	41	14.12.89
Kanduyi	24	3.05.90
East Wanga	70	29.05.90
TOTAL	260	

4.1.5 Manuals

The AFRIDEV pump manual is ready. Corrections and recommendations on the NIRA AF 85 manual were made and sent to the manufacturer for printing. There is no urgent need for preparing a manual for INDIA MK II due to its cumbersome nature of maintaining it. It is not in the category that can enhance the achievement of Village Level Operation and Maintenance.

Preparing of manuals for protected springs has not yet started.

Manuals for community operated wells equipped with submersible pumps are under investigation, planning and design. Manuals for 6 pumps have been distributed.

Distribution of certificates, documents, instructions and tools is taking place in handing over ceremonies organized by community department. Total number of pump attendants who have received certificates, tools and pump manuals is 381.

4.1.6 Spare Part Delivery System

A study carried out by the socio-economic section came up with a plan that is now ready for trial, starting with two groups on a pilot basis. These are:
1) COMMUNITY OPERATED, in which some women groups were identified in the pilot areas. The groups will acquire spare parts and they will in turn sell to the well committees in need.

2) HARDWARE SHOPS, whereby a few potential individuals were identified.They will also acquire the spare parts and sell to the needy committees. If these groups prove effective, then more groups or hardware shops will be used in the whole Programme area. Decentralization of spare parts to district bases is under progress.

4.2 PIPED WATER SUPPLIES

4.2.1 General

The piped scheme section had only started with a skeleton staff early 1990 but later a number of officers were posted from the Ministry of Water Development Headquarters to the Programme. Head of section and mechanical engineer were posted in mid of February and electrical engineer arrived in April. Preliminary feasibility studies for the electrical works has been made for nearly all the present water supplies which are powered by electricity in the project area.

4.2.2 Assessment of Existing Situation

Existing data for piped water schemes already have been collected and inventory of mechanical and electrical equipments for water supplies made. Identification and analyzing of collected information was carried out and a Survey Report is under preparation. Piped water supplies are shown in appendix 4.2.

Management and personnel studies for the Ministry of Water Development staff to man the water supplies was being carried out. The studies for 25 piped water supplies was completed.

4.2.3 Suggestions for Improvements and Rehabilitations

Updating of plans and layouts for 13 piped water supplies within the Programme area have been finalized.

Two separate reports have been prepared for improvements and rehabilitations. Activities undertaken for piped schemes is shown in appendix 4.3.

Implementation of the rehabilitation works have been taking place in Malava W/S.

4.2.4 Operation and Maintenance Procedures for Piped Schemes

Flow diagrams and network layout have been prepared for two schemes:

Malava Water Supply and Shikusa prison institutional Water Supply.

Sign posts for four piped schemes have been painted and erected.

Inventory of mechanical and electrical equipments for preparing operation and maintenance manuals have been computerized and analyzed.

Mechanical and service cards are under design.

Investigation of existing monitoring system have been carried out and forms of duty report, production, chemical consumption, water quality and etc. have been collected and revised with co-operation of Ministry of Water Development and NWCPC staff.

4.3 WATER TREATMENT PLANTS

4.3.1 General

Totally 18 water treatment plants are operated by MoWD in programme area. Plants are summarized in appendix 4.2.

Assessment of existing situation of piped schemes and water treatment plants for Water Supply Development Plan report have been made by Operation and Maintenance Department.

This includes:

1) Plotting schemes to maps
2) Compatibility of water resources and demand
3) Feasibility of engineering
4) Rehabilitation cost
5) Area and population served
6) Collection technical and operational data
7) O & M cost
8) Revenue collection

4.3.2 Assessment of Existing Situation

Inventory of existing water treatment plants in programme area have been finalized. Data is computerized and analyzed. Survey report is under preparation.

Personnel studies made by Operation and maintenance Department have been handed to Community and Training Department.

4.3.3 Suggestion for Improvements and Rehabilitations

Updating of plans and layouts for six water treatment plants have been made and documented.

Reports of proposal of rehabilitation works are made for six plants co-operated with District Water Engineers.

Reports for rehabilitations of electrical works in the water

supplies are made for the following water supplies:

Bungoma Township water supply.
Mbale water supply.
Mumias water supply.

Detailed planning and programming are made for Chesikaki Water Supply in Bungoma District and Kakamega W/S in Kakamega District.

4.3.4 Operation and Maintenance Procedures for Water Treatment Plants

Forms for record keeping have been designed and are currently in use in those plants where rehabilitation works have been implemented.

Water quality monitoring programme is carried out by water quality section. In addition, several inspection for water treatment plants has been made.

Characteristics like production, area and population served, storage capacity etc, have been collected and documented for all water treatment plants in the programme area.

Inventory of drawings have been made and specifications documented by Ministry of Water Development and Programme have been listed.

Updating of layouts have taken place in Mumias, Kakamega and Mbale Water Supplies in Kakamega District, Matisi, Webuye and Chesikaki Water Supplies in Bungoma District and Busia-Mundika, Funyula-Bumala Water Supplies in Busia District.

Form for service -lubrication card is in use in maintenance and repair activities carried out in central workshop in Kakamega.

4.3.5 Programme for WTP Rehabilitations 1990

Investigations for programming of water treatment plants rehabilitations 1990 has been completed and preliminary feasibility studies for six treatment plants have been prepared.

Planning and programming for Kakamega and Chesikaki Water Supplies have been completed.

Implementation of rehabilitation activities has mostly been taken over by Operation and Maintenance Department and progress is shown in appendices 4.3 and 4.4.

Water meter installation for house connections has continued in Kakamega scheme and towards the end of the reporting period, almost all the connections were equipped with water meters.

Several valve chambers have been constructed throughout the network. Pressure gauges were also installed to monitor the pressure levels within the supply area.

Report of augmentation of Kakamega Water Supply is under preparation.

Operators on-job training during the rehabilitation works has already taken place in Kakamega, Chesikaki, Mumias, Webuye and Matisi Water Supplies. Other training for specific duties such as filter backwashing, preparation of chemicals, adjustment of flows and etc. have taken place in Shitoli, Kaimosi, and Busia Mundika Water Supplies.

Summary of training given on site as well and participation sheet is shown in appendix 4.5 and 4.6.

4.3.6 Training of Operators and Attendants in Water Treatment Plants

The study of manpower requirements and qualifications of Ministry of Water Development operated supplies is under preparation and it is based on organization charts and annual report made by districts.

A special programme for operators' training is to be arranged to take off from September, 1990. In-service training for operators, attendants and maintenance personnel from district bases have been taken place on several occasions during the repairing or maintenance activities carried out.

4.3.7 Material System

Inventory of mechanical and electrical equipment used in water treatment plants have been completed. Data has been identified and analyzed.

List of urgently needed spare parts have been prepared by district bases and procurement for electrical consumables, like fuses, relays, conductor etc. have already taken place.

Decentralization of spare parts delivery system to district bases is to be systematized according to standardization of equipments.

The list of materials and spares for operation and maintenance purposes to be stocked is under preparation.

4.3.8 Workshop for Operation and Maintenance Facilities

Completion of extension of Provincial Central Workshop for operation and maintenance facilities is under construction.

Control panel for pump testing devices is procured.

Water meter calibrating device is specified and procurement will take place in the beginning of 1991. Two mechanics have been trained by local water meter supplier.

Battery recharge have been cancelled due to facilities already existing.

Existing compressor for compressed air system has been maintained and electric motor bought. Tools for system are under specification.

Personnel and management studies have been completed and organization chart revised.

Procurement of tools is taking place end of this year. Evaluation of tenders have already been made.

Development of workshop procedures and training for special duties are delayed due to late of construction. However, two mechanics have been trained by local suppliers and job-card system created.

5. TRAINING AND MANPOWER DEVELOPMENT

The main objective of given training is to develop relevant knowledge, skills and expertise within the staff of the Ministry of Water Development, the Programme and other relevant groups involved in the development of water supply sector in the area. The main target groups who benefitted besides staff members were locational leaders, water point committee members, pump attendants, local small-scale contractors and artisans. In addition the Programme offered many field (industrial) attachment opportunities for trainees coming from institutions like KEWI, and WECO which are supposed to produce skillful manpower to the sector.

5.1 LOCAL COMMUNITY TRAINING

The main target groups under this component are community leaders, consumers and members of water committee. The main objective is to create awareness among the consumers, on the benefits of using clean and safe water. In addition the training aims at giving administrative skills to local communities which later helps to create a sense of ownership when the water points are managed by water committee members. The following activities were accomplished during the report period.

5.1.1 Leaders Training

According to the District Focus Policy the community leaders are found at a locational level and they represent the local communities in development issues.

In line with this, the Programme has organized seminars for leaders from Government organizations, party leaders , women leaders and other opinion leaders.

During the training , participants shared ideas on issues related to water, health and sanitation. At the end of the four days seminar, participants are supposed to work as trainers disseminating the information to other members of the community through meetings popularly known as "Barazas".

During the period under review, leaders training seminars have been covered according to the schedule. The attendance was good according to the list shown in appendix 5.1.

5.1.2 Community Training

The target groups covered under this subject include water committee members and water consumers in general. The training methods used have included grass-root level seminars, film shows, study tours, group discussions, songs, dance and drama.

The training of executive water committee members is to strengthen their self-management and administrative skills. During the period under review eleven seminars were organized. In all, four hundred and forty four executive committee members of water committees were trained according to appendix 5.2.

The main objective of film shows was to reach both illiterate and literate people who learned by hearing and seeing. The films emphasized health education, environmental sanitation and operation and maintenance aspects. The organized film shows are listed in appendix 5.3.

5.1.3 Training of Pump, Spring and Iron Removal Plant Attendants

The main objective of this activity is to reinforce the technical skills of attendants, who are also executive members in water point committees.The Programme has continued to train women as pump attendants to maintain community managed water points and to do preventive maintenance work.

In addition, the trained pump attendants assisted the Programme to train others, so that the multiplier effect can enable the Programme to cover more wells within a given time. During the report period, the Programme has continued to train attendants on the Nira and Afridev handpumps. Spring attendants have also been trained to take care of the already protected springs in their areas. The table in appendix 5.4 indicates the trained pump, spring and iron removal plant attendants in the period under review.

5.2 TRAINING OF LOCAL CONTRACTORS

5.2.1 Training of Contractors

In line with the programme document, the Programme continued using local small-scale contractors, namely groups of two to four artisans, in construction, pump installation and major repairs of community water points.

During the report period skill improvement training was given as on-site training in the following way: 16 contractors from Kakamega District were trained in hand-dug well and slab construction and in addition 12 contractors were trained in pump installation.The training in spring protection was carried out in Busia for 8 contractors. In Siaya 13 contractors were trained in hand-dug well construction and pump installation. In Bungoma district 10 contractors were trained in spring protection.

5.2.2. Training of Locational Pump Repairmen.

It has been felt necessary to train one repairman in each

location to do major repairs for hand pumps,which can not be taken care of by pump attendant. The training is given by attaching the pump repairman to mobile hand-pump maintenance team for about four months.

Because there are not enough hand pumps needing major repairs in some locations the construction department has given further training to some repairmen in slab making and repair, in pump installation and in spring protection to expand their working capacity. After the training the pump repairmen are supposed to work as self employed artisans in their respective locations charging water point committees for repair works and spare parts.

Up to the end of June 1990 there were 14 repairmen trained and 6 were in training.

5.3 TRAINING FOR SPECIAL GROUPS

5.3.1 Training for Women Groups

Leaders of women groups were trained in basic accounting and leadership skills. It is also worth of mentioning that the training of water point committees and pump attendants is focused to benefit women, because about half of committee members and all pump attendants are women.

5.3.2 Management Training

On top of the daily on-the-job guidance given by the Programme personnel, a lot of training events were participated by the staff members of MoWD, the Programme and district personnel involved in water supply development.

A workshop on planning and co-ordination of the decentralization activities of KFWWSP was held to further promote intersectoral collaboration especially in districts. The participants were Department Heads of the Programme, District Development Officers, District Water Engineers, Technicians, Geologists and Water Bailiffs from Bungoma, Busia, Kakamega and Siaya Districts. In addition the representatives of Primary Health Care Programme attended the workshop.

In connection with the preparation of water supply development plan, a special workshop was arranged for provincial and district heads to acquaint them with water resources and planning for the water supply development in the Western Province.

5.3.3 Staff Training by Short Courses and Seminars

Six senior staff members from the MoWD and the Programme participated a Symposium on Industrial Waste Waters, which was held in Nairobi.

African Water Technology Conference and Exhibition in Nairobi was attended by two persons from MoWD, Western Province and three persons from the Programme.

The Head of Planning Department attended a course on District Water Development Planning which was held in Nyeri by the Kenya Institute of Administration and the Water Resources Assessment Programme from MoWD Headquarters.

One Planning Engineer participated in three weeks training course on Planning of Rural Water Supply and Sanitation Projects, which was held in Nairobi by CEFIGRE.

One Training Officer attended a two weeks training of trainers seminar organized by Government Training Institute (GTI) in Maseno.

One Technician from the MoWD participated in six weeks course on installation and repair of KSB centrifugal and submersible pumps which was organized by the KSB representative in Kenya.

Two Mechanics attended a course on effective use of speed governors and tachographs given by the representative of the manufacturer.

Two plumbers from the MoWD (NWCPC) were trained over two weeks in water meter repair by the representative of Hymel water meters in Nairobi.

One Mechanic participated in one week course on the maintenance of diesel engines organized by the Lister representative in Kisumu.

One Secretary, who is attached to the Programme from the MoWD, participated in a course on advanced secretarial management offered by the Conference Secretaries in Nairobi.

Five secretaries participated in secretarial development course organized by Kenya Institute of Management in collaboration with KFPHCP and KFWWSP.

5.3.4 Training of Community Extension Workers

A lot of efforts have been made to get the community extension workers (locational representatives) to understand their role and to equip them with skills needed on grass-root level community work.

Introductory courses were given in Government Training Institute in Maseno to familiarize them with the objectives of the Programme and basic working skills like communication techniques

and report writing.

On top of the monthly co-ordination meetings and on-the-job training two seminars of five days were held in Kakamega in June-July 1990 to improve the skills and performance of locational representatives. Emphasis was in exchange of experiences and problem solving techniques.

5.3.5 Trainees Attached to KFWWSP

During the period under review, a total of 259 students were attached to the Programme as trainees. They were drawn from the national training institutions as shown in the summary table below:

PERIOD	NO. OF INSTITUTIONS	NO. OF STUDENTS	TOTAL TRAINING MONTHS
July-Sept 1989	12	60	144
Oct-Dec. 1989	12	129	332
Jan-March 1990	10	22	52
April - June 1990	11	48	119
TOTAL	45	259	647

The distribution of trainees between various training institutes during April - June 1990 is presented in appendix 5.5.

The efforts of the Programme to offer field attachment places for students coming from training institutes, which train manpower for water supply sector, have been highly appreciated in the MoWD and especially in KEWI. The Programme has developed a field attachment system with KEWI, which facilitates fluent planning, implementation and follow-up of field attachments for trainees who come from KEWI or from training institutions whose field attachments are coordinated by KEWI.

5.3.6 Training Abroad

Only one staff member participated in one week meeting of the Collaborative Council of External Support Agencies in the water sector in France.

6. COMMUNITY INVOLVEMENT

The main objective of this sector is to involve all beneficiaries in all aspects of their water supply development including planning, designing, implementation, operation and maintenance and actual ownership of the water facility.

6.1 DECISION MAKING AND PLANNING

6.1.1 Community Participation in Decision Making

The Programme team has recognized the important role played by the communities in making decisions concerning their water facilities. The Programme's role has changed from that of planner, designer, implementor, maintainer and owner of water facilities to that of adviser. Decision making involves a dialogue between the Programme staff and the communities, during which the communities are explained the activities planned by the Programme and the role to be played by each party. During the period under review, the communities attended several meetings to discuss the siting procedures, the contribution in labour, and the maintenance requirements. The outcome of these meetings was the participation and acceptance as shown in the table below:

DISTRICT	NO. OF MEETINGS HELD	ATTENDANCE		TOTAL
		WOMEN	MEN	
Kakamega	122	2,404	3,584	5,988
Bungoma	60	1,241	1,861	3,102
Busia	201	3,992	4,945	8,937
Siaya	83	2,171	1,898	4,069
TOTAL	466	9,808	12,288	22,096

6.1.2 Siting

Siting meetings took place in all Districts and at all levels. The objective of involving the communities in siting their water points is to ensure that all beneficiaries make decisions concerning the location of the facility and they accept it as theirs on completion.

The table below gives the summary siting report from June 1989-June 1990

SUMMARY JULY 1989 - JUNE 1990

DISTRICT	LOCATIONS	DATES	SP	DW	BH	TOTAL
Kakamega	9	20/6/89 - 19/6/90	50	16	31	97
Bungoma	7	16/1/90 - 20/6/90	18	17	17	51
Busia	11	3/8/89 - 20/6/90	32	58	62	148
Siaya	5	6/6/89 - 20/6/90	17	20	28	64
TOTAL	32		117	111	138	360

6.1.3 Feasibility Studies

Communities have continued to participate actively during the investigation of water facilities in their villages. The Hand Auguer Test Drill method has been used, and this has improved the status of the shallow wells. During the report period, the beneficiaries provided labour during investigations and also participated in the selection of the best sites to be constructed. The team also did direct initiation of wells where the community had requested the trimming and development of traditional wells.

SUMMARY OF FEASIBILITY STUDIES/INVESTIGATION REPORT
JULY 1989 - JUNE 1990

DISTRICT	LOCATIONS	TARGET NO.	MODE OF INVESTIGATION		NO. OF INVEST. SITES	NO. OF SUCCESSFUL SITES	NO. OF NOT FEASIBLE SITES	EFFICIENCY OF OUTPUT	REMARKS
			AUGER DRILL	INITIATION NO OF SITES					
Siaya	3	16	13	3	16	13	(3)	81.3%	The work progressed well due to permanent H.D.U. in the district.
Busia	9	51	6	49	51	24	-	47.1%	Due to lack of permanent HDU sites initiated to avoid delay Most of them reached rock basement.
Bungoma	6	30	21	12	32	31	-	103.3%	Output higher than the target due to changing of SP sites to BH sites.
Kakamega	10	25	17	12	29	28	1	112%	Output high due to changing of BH & SP site to HDW sites. Permanent HD Unit.

6.2 COMMUNITY PARTICIPATION IN PLANNING AND DESIGN

Communities have continued to be active in the design of their water supplies. During the report period, the communities participated during the design of the following gravity schemes, Lukolis, Kotur, Kapsakwony, Lwandeti and Kambiri. The designs of the mentioned water supplies have incorporated the needs of the beneficiaries, and it has been agreed that most of them when completed will be operated and maintained by the communities. A field visit was also organized for the Kapsakwony water committee to visit and review the designs and plans of a gravity water scheme in Meru District.

6.3 COMMUNITY PARTICIPATION IN CONSTRUCTION

The communities were active during the construction of their water supplies. They provided locally available materials such as stones and sand, fencing poles. They also provided labour by digging pits up to water level, cleared routes and fenced the sites. They also assisted during the repair and rehabilitation of old supplies. The table below gives the details of achievements:

ACTIVITY	NO. OF SITES	%
Digging of pits to water level	140	93%
Routes cleared	150	75%
Stones collected	149	99%
Fencing material	500	83%
Repairs and New Construction	470	46%

6.4 COMMUNITY PARTICIPATION IN OPERATION AND MAINTENANCE

Pump Attendants, Local Repairmen and Local Contractors continued to repair, operate and maintain the water points and gravity schemes. The Programme has continued to update their skills through training. During the report period, a feasibility study was carried out in order to find ways and means of decentralizing the distribution of spare parts so as to reinforce the local community's capacity to operate and maintain the water systems.

6.5 COMMUNITY PARTICIPATION IN MANAGEMENT OF FACILITY

A water committee has the overall responsibility of managing point water sources. The success of the committee depends on the support from the consumers, the Programme and the Ministry of Water Development.

6.5.1 Water Committee Formation

Committee Formation took place for every water point constructed and the reactivation of old committees continued as shown in the table below:

	KAKAMEGA	BUNGOMA	SIAYA	BUSIA	TOTAL	OUTPUT
Committees Formed Annual Target	155	55	24	130	364	83%
- Done 1/07/89 - 30/06/90	102	55	22	128	302	
Committees Activated Annual target	200	100	100	200	600	160%
- Done 1/07/89 - 30/06/90	290	171	232	287	980	

6.5.2 Registration of Committees

This activity is an inter-sectoral one with more responsibility given to the Ministry of Culture and Social Services. Once the committees are registered, it becomes easier for the committee members to open Postal Bank Accounts.

Water Committees Registered with Ministry	KAKAMEGA	BUNGOMA	SIAYA	BUSIA	TOTAL
Annual target	200	100	50	150	500
Registered	186	60	112	88	447

6.5.3 Land Easement

Given the fact that land is privately owned, it is important to negotiate with the land owners the legal requirements of allowing the beneficiaries to use the water facility. The process of land easement has been very slow due to long procedures involving several ministries and individuals.

Land Easements Registered with Ministry of Lands	Kakamega	Bungoma	Siaya	Busia	Total
Letters of no objection filled.	198	71	111	97	477
Annual target to be registered	100	50	50	100	300
Registered	69	48	29	52	198

6.5.4 Funds Collection and Book-keeping

The communities continued to collect funds in readiness for future maintenance of the water facilities. The achievements made during the period under review were as follows:

District	Kakamega	Bungoma	Siaya	Busia
Funds collected	184,466	101,862	94,718	113,359
Accounts opened	102	61	41	81

6.5.5 Handing Over of Community Water Supplies

The Programme together with the Resident Engineer inspected the water points and preliminary handed over 260 point water sources to the water committees to manage. In order to enhance the final handing over, locations formed Locational Development Committees which are charged with the responsibility of coordinating activities of individual water points. The concept of a Locational Water Development Committee is a new one, its outcome will be reported in next report.

6.5.6 Community Participation in Health Education

Extension workers in collaboration with relevant Government Ministries such as the Ministry of Health, Culture and Social Services do educate the communities in the Health aspects of water, and its impact on the lives of local communities. Advice has been given on how to keep the sites clean, storage of water at home, improve sanitation and personal hygiene. In collaboration with the Kenya Finland Primary Health Care Programme, the Programme has continued to create awareness to the local communities on the Health benefits acquired as a result of using clean water facilities.

6.6 ECONOMIC ACTIVITY

6.6.1 Socio-Economic Studies

The Socio-economic studies aim at identifying communities needs for effective designing,planning and implementation of sustainable water supplies. During the period under review, eleven (11) Socio-economic surveys were carried out in Busia and Bungoma Districts respectively as illustrated by the table below:

District	Locations	Dates
Bungoma	Cheptais-Chepkube	July 1989
	North Bukusu	July 1989
Busia	West Teso	August 1989
	South Teso	September 1989
	Central Marachi	October 1989
Bungoma	Kopsiro	November 1989
Busia	East Marachi	December 1989
	North Teso	January 1990
	West Bukhayo/Busia Town	February 1990
	Central Bukhayo	April 1990

In addition to the above mentioned Socio-economic studies, feasibility studies were carried out in specific areas of interest as detailed below:

STUDY	AREA	OBJECTIVE	DATES
Feasibility on the decentralization of spares	Whole Programme area	To find target groups within the Programme area who can participate in spare parts distribution and management.	January - March 1990
Follow up study of Kapsokwony Kongit water project	Kapsokwony Chemoge Kongit areas of Bungoma District	To identify the income levels of the local communities. - to identify the local capabilities in operation and maintenance of gravity schemes.	March - April 1990
Income generating activities and potential for women groups.	Busia, Bungoma Kakamega	To identify women groups involved in income generating activities. To recommend ways of improving women group performance.	February - June 1990

6.6.2 Socio - Economic Activities

The effective usage of water, time and energy saved as a result of bringing the water closer to the communities, can be used to judge the impact of water on the Socio-economic development of the affected communities. The table below shows the different Socio-economic activities initiated by the communities during the report period:

DISTRICT	TYPE OF ACTIVITY			
	BLOCK/BRICK MAKING	VEGETABLE GARDEN	FISH PONDS	TREE NURSERIES
Kakamega	4	231	9	27
Bungoma	3	104	4	21
Busia	2	137	2	19
Siaya	1	131	5	23

6.6.3 Women Group Programme

Women have been identified as the best managers as well as users of community water and sanitation facilities. In recognition of the role played by women in the development of rural areas, the Programme has designed activities which enable the women groups to generate incomes. Women have been given tenders to supply construction materials such as sand to District bases. In addition, the Programme constructed a filter sand project to be managed and owned by the women groups in Budalangi Division of Busia District. During the report period, a proposal for engaging women groups in fish farming on pilot basis was submitted, and progress on the implementation will be highlighted in the next report.

The Programme continues to train women in operation and maintenance, management and health education. There has been strong collaboration between the women organizations such as KANU, Maendelo of Wanawake organization and the Programme in using women leaders as part of the extension network.

7. IMPLEMENTATION SUPPORT

7.1 PERSONNEL ORGANIZATION

During the report period the detailed organization charts for each department were prepared and presented in the plans for 1989 and 1990. The following vacancies were not filled during the report due to the following reasons:

Assistant system analyst
To be posted from the Ministry of Water Development

Head of community development section
The post to be filled by a personnel from the Ministry of Culture and Social Services.

Assistant mechanical engineer
To be posted from the Ministry of Water Development

Material system officer
To be posted from the Ministry of Water Development

Groundwater Engineer
To be posted from the Ministry of Water Development

Laboratory staff, laboratory technologist preferably one with higher national diploma (HND, the rest Ordinary National Diploma - OND)
To be posted from the Ministry of Water Development

At the end of the report period, the staff is as follows

	Actual	Planned
Consultant	15	15
Ministry staff	37	60
Programme staff	339	374

7.2 COSTS

The total costs during the report period were FIM 35.2 million (KES 190 million). The expenditure for the year 1990 (Jan-June) was 90% of the Programme budget for that period. The total costs are presented in appendix 13 and 14.

7.3 LOCAL COMPONENT

During the management committee meeting held on 11th May 1990, it was agreed that the local component be one third of the net expenditure of GoK for development of water supply in the Districts of the Programme area. The net expenditure, as printed in the 1990/91 financial estimate, amounts to £ 393,300 out of which £ 60,000 has been marked as a local component for KFWWSP. In order to comply with the agreement, the amount to be allocated as a local component should be £ 131,100 (Ksh. 2,622,000)

7.4 RESIDENT ENGINEER'S OFFICE

During the period under review the Resident Engineer was officially nominated by MoWD for the Programme and took over office towards the end of the year 1989 from the then acting Resident Engineer who officially retired at end of December, 1989. Accordingly, the supervision of the Programme's activities by the office continued with R.E. and his Assistant working hand in hand with various departments of the Programme.

The necessary facilities provided during the report period were adequate except for the transport for field operation whereby only one vehicle was allocated to the office.

The Programme continued informing the Resident Engineer of on-going construction activities in the Programme area whereby the office undertook the day-to-day supervision of the Programme's activities.

During the report period handing over programme was drawn for the year 1990. However, it lagged behind schedule up to the end of the report period. The Programme managed to hand over a total of 260 water points in nine locations.

7.5 CO-ORDINATION

Coordination of the Programme with the Ministry of Water Development continued throughout the report period at all levels. Regular monthly meetings took place in each District, attended by both the Ministry and the Programme's staff, while the Programme kept the Provincial Water Engineer/Resident Engineer well briefed on all the Programme activities including achievements, plans and targets.

The FINNIDA Coordinator and FINNIDA through Embassy of Finland, Nairobi followed the Programme activities very closely and has continued coordinating the Programme activities with the Ministry of Water Development Headquarters.

The Programme's home office coordinator and FINNIDA headquarters continued the coordination in Finland. The first meeting of the

Management Committee of the Programme was held on 11th May 1990.

During the meeting the terms of reference for the Management Committee were adopted. Co-ordination with the Primary Health Care Programme has continued with several Technical Committees being held during the report period. Coordination with other Ministries such as the Ministry of Culture and Social Services and Ministry of Health has been undertaken at Divisional level where matters on Community involvement in implementation of the Programme's activities are discussed.

APPENDIX 1

WATER POINTS CONSTRUCTED BY THE PROGRAMME UP TO 30TH JUNE, 1990

PRODUCTION	KAKAMEGA	BUSIA	BUNGOMA	SIAYA	TOTAL
SPRINGS					
- Inv.Phase	16	-	5	-	21
- Phase I	106	26	32	12	176
- Phase II	306	148	92	103	649
- Phase III	94	23	36	12	165
Sub-Total	522	197	165	127	1,011
DUG WELLS					
- Inv. Phase	36	32	27	16	111
- Phase I	195	61	29	9	294
- Phase II	140	134	79	97	450
- Phase III	46	1	25	5	77
Sub-Total	417	228	160	127	932
BOREHOLE WELLS					
- Inv. Phase	36	28	10	8	82
- Phase I	68	98	54	46	266
- Phase II	120	99	43	56	318
- Phase III	108	70	28	28	234
Sub-Total	332	295	135	138	900
TOTAL	1,271	720	460	392	2,843

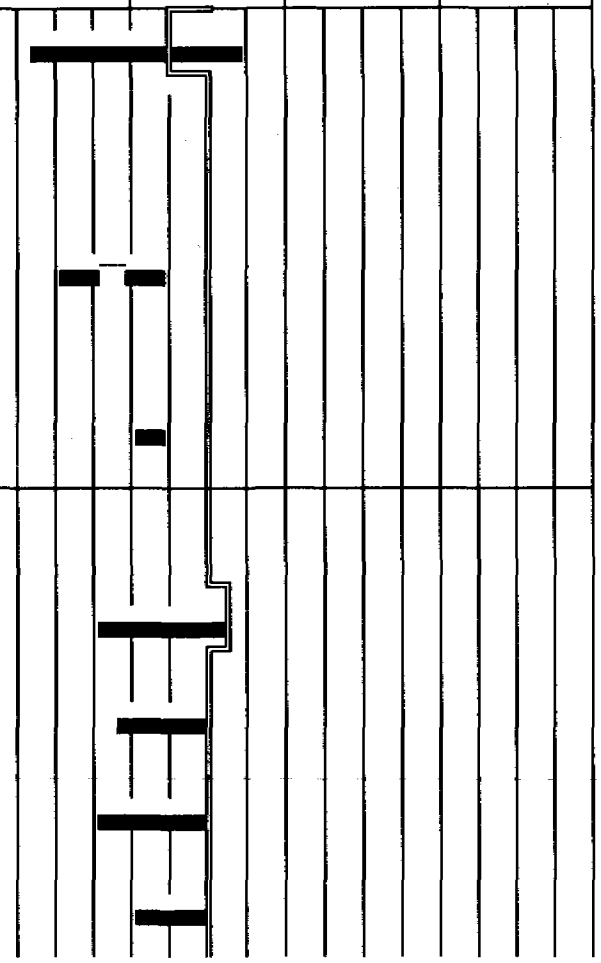
APPENDIX 2

WORK PROGRAMME FOR WATER SUPPLY DEVELOPMENT PLAN

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
EXISTING DATA	Review existing W/S plans	DDP, M&MP, WSDP 1983 reviewed	Plan Area Added		100	98				
	Review existing water supplies	M&MD/other W/S systems invented and plotted on maps, condition assured	75 W/S 2850 WP	75 W/S 2850 WP	100	95				
PROGRAMME AREA	Boundaries and areas	Locations and sub-locations boundaries areas fixed.	5230km2	5230km2	100	100				
WATER RESOURCES	Identify ground water potential quality/ quantity	Analyzing hydrogeological and hydrology data, maps prepared	5230km2	5230km2	100	95				
	Survey for surface water resources	Analysis of surface water resources dams,springs,rivers, lakes. Surface water resources documented and taken into acc. in WSDP prepare.	ESTAB.	DEVEL.	ESTAB. 100	80				

WORK PROGRAMME FOR WATER SUPPLY DEVELOPMENT PLAN

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV.				
WATER DEMAND	Sos. econ factors scrutinized	Community base sos. econ.facts analyzed affordability, water use habits, criterions and recommendations	27 pcs	27 pcs	100	50				
	Baseline data on population, livestock, institutional and commercial facilities	Population figures concluded forecast ready . Years 1989,93,98,2005 Estimate of livestock population number of pupils in schools, hospitals health centres, dispensaries and hotels, shops, bars.	AWD caetm eeapr ntd ed	D evel op	AWD caetm eeapr ntd ed 100	100				
WATER SUPPLY OPTIONS	Sources development	Water supply development;	AO cp ct	D evel op	AO cp ct					
	Borehole/dug well	Pump, storage,distribution	ei po tn es d	ment	ei po tn es d	100				
	Spring protection	Storage, distribution				100				
	Surface water intake	Storage, chlorination, limited distribution				100				
	Roof catchment	Storage				100				

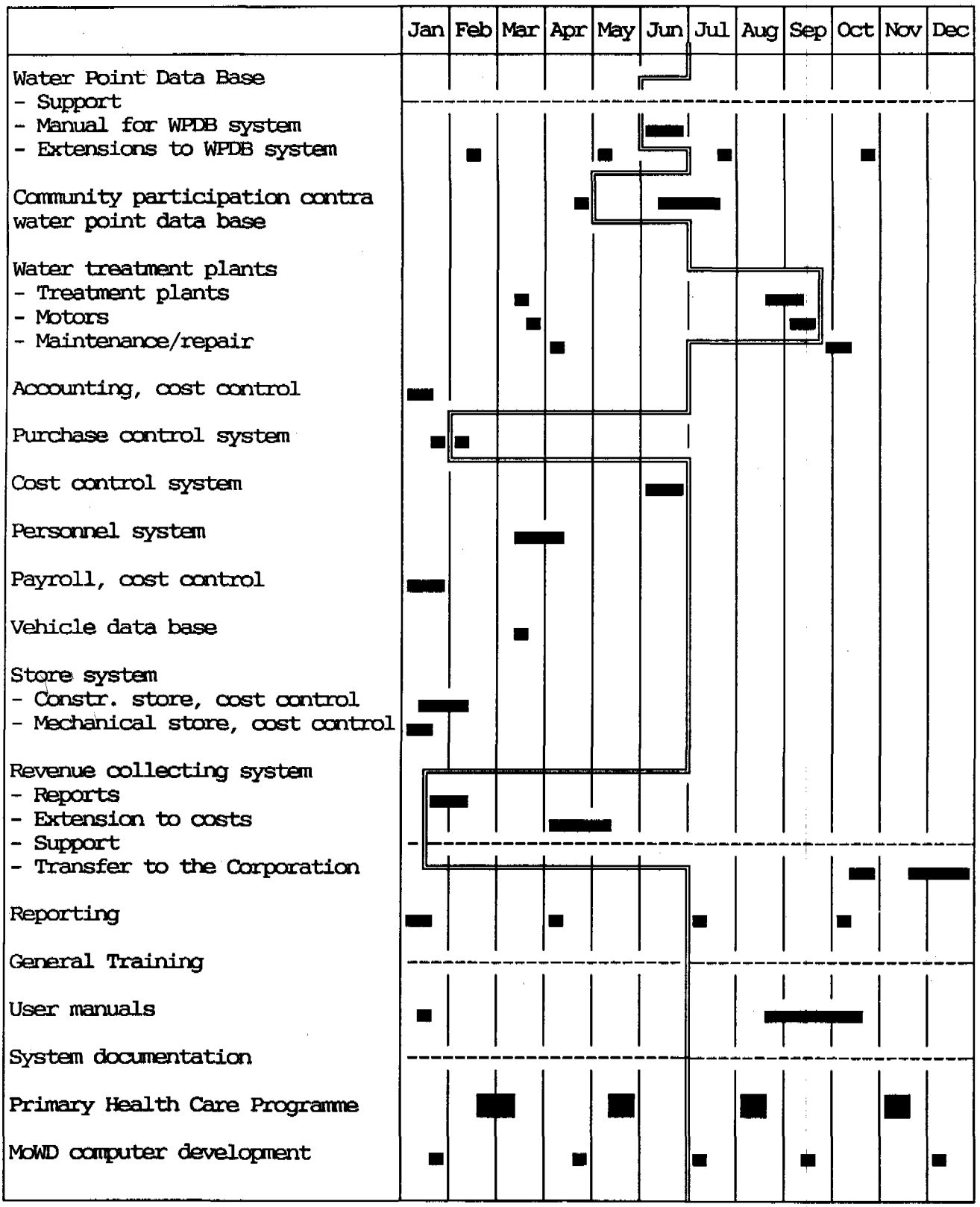


WORK PROGRAMME FOR WATER SUPPLY DEVELOPMENT PLAN

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV.				
	Rock catchment	Storage				100				
PROGRAMMES	Recommendation for Programme construction activities	Implementation programme for every district during 1990-93, 94-98 and 99-2005.	WSDP 2.7MIL	DEV. 0.8MIL	WSDP 0.1MIL	70				
	Interim report	Introduction of interim report to Districts (DPU), comments and recommendations	ESTAB	DEVEL.	ESTAB	100				
REALIZATION OF PROGRAMMES	Drawings	Guideline and drawings completed	27	27		0				
	Work method guidelines	Special volumes for specific method guidelines published	5	5		0				
	Quality control	Specifications published	1	1		0				
	Data base (computerization)	Establish an adequate system for retrieval and collection of data in regular use in updating WSDP	ESTAB.	DEVEL.	RUN.	50				

APPENDIX 2.1 1/1

WORK PROGRAMME FOR COMPUTERIZATION FOR 1990



APPENDIX 2.2

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

MAJOR WATER SUPPLIES & LOCATION	SOURCE	CONSTRUCTION		POPULATION PROJECTION			WATER DEMAND, M/3 DAY		
	YIELD (M3/H)	PIPE WORK (M)	COST. EST. KSH	INITIAL	FUTURE	ULTIMATE	INITIAL	FUTURE	ULTIMATE
1. UGUNJA WATER SUPPLY		(9,000)		(1990) -	(2000) -	(2010) -	(1990)	(2000)	(2010)
- SIAYA DISTRICT - UGUNJA MARKET CENTRE	1 NO. B/HOLE 6	Rising main - 63mm Ø upvc "c" 810m Distribution mains upvc 8,142 m 110 mm Ø class "B" 1,122 m 90 mm Ø class "B" 204 m 63 mm Ø class "B" 3,132 m 63 mm Ø class "C" 702 m 32 mm Ø class "B" 2,652 m 32 mm Ø class "C" 330 m	2.5 mill	2,500	4,000	6,000	90	170	330
2. NAVAKHOLO W/SUPPLY	B/HOLE	(21,00m)		(1991)	(2001)	(2011)	(1991)	(2001)	(2011)
- KAKAMEGA DISTRICT - BUNYALA LOCATION	1NO. 40	Rising main - 160 mm Ø upvc / "c" 2,874 m Distribution mains upvc 17,886 m 160 mm Ø "B" 1,026 m 110 mm Ø "B" 1,800 m 90 mm Ø "B" 6,486 m 63 mm Ø "B" 8,574 m	3.0 mill	8,000	11,200	16,250	230	370	580
3. LUKOLIS W/SUPPLY	SPRING	63 mm Ø pvc		(1991)	(2001)	(2011)	(1990)	(2001)	(2011)
GRAVITY SCHEME - BUSIA DISTRICT SOUTH TESO LOCATION	1NO 19	(2660)	0.25mill	1,200	1,743	2,531	43	62	102

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

MAJOR WATER SUPPLIES & LOCATION	SOURCE	CONSTRUCTION		POPULATION PROJECTION			WATER DEMAND, M/3 DAY		
	YIELD (M3/H)	PIPE WORK (M)	CONST. EST. KSH	INITIAL	FUTURE	ULTIMATE	INITIAL	FUTURE	ULTIMATE
4. KOTUR W/SUPPLY	SPRING	63 mm Ø pvc (1550)		(1990)	(2001)	(2011)	(1990)	(2001)	(2010)
BUSIA DISTRICT	1NO		0.14mill	1,200	1,693	2,320	68	108	205
SOUTH TESO LOCATION	10								
5. KAMBIRI W/SUPPLY	SPRING	160 mm Ø pvc 3500		(1991)	(2001)	(2011)	(1991)	(2001)	(2011)
GRAVITY SCHEME	1NO.	160 mm Ø G.I 2500	4.6 mill	428	10,255	14,253	306	458	688
- KAKAMEGA		110 mm Ø pvc 2000							
- EAST ISUKHA		110 mm Ø G.I 1000							
- KAMIRI SUB-LOC.	29	75 mm Ø pvc 2500							
		75 mm Ø G.I 200							
		50 mm Ø pvc 800							
6. MATURU-LUANDETI W/SUPPLY	SPRINGS	75 mm Ø pvc 3000		(1991)	(2001)	(2011)	(1991)	(2001)	(2011)
GRAVITY SCHEME		75 mm Ø G.I 50	0.7 mill	1,561	2,212	3,106	89	136	245
- KAKAMEGA DISTRICT		50 mm Ø pvc 2000							
LUANDETI & MATURU SUB-LOCATIONS	13	40 mm Ø pvc 3000							
7. KASPSAKWONY PIPED SCHEME	SPRINGS 3 NO.	110 mm Ø pvc 600		(1989)	(1999)	(2009)	(1989)	(1999)	(2009)
WATER SUPPLY: PHASE II	6	80 mm Ø pvc 200	0.5 mill	2,198	3,254	4,917	250	360	520
BUNGOMA DISTRICT	13	63 mm Ø pvc 1400							
KAPSAKWONY LOC	21								

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

MAJOR WATER SUPPLIES & LOCATION	SOURCE	CONSTRUCTION		POPULATION PROJECTION			WATER DEMAND, M/3 DAY		
	YIELD (M3/H)	PIPE WORK (M)	CONST. EST. KSH	INITIAL	FUTURE	ULTIMATE	INITIAL	FUTURE	ULTIMATE
8. BUTERE WATER SUPPLY	B/HOLE	110 mm ø pvc `B' 900		(1989)	(1999)	(2009)	(1989)	(1999)	(2009)
- KAKAMEGA DISTRICT	3NO.								
- BUTERE TOWN		90 mm ø pvc `B' 391	1.4 mill	6,498	8,894	12,280	214	297	412
		63 mm ø pvc `B' 1178							
	3								
	6	32 mm ø pvc 968							
	3								

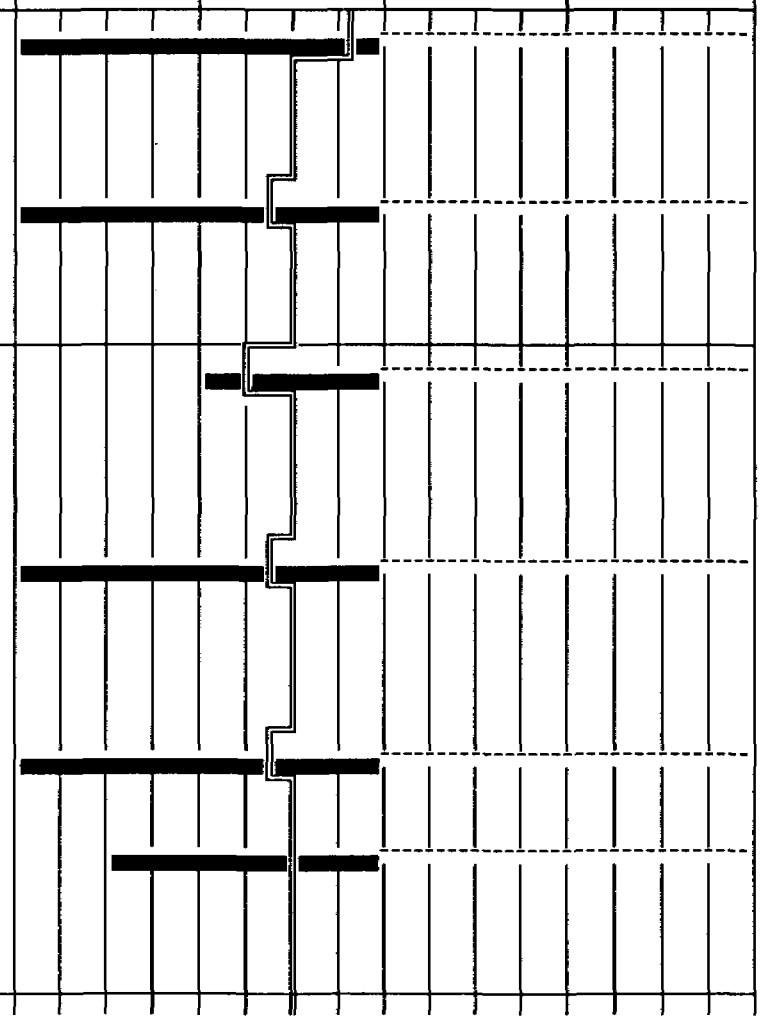
INSTITUTIONAL WATER SUPPLIES & LOCATIONS	SOURCE	CONSTRUCTION		POPULATION PROJECTION			WATER DEMAND (M3/DAY)		
	YIELD (M3/H)	PIPE WORK (M)	COST EST. (KSH)	PRESENT (1990)	FUTURE (2000)	ULTIMATE (2010)	PRESENT (1990)	FUTURE (2000)	ULTIMATE (2010)
1. MATAYOS HEALTH CENTRE WATER SUPPLY	Borehole C-8014	60- 50 mm ø G.I	52,000	645	955	1,415	16	23	37
- Busia District									
- West Bukhayo Location									
- Matayos sub-location	3.70								
2. MAUTUMA HEALTH CENTRE WATER SUPPLY	Borehole C-855	2440- 50 mm ø G.I	570,000	330	482	706	12	21	38
- Kakamega District									
- Lumakanda Location									
- Mautuma sub-location	4.00								
3. KAVUJAI HEALTH CENTRE WATER SUPPLY	Spring	18- 80 mm øG.I	210,000	1,930	2,829	4,113	38	56	80
		9- 50 mm ø G.I							
- Bungoma District									
- North Bukusu Location		4- 40 mm ø G.I							
- Nalondo sub-location		3- 150 mm øG.I							
	5.60								

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

INSTITUTIONAL SUPPLIES & LOCATIONS	SOURCE	CONSTRUCTION		POPULATION PROJECTION			WATER DEMAND (M3/DAY)		
	YIELD (M3/H)	PIPE WORK (M)	COST EST. (KSH)	PRESENT (1990)	FUTURE (2000)	ULTIMATE (2010)	PRESENT (1990)	FUTURE (2000)	ULTIMATE (2010)
4. IPALI HEALTH CENTRE WATER SUPPLY - Kakamega District - West Bunyala Location - Ebusiekwe sub-location	Spring 1.80	874- 50 mm Ø	220,000	350	520	800	5	8	11
5. MUKHOBOLA HEALTH CENTRE WATER SUPPLY - Busia District - Bunyala south Location - Magombe west sub-location	Borehole 10.6	60- 50 mm Øpvc	206,000	295	405	590	8	11	15
6. HAMISI HEALTH CENTRE WATER SUPPLY - Kakamega District - South Tiriki Location - Gavundunyi sub-location	Spring 10.3	600- 50 mm ØG.I	300,000	270	385	500	6	9	11
7. NAITIRI HEALTH CENTRE WATER SUPPLY - Bungoma District - Naitiri Location - Naitiri sub-location	Borehole 1.3	245- 63 mm Ø pvc	350,000	305	450	670	8	12	18
8. MUKUMU COMPLEX W/SUPPLY - Kakamega District	Borehole 2 No. 5.37	-	603,000	-	-	-	167	243	362
9. SIRISIA HEALTH CENTRE WATER SUPPLY - Bungoma District - Kulusiru sub-location	Borehole 1.5		209,000	442	657	975	13.50	20.11	30
10. EREGI WATER SUPPLY	Spring 6.5 Boreholes 3No. 20	2134 63 mm Ø pvc	1,500,000	5,000					

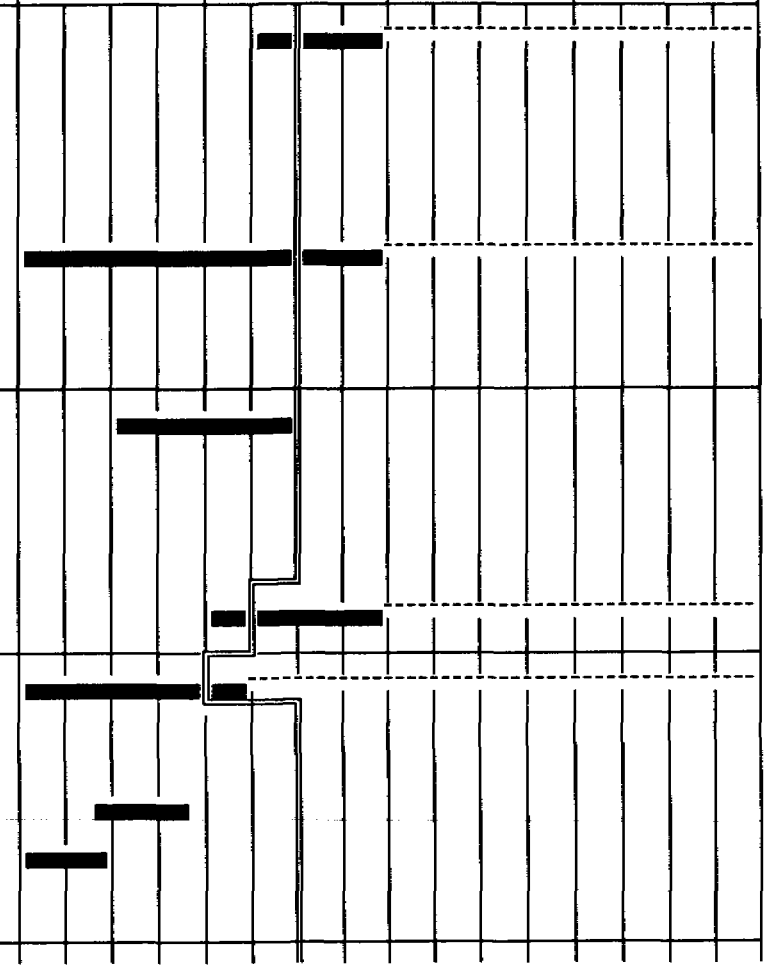
WORK PROGRAMME FOR PHYSICAL IMPROVEMENTS

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
WATER POINTS	Water points provided during previous phases rehabilitated	Rehabilitations done within locations, where new water points are constructed according to the recommendations from O&M department.	1000 water points rehabilitated	400	200	86				
	New water points constructed	Water points constructed in selected locations based on the present service coverage and to the sites, selected by the community.	4250 New water points constructed	2,850	440	36				
PIPED WATER SCHEMES	Piped schemes provided by the Programme in previous phases repaired.	Modification of the rising main in Sega, electrification of Nambale and Butula Muandas W/S, improvements of Moding W/S, coating of Strujas and increasing the capacity.	8 Water supplies during phase III	-	6	25				
	Rehabilitation and construction of piped schemes.	Rehabilitations and construction of piped schemes according to the district development plans, priorities given by DDC's, when found feasible	16 Water supplies during phase III	0.5	5.5	40				
		Water supplies for Health Centres, Naitiri, Hamisi, Kabuchai, Ileho and six others to be specified later.	30	10	10	35				
		Small water supplies according to the requests of DDC, completion of Mukumu and Eregi and construction of new supplies according to the 10% allocation given to DDC.		1		50				



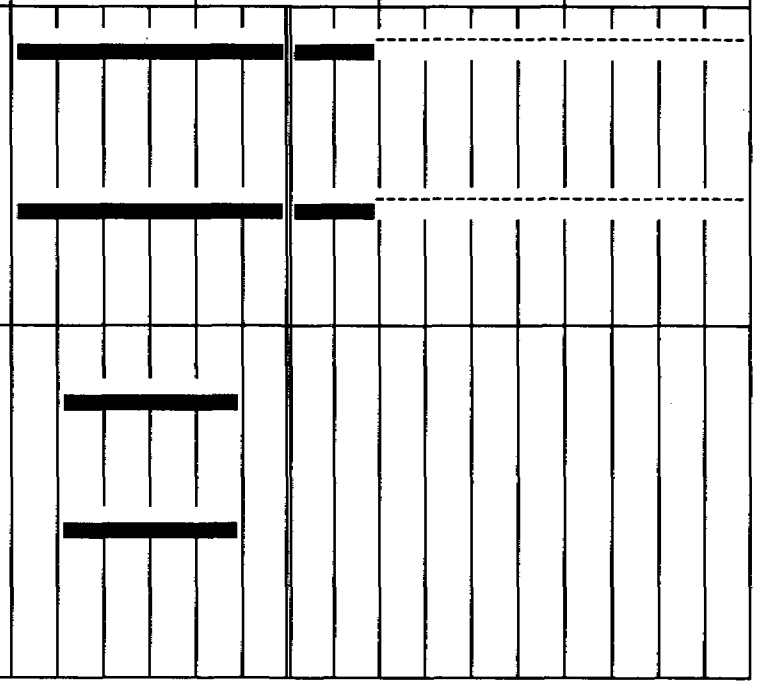
WORK PROGRAMME FOR PHYSICAL IMPROVEMENTS

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
WATER TREATMENT PLANTS	Improvement of existing facilities based on the survey carried out by O&M department.	Rehabilitation of existing water treatment plants	30	-	4	50				
	Rehabilitation and augmentation of Kakamega W/S	Installation of meters and design of the network and augmentation.	4,000 meters installed	2,500	1,000	50				
ALTERNATIVE WATER SOURCES	Reliable information on feasible alternative water treatment and distribution systems in programme area.	Rehabilitation of roof catchments and monitoring of those	2	1.5	0.5	100				
		Investigations of other alternative sources.				25				
CONSTRUCTION OF BUILDINGS	Buildings for Kakamega and district bases	Construction of district base offices for Siaya in connection with Ugunja piped scheme.	4	3.5	0.5	0				
	Laboratory		1	1						
	Augmentation of garage and store.		1	1						

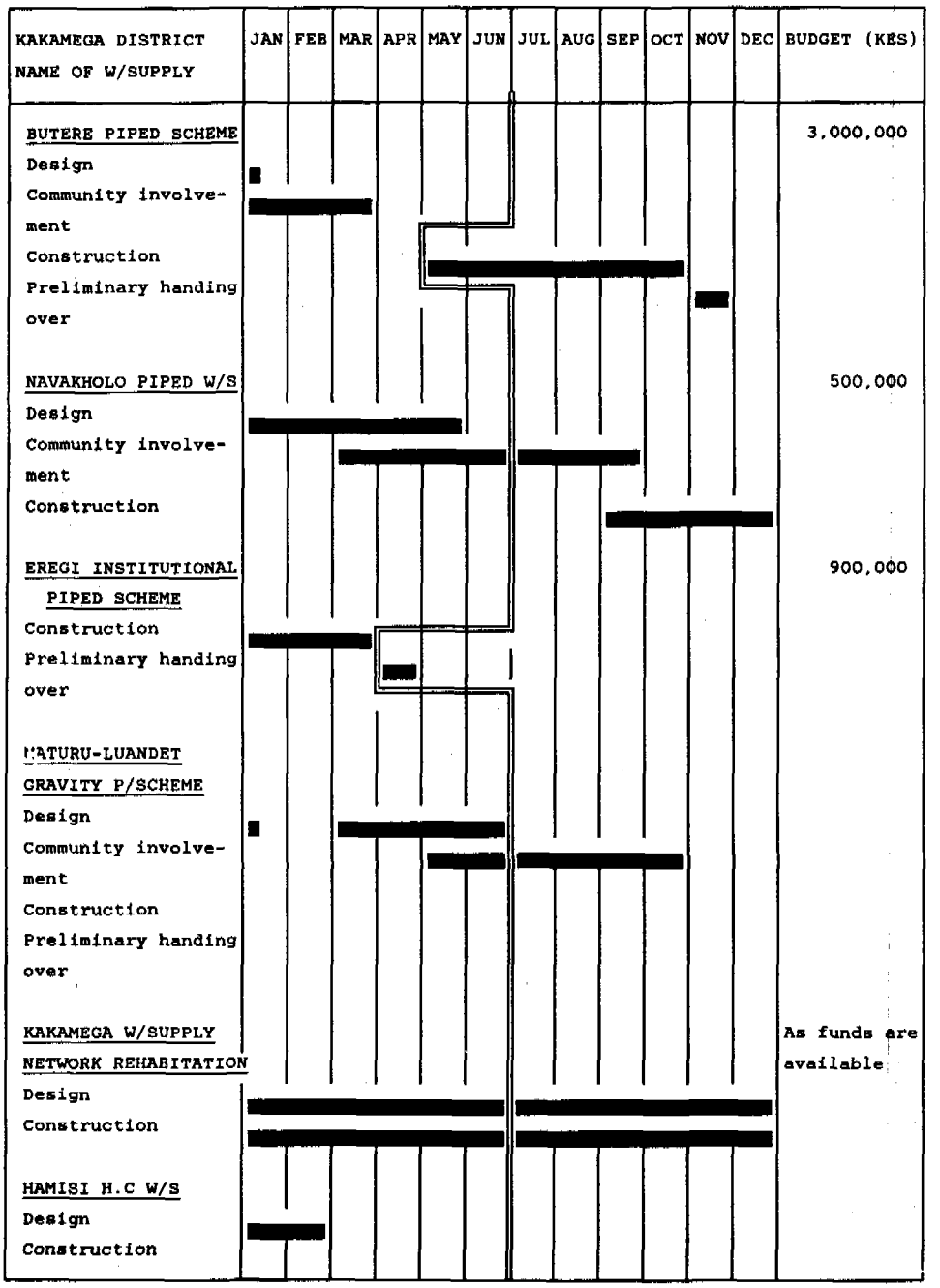


WORK PROGRAMME FOR PHYSICAL IMPROVEMENT

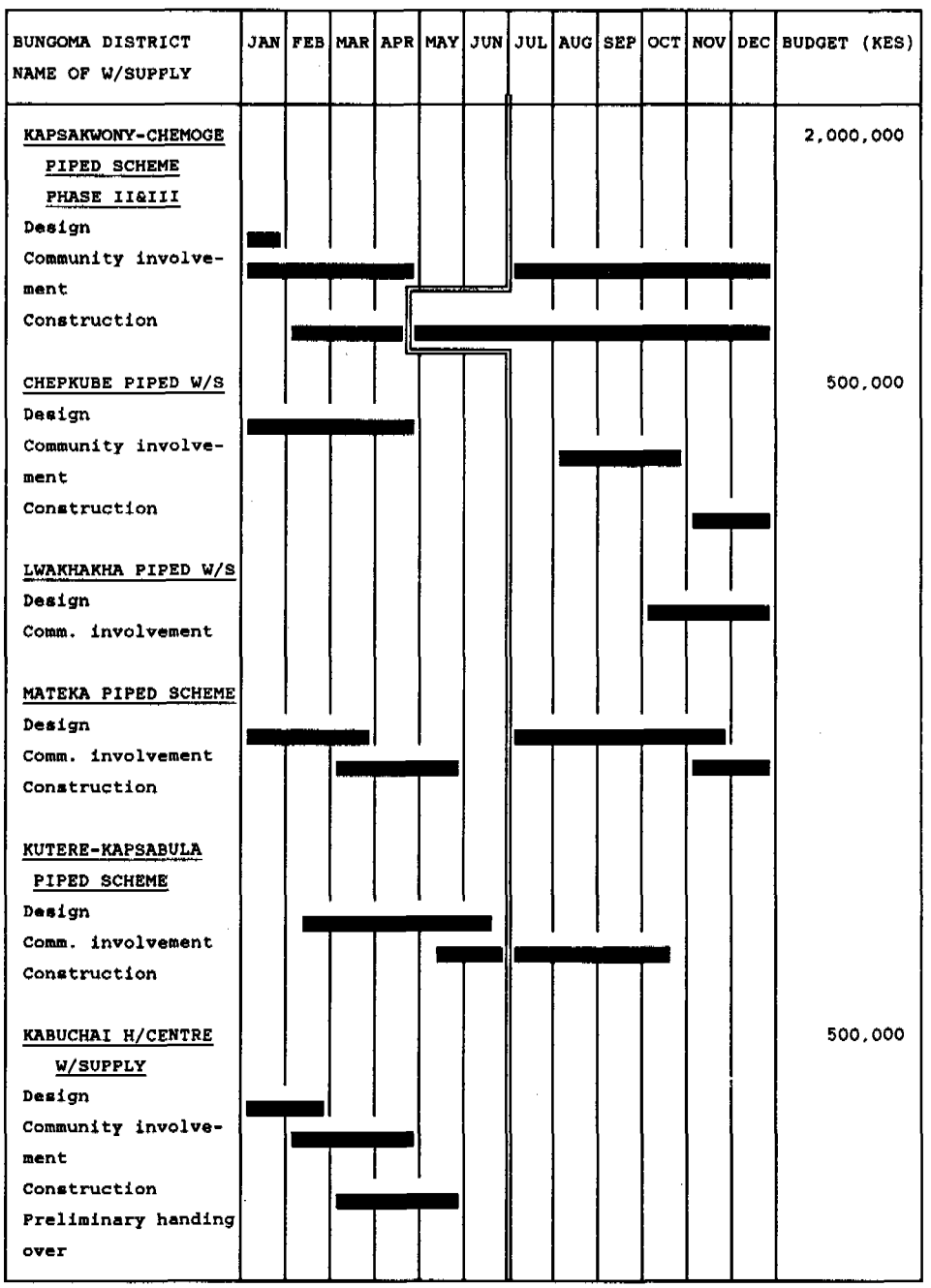
COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
WORKSHOP	Vehicle and equipment maintenance	Will continue as before				50				
	Mechanical store services	To have all necessary spares on stores or sources available for immediate delivery.				50				
SURFACE WATER INTAKE IMPROVEMENT	Provision of dredging unit	Handing over the unit to MoWD				100				
	Sufficient number of trained operators	On-the-job training with dredging unit	2	2	-	100				



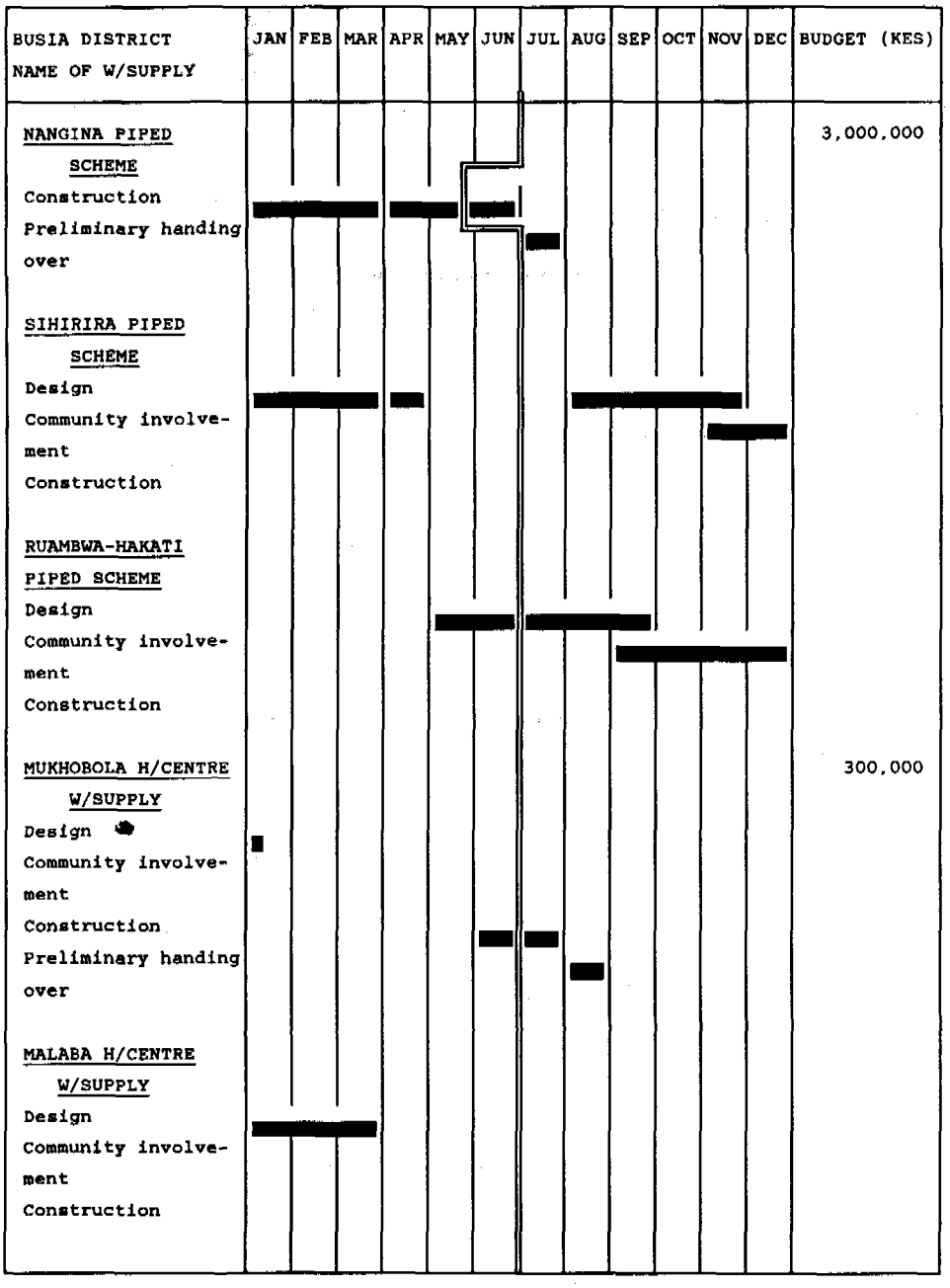
WORK PROGRAMME FOR PIPED WATER SUPPLIES AND BUILDING CONSTRUCTION (SUBJECT TO AVAILABILITY OF FUNDS)



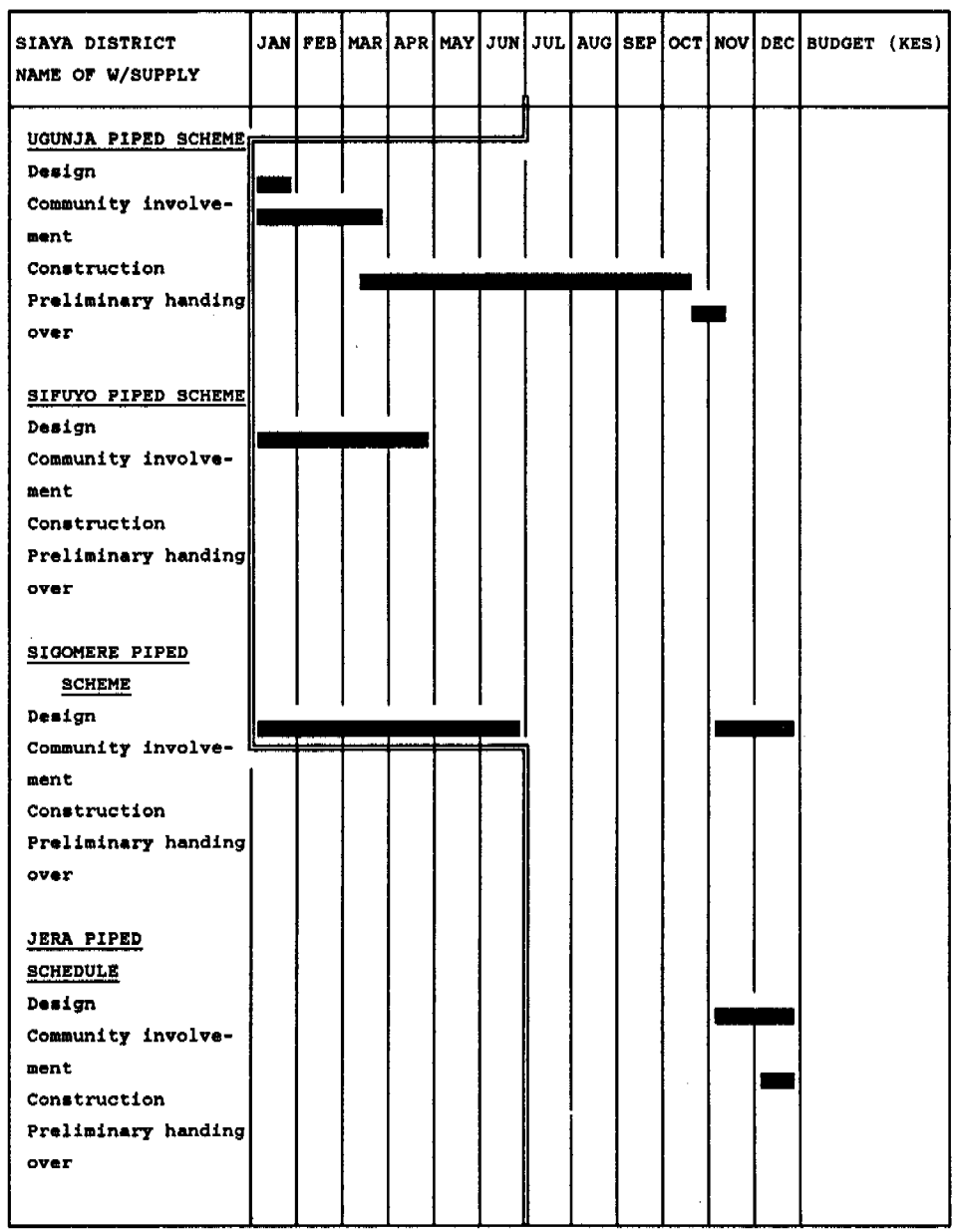
WORK PROGRAMME FOR PIPED WATER SUPPLIES AND BUILDING CONSTRUCTION (SUBJECT TO AVAILABILITY OF FUNDS)



WORK PROGRAMME FOR PIPED WATER SUPPLIES AND BUILDING CONSTRUCTION (SUBJECT TO AVAILABILITY OF FUNDS)



WORK PROGRAMME FOR PIPED WATER SUPPLIES AND BUILDING CONSTRUCTION (SUBJECT TO AVAILABILITY OF FUNDS)

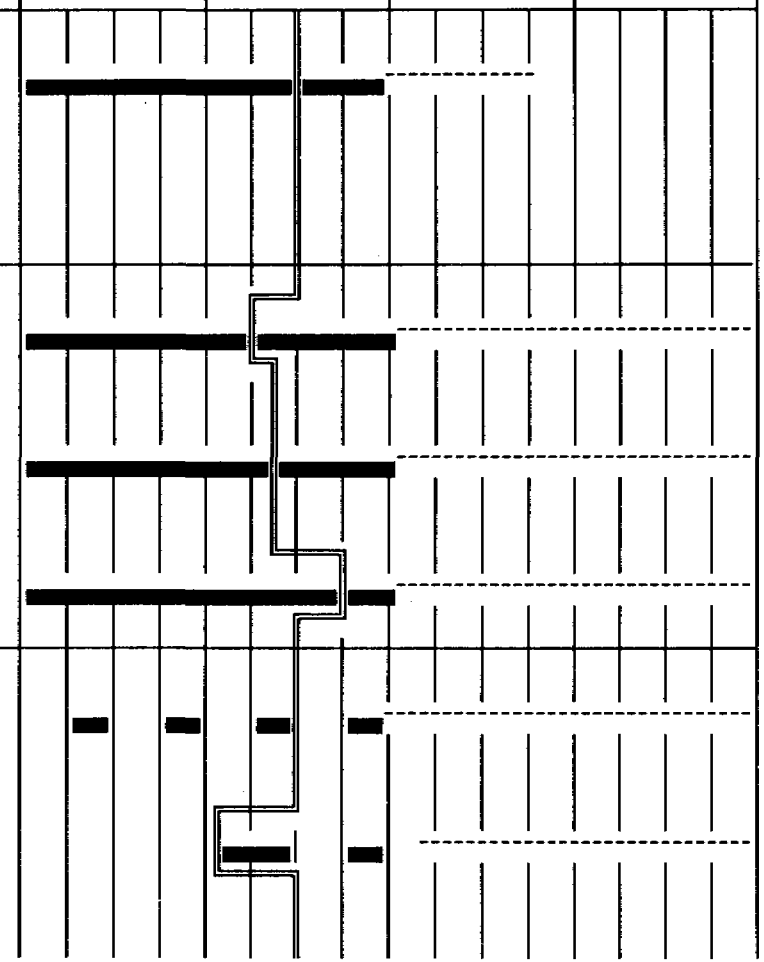


BUILDING CONSTRUCTION PROGRAMME 1990
(SUBJECT TO AVAILABILITY OF FUNDS)

ITEM	1	2	3	4	5	6	7	8	9	10	11	12	KES
1. Rehabilitation of the office of D.W.O Kakamega													550,000
2. Rehabilitation of the office of D.W.O Bungoma													900,000
3. Rehabilitation of the office of D.W.E Busia													1,200,000
4. Rehabilitation of the office of D.W.E Siaya													900,000
5. Rehabilitation of the provincial w/shop buildings													2,500,000
6. Concrete water tank construction													500,000
TOTAL													6,550,000

WORK PROGRAMME OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
1. POINT SOURCE SUPPLIES	Sufficient number of trained pump repair-men for every location.	On-job-training with two mobile teams for locational pump repair-men to be familiarized with different types of handpumps and O&M procedures.	54 repair-men	14	24	50				
	Achieve reliable village level O&M system	Changing of handpump Nira AF 76 to Nira AF 85 for boreholes up to 13 meters	150 pumps	30	45	24				
		Changing of handpump Indian Mark II to Afridev for boreholes up to 45 meters.	405 pumps	65	113	39				
		Changing of handpump Nira AF 76 to Nira AF 85 for dug wells	315 pumps	65	84	76				
	Water points acceptable condition for final handing over.	Inspection of handpumps and wells and spring structures before and after preliminary handing over	1000 water points	125	400	65				
		Inspection for final handing over	400 water points	-	200	21				



WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
	Operation and maintenance procedures. Appropriate O&M manuals prepared for each type of water points	1. Manuals for handpumps								
		- Afridev	1	1	-	100				
		- Indian Mark II	1	-	1	0				
		- Nira AF 85	1	-	1	45				
		2. Manuals for spring protection	1	-	1	0				
		3. Manuals for each type of submersible pumps	11 manuals	-	7	57				
		4. Distribution of documents and involvement of communities	4,400 Instruction sheets	1,012	880	60				
	Spare part distribution system. Developed purchasing, inquiring ordering & payment procedures are in use	1. Identification and necessary feasibility studies	Estimates for long term supplies,	-	Plans ready and accepted	100				
		2. Procurement			Spares available	25				
		3. Stocking	Stored items in specific quantity		Spare avai.& distributed	0				
		4. Material system control	Recording and reporting procedures are computerized		System created	0				

WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

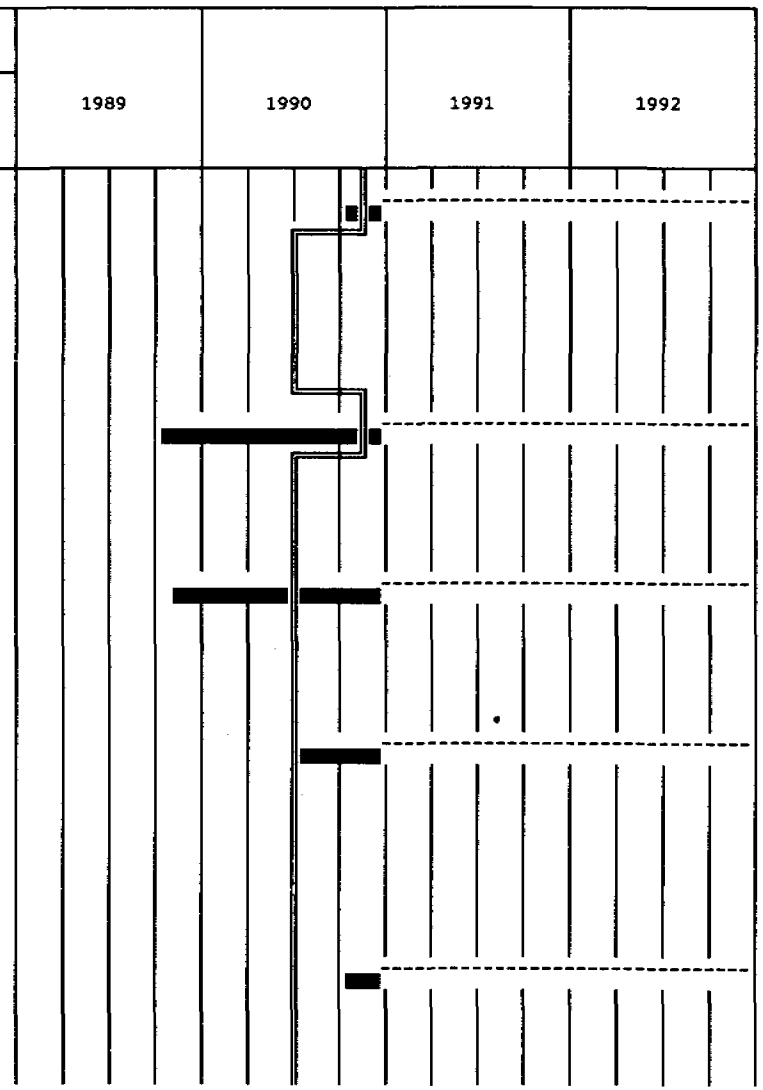
COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
2. PIPED WATER SUPPLIES	Existing - data available and analyzed	1. Inventory of piped schemes and plants	89 piped W/S	-	89	100				
		2. Identification and analyzing of data	89 piped W/S	-	89	70				
		3. Management and personnel studies.	25 piped W/S	-	25	100				
	Design	1. Updating the plans and layouts	33 piped W/S		13	100				
		2. Suggestions for improvements and rehabilitations	15 piped W/S		3	66				
		3. Implementation	15 piped W/S		3	33				
	Operation maintenance procedures	1. Preparation flow diagrams	33 diagrams		13	10				
		2. Specifications and instructions	33 pcs		20	10				
		3. Manuals	33 manuals		13	40				
		4. Mechanical and service cards	33 W/S		20	10				
		5. Monitoring system.	33 pcs		13	10				

WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
3. WATER TREATMENT PLANTS	Existing Data Source. Survey report of water treatment plants	1. Assessment of existing situation	18 WTP		18	90				
		2. Management and personnel studies	18 WTP		18	75				
		3. Inventory of machines and equipments	250 pcs		250 pcs	75				
		4. Identification and analyzing data	18 WTP		18	50				
	Design	1. Updating the plans and layouts	18 WTP		18	33				
		2. Suggestions for improvements	18 WTP	3	9	66				
		3. Detail planning and programming the improvements	15 WTP	2	5	40				
	Operation & maintenance procedures, operators familiar with prepared procedures and carrying them out accordingly	1. Standardization	Standards available	-	Plan ready & accepted	0				
		2. Record keeping	Records taken as scheduled	-	Form ready & accepted	10				

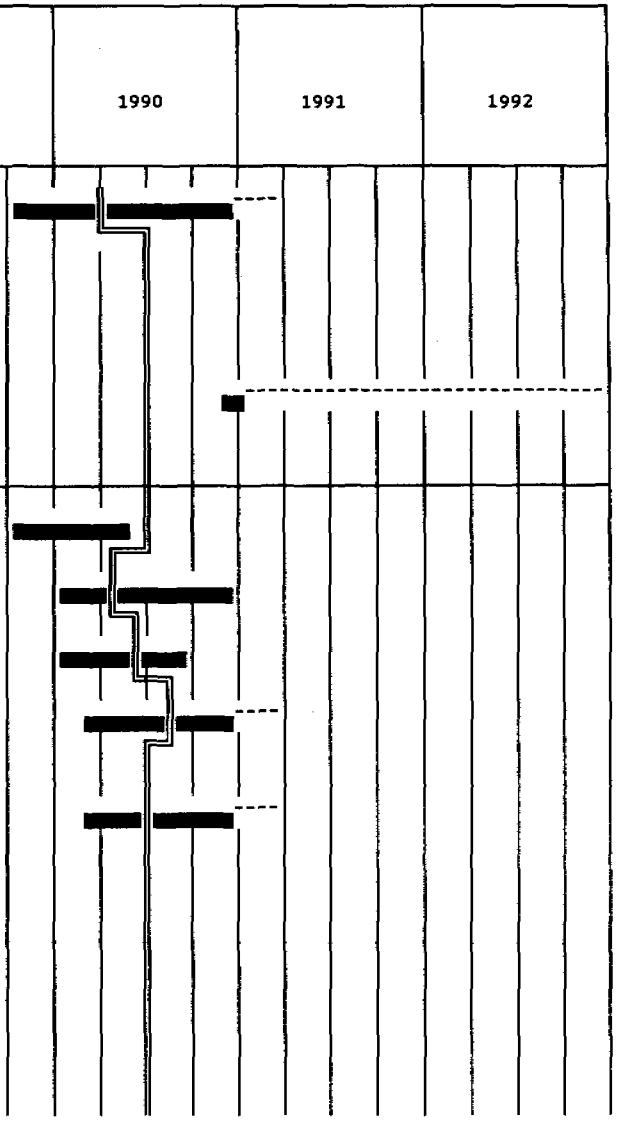
WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
		3. Quality control	Plants operating according to standards	-	Each plant has equipments	10				
		4. Specifications	Spex documented and available	-	Spex ready & accepted	90				
		5. Flow diagram & drawings & layout	18 (each water supply)	2	16	50				
		6. Manuals	18 (Manuals available for each water supply	-	18	0				
		7. Instructions	Instructions available		Plan ready & accepted	0				



WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
		8. Service-lubrication cards	Cards distri-buted & compute rized		Form ready & accepted	25				
		9. Monitoring	Monitoring prog. & procedures implemented.		Plan ready & accepted	0				
	Programmes for WTP rehabilita-tions 1990	1. Investigations	8 WTP	2	6	100				
		2. Design	8 WTP	1	7	28				
		3. Implementation	6 WTP		6	33				
		4. Rehabilitation	6 WTP		6	50				
		5. In-service Training	Plant person-nel are able to use their profe. skills in prac tise		Plant personnel involved	33				



WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
		6. Feedback & analyzing	4 WTP improvement achieved		4	0				
	Training: operators and pump attendants are able to operate and maintain WTP satisfactorily	1. Manpower requirements & qualifications	18 (WTP)		18	50				
		2. Operators training	150 (operators)		50 (operators)	0				
		3. In-service Training for specific duties	Plant personnel are trained to utilized specific duties		Plant personnel involved	25				

WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
	Material system	1. Inventory of spare parts needed	Spares available and stocked properly		Plan ready accepted	25				
		2. Procurement				60				
		3. Supply and distribution				15				
		4. Stocking	Stock computerized		Stock cards	10				
		5. Control	Stock & cost control			0				
		6. Management training	Procedures for training management in storing, control and reporting.			0				

WORK PROGRAMME FOR OPERATION & MAINTENANCE DEPARTMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
	Workshop for O&M facilities:	1. Extension of Ministry worksh-op:								
		- Pump testing devices	1 unit		1 unit	40				
		- Water meter calibrating device	"		"					
		- Electrical workshop	"		"					
		- Mechanical workshop	"		"					
		- Battery recharge	"		"					
		- Air compressor	"		"					
		2. Organization			Organiza. chart reviewed	50				
		3. Spare & tools procurement				75				
		4. Development of workshop procedures				40				
		5. Training for special duties	Working skills are improved		Methods approved	40				

PUMP INSTALLATION

	KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
HAND DUG WELLS	8	7	1	2	16
BOREHOLES	26	9	22	32	89
TOTALS	34	16	23	34	107

Below is a list of water points installed with hand pumps.

INSTALLATIONS DONE BETWEEN JULY 1989 TO JUNE 1990.

BUSIA DISTRICT

WELL NUMBER	PLACE	PUMP TYPE	INST. DATE	LOCATION	SUB-LOCATION
C 7981	Raboki	Afridev	1.07.89	S.Samia	Buburi
C 7982	Nanjekho	Afridev	1.07.89	S.Samia	Buburi
C 7983	Naluchaka	Afridev	1.07.89	S.Samia	Buburi
C 8530	Lugulu Ch.	Afridev	13.07.89	E.Marach	Elukhari
C 8420	Musibiriri	Afridev	14.07.89	E.Marach	Tingolo
C 7996	Nakhainja	Afridev	20.07.89	S.Samia	Buburi
C 7986	Nanderema	MK II	20.07.89	S.Samia	Buburi
C 7990	Sibiriri	MK II	26.07.89	S.Samia	Butabona
C 7993	N.Mukhondo	MK II	9.08.89	S.Samia	Butabona
C 8529	N.Khabondo	AF 85	25.08.89	E.Marachi	Elukhari
C 7546	Okame Vill.	Afridev	15.09.89	W.Teso	Chakol
C 8527	Emasinde	Afridev	22.09.89	C.Marachi	Esikoma
C 8020	Bulwani Sch	Afridev	17.10.89	C.Marachi	Bulwani
C 8528	Kingandole	Afridev	17.10.89	C.Marachi	Kingandole
C 8374	Chakoli Pr.	Mk II	23.11.89	W.Teso	Chakol
C 8374	Siunga Pr.	Afridev	11.12.89	E.Marachi	Tingolo
C 8370	Sikura Vill	Afridev	12.12.89	C.Marachi	Bulwani
C 7534	Chakol Pr.				
C 8800	Obuchuni pr	Afridev	25.04.90	West Teso	Chakol
C 8803	Adungosi	Afridev	25.04.90	West Teso	Chakol
C 7544	Okojolo	AF 85	18.04.90	West Teso	Asinge
C 8810	Asiriam	AF 85	18.04.90	West Teso	Angorom
C 8802	Ongariam	AF 85	18.04.90	West Teso	Chakol
C 8804	Gahiga Ch.	AF 85	18.04.90	West Teso	Asinge
C 8817	Lupida Mkt	AF 85	24.05.90	East Bukhayo	Lupida
C 8822	Mujuru	AF 85	24.05.90	West Bukhayo	Bugeng'i

PUMP INSTALLATIONS

BUNGOMA DISTRICT

WELL NUMBER	PLACE	PUMP TYPE	INST. DATE	LOCATION	SUB-LOCATION
BN 148	Sango	AF 85	15.10.89	Kanduyi	N.Kanduyi
BN 23	Kibabi	AF 85	18.09.89	Kanduyi	N.Kanduyi
BN 147	Bunanachi	AF 85	6.10.89	Kanduyi	N.Kanduyi
BN 149	Luvasa	AF 85	13.10.89	Kanduyi	N.Kanduyi
BN 150	Sichikhi	AF 85	19.11.89	Kanduyi	N.Kanduyi
BN 152	Sirare	AF 85	11.10.89	N.Bukusu	S.Nalondo
BN 153	Nasala	AF 85	13.10.89	N.Bukusu	S.Nalondo
BN 154	Lureko	AF 85	18.09.89	Kanduyi	N.Kanduyi
C 8395	Muluya	MK II	1.07.89	Lwandanyi	Mayekwe
C 8396	Chebkuyi	Afridev	1.07.89	Lwandanyi	Chebkuyi
C 8533	Musese	AF 85	1.07.89	W.Bukusu	N.Nalondo
C 8381	Ngoli vill	Afridev	12.07.89	W.Bukusu	Kibuke
C 8382	Musokho Sc.	Afridev	12.07.89	W.Bukusu	Kibuke
C 7886	Mayanja Sc.	Afridev	20.07.89	W.Bukusu	Kibuke
C 8406	Wabukhoyi	AF 85	31.10.89	W.Bukusu	E.Siboti
C 8405	Nasibo/Siboti	Afridev	1.11.89	W.Bukusu	E.Siboti
C 8565	Marakaru	MK II	3.05.90	N.Kanduyi	Kanduyi

SIAYA DISTRICT

WELL NUMBER	PLACE	PUMP TYPE	INST. DATE	LOCATION	SUB-LOCATION
C 7977	Murumba	Mk III	02.07.89	N.Ugenya	Uyundo
C 8414	Simur Obor	Afridev	07.07.89	W.Ugenya	Simuru
C 8416	Nyakudi `B'	AF 85	26.07.89	N.Ugenya	Siranga
C 8417	Alara vill	AF 85	13.07.89	N.Ugenya	Siranga
C 8408	Guok Onyungo	Afridev	13.07.89	S.Ugenya	Ambira
C 8415	Sirunga	Mk III	09.09.89	S.Ugenya	Ugunja
C 8542	Ruwe	Mk III	09.09.98	S.Ugenya	Ruwe
C 8521	Daho poly	Mk III	10.09.89	S.Ugenya	Umala
C 8525	Waliera	Afridev	10.09.89	Ukwala	Uyundo
C 6477	Urefu Pr.Sc	AF 85	23.11.89	Uholo	Ugunja
C 7534	Chakol Pr.	Mk III	23.11.89	W.Teso	Chakol
C 8795	Ninga Pri.	Afridev	02.03.90	Uholo	Sigomere
C 8797	Asango	Afridev	05.04.90	Uholo	Asango
C 8784	Ligala	Afridev	05.04.90	Uholo	Tingare
C 8786	Mudaho	Afridev	05.04.90	Uholo	Rambula
C 8785	Ulanda	AF 85	05.04.90	Uholo	Asango
C 8793	Kunjre	AF 85	23.05.90	Uholo	Sigomere
SI 126	Mucheche	AF 85	08.05.90	S.Ugenya	Ruwe

PUMP INSTALLATIONS

KAKAMEGA DISTRICT

WELL NUMBER	PLACE	PUMP TYPE	INST. DATE	LOCATION	SUB-LOCATION
C 8393	Nyalongo	AF 85	1.07.89	C.Mumias	Lureko
C 8403	Eshiserele	AF 85	11.07.89	C.Mumias	Nucleaus
C 8399	Eshijir-chili	Afridev	13.07.89	C.Mumias	Lureko
C 8391	Murrum Vill	AF 85	14.07.89	C.Mumias	Ekero
C 8390	Bwayi	AF 85	20.07.89	C.Mumias	Ekero
C 8365	Mayuke Pr.	Afridev	4.10.89	W.Kabras	Lukume
C 8558	Tumbeni Vill	AF 85	17.10.89	S.Kabras	Chemuche
C 8544	Emakhwale	AF 85	17.10.89	C.Mumias	Ekero
C 8563	Ikoli Vill	Afridev	18.10.89	S.Kabras	Chesero
C 8571	Nguvuli Pr.	Afridev	18.10.89	S.Kabras	Chesero
C 8572	Matende Pr.	AF 85	18.10.89	S.Kabras	Shianda
C 8574	Shipala Ch	AF 85	19.10.89	C.Kabras	Matsakha
C 8570	Teresia Vill	AF 85	24.10.89	C.Kabras	Malava
C 8583	Vateta	AF 85	25.10.89	C.Kabras	Malava
C 8560	Chemoroni	AF 85	25.10.89	S.Kabras	Chemuche
C 8573	Lubao	Afridev	18.11.89	S.Kabras	Shamberere
C 8585	Mukhalanya	AF 85	24.11.89	Chevaywa	Kiliboti
C 8555	Mukhukhuni	AF 85	24.11.89	Chevaywa	Kiliboti
C 8596	Chesero Sch	Afridev	15.11.89	S.Kabras	Chesero
C 8596	Chitelesi	Afridev	1.11.89	W.Kabras	Mugai
C 8384	Eshirumbwe	Afridev	9.11.89	W.Wanga	Dagalasia
C 8569	Shiamoni	Afridev	23.11.89	S.Kabras	Shiamoni
C 8575	Sawawa	Afridev	23.11.89	W.Kabras	Burundu
C 8595	Malimali	Afridev	23.11.89	S.Kabras	Shamberere
C 8557	Imbiakalo	AF 85	23.11.89	W.Kabras	Lukume
C 8384	Eshirumbwe	AF 85	9.11.89	W.Wanga	Ndangalasia
C 8502	Lwandeti Pr.	Afridev	22.12.89	C.Kabras	Sirungai
C 8676	Shikumulo	Afridev	7.12.89	W.Kabras	Burundu
C 8545	Matawa Pr.	Afridev	1.12.89	C.Mumias	Lureko
C 8554	Bunuku Pr.	Afridev	5.12.89	S.Kabras	Chesero
C 8598	Vihiga Mkt	Afridev	21.12.89	Chevaywa	Kivaywa
C 8601	Chepsai Pr.	AF 85	15.12.89	Chevaywa	Kivaywa
C 8587	Konyero	Afridev	14.12.89	Chevaywa	Kivaywa
C 8600	Musiti Vill	AF 85	21.12.89	W.Kabras	Burundu
KA 532	Musingu	AF 85	13.07.89	S.Kabras	Chemuche
KA 527	Lunyu	AF 85	8.08.89	C.Kabras	Malava
KA 533	Lunyiko	AF 85	4.08.89	N.Butsotso	Sinohi
KA 534	Makhwanuye	AF 85	6.11.89	C.Kabras	Butali

PUMP INSTALLATIONS

KAKAMEGA DISTRICT

WELL NUMBER	PLACE	PUMP TYPE	INST. DATE	LOCATION	SUB-LOCATION
KA 535	Luyeshe	AF 85		S.Kabras	Shambere
KA 536	Shianda Mkt	AF 85		S.Kabras	Shianda
KA 524	Shirong Sch	AF 85		C.Kabras	Malava
C 8397	Khwirale	Afridev	10.01.90	C.Mumias	Lureko
KA 542	Musungu	AF 85	11.03.90		
C 8553	Ichemo	Afridev	13.03.90		
C 8790	Lusheya	AF 85	03.05.90	E.Wanga	Lusheya
C 8806	Mwitua	AF 85	03.05.90	E.Wanga	Matungu
C 8827	Shikangamia	MK II	27.03.90	Kak.Municip	Lurambi

APPENDIX 4.2

WATER TREATMENT PLANTS AND WATER SUPPLIES

DISTRICT	MoWD OPERATED W/S		INSTI-TUTIO-NAL W/S	SELF HELP W/S	LOCAL AUTHORITY W/S	TOTAL
	Full treatment	Piped scheme				
KAKAMEGA	9	7	8	7	-	31
BUNGOMA	5	4	7	9	-	25
BUSIA	4	10	13	4	12	43
SIAYA	-	4	-	4	-	8
TOTAL	18	25	28	24	12	107

PIPED WATER SUPPLIES, KAKAMEGA DISTRICT

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
Malava W/S Central Kabras	1.5 km2 5,000	9 m3/h 12 m3	Letter form DDC on 19.03.1990	- Replacement of reciprocating arm of John Blake pump - Replacement of cap bathens - Replacement of suction pipe - Replacement of master meter (twice) - Service of the engine and pump - Completion of staff quarters - Construction of generator house - Construction of new pump house and new water sump - Fencing the water supply - Raising weir intake - Trenching of the rising main and installation of meters
Shikusa W/S Lubao	0.3 km2 1,000	8 m3/h 113 m3	Shikusa prison institutional water supply KFWWSP	- Overhauled the engine - Fitting new parts on the engine and total service of the pump and engine and tested - New generator set installed - New borehole pump and panel installed - Repairing leakages in network
Mukumu Complex W/S West Indakho	0.5 km2 1,000	8 m3/h 100 m3	KFWWSP	- Pump installation - Mainteining electrical switchboard
Eregi W/S South Indakho	1.0 km2 3,000	50 m3/h 72 m3	Eregi institutional water supply KFWWSP Work Plan 90	- Rectified the borehole electrical cable
Kiboswa W/S	3.0 km2 10,000	40 m3/h 90 m3	Kakamega District Water Officer	- Installation of new horizontal centrifuge pump to replace vertical ones - Installation of new starter

PIPED WATER SUPPLIES, BUSIA DISTRICT

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
Funyula W/S North Samia	50 km2 4,000	360 m3/d 90 m3	KFWWSP Work Plan 90	- Rehabilitation of the supply i.e. construction of tanks, extension of distribution line, etc.
Wakhungu W/S North Samia	15 km2 5,500	100 m3/d 200 m3	Busia District Water Engineer	- Overhauled the engine - Fitting new parts to the engine
Munana W/S North Samia	10 km2 3,500	40 m3/d 100 m3	Busia District Water Engineer	- New nozzles fitted on the engine
Sio Port W/S South Samia	30 km2 2,800	50 m3/d 250 m3	Busia District Water Engineer	- Diesel Lister engine ST2 overhauled - Pump unit serviced
Port Victoria W/S West Bunyala	30 km2 10,000	150 m3/d 150 m3	Busia District Water Engineer KFWWSP	- Rectified electrical switchboard - Servicing and installation of generator set and the engine - Assembling the new starter for diesel generator
Nambale W/S Central Bukhayo	5.0 km2 4,700	150 m3/d 115 m3	KFWWSP	- Servicing the generator
Butula W/S Central Marachi	6.0 km2 1,800	70 m3/d 100 m3	KFWWSP	- Replaced electrical feeder cable for submersible pump - Repaired leakages
Funyula-Bumala W/S			KFWWSP	- Dismantling and overhauling 25 kVA generator to be transferred to Malava W/S

PIPED WATER SUPPLIES, BUNGOMA DISTRICT

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
Kabuchai W/S Nalondo	2.5 km2	50 m3/d 50 m3	KFWWSP	- Changed seals to multistage horizontal pump
Bokoli Health Centre W/S West Bukusu	1.0 km2 500	7 m3/h 50 m3	KFWWSP	- Checking and removing the solar system for repairing

PIPED WATER SUPPLIES, SIAYA DISTRICT

NAME	AREA SERVED	CAPACITY	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
LOCATION	POPULATION	STORAGE		
Sega W/S	5.0 km2	7.5m3/h	KFWWSP	- Repairing the borehole starter pump
Nalondo	3,000	50 m3		
Ukwala W/S	1.2 km2	100 m3/d	KFWWSP	- Preparing the cable to the borehole pump
Ugenya	1,000	50 m3		

APPENDIX 4.4

FULL TREATMENT PLANTS, KAKAMEGA DISTRICT

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
Kakamega WTP West Isukha	28 km2 72,000	202m3/h 1800m3	Project Document, KFWWSP Work Plan 90	- Rehabilitation of old high lift pump - Rehabilitation of backwash elevated tank - Installation of ducts to electrical pump house - Replacement of water meter and pressure gauge - Repair of leakages in distribution system - Rehabilitation of storage tank at Milimani - Construction of platforms on the elevated tanks - Construction of roof on coagulation basins - Maintenance of electrical switchboards
Mumias WTP Central Wanga	10 km2 34,000	120 m3/h 550 m3	Letter from the DDC on 19.03.1990	- Rehabilitation of coagulation basins - Fixing on lamps and security light in the pump house - Repair of the leakage on the clear water sump and drainage system - Installed pipe to staff quarters in WTP
Maseno WTP South Bunyore	38 km2 40,000	67m3/h 1900m3	Kakamega District Water Officer	- Rehabilitation of filters and repairing backwash pumping unit - Replaced some fittings on the rising main
Kaimosi WTP Shamakhokho	40 km2 23,000	34 m3/h 466 m3	Kakamega District Water Officer	- Rewounding high lift electrical 30 hp motor and replacing switch fused - Installation of high lift pump - New switch for high lift pump installation - Repaired on burst on rising main - Installing the low level protection for the high lift pumps
Shitoli WTP East Isukha	60 km2 55,000	85 m3/h 925 m3	KFWWSP	- Rehabilitation of sand filters - One filter basin completed and in operation - Maintenance of electrical switchboards
Mbale WTP Marangoli	50 km2 40,000	72 m3/h 430 m3	Letter from the DDC on 10.03.1990	- Servicing of the electrical panel - Repaired the only high lift pump in operation

FULL TREATMENT PLANTS, BUNGOMA DISTRICT

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
Bungoma WTP	13 km2 24,000	113m3/h 4700m3	KFWWSP	- Rehabilitation of low lift pumping station - Installation of electrical panels for pumps - Installation of automatic level control - Electrical design works for intake pumping station and chemical pumping station switchboard - Installation of three chemical dosing pumps - Repairing and installing of chemical mixers
Webuye WTP Nabuyole	27 km2 30,000	249 m3/h 500 m3	Bungoma Diatrict Water Engineer	- Replacement of gland packing in all leaking valves - Renovation of pump house - Rehabilitation of coagulation basins - Replace switch on the electrical panel
Chesikaki WTP Cheptais	115 km2 23,000	117 m3/h 610 m3	Bungoma District Water Engineer/ KFWWSP	- Serviced all the air valves - Serviced the back wash engine and pumps - Installed the master meter

FULL TREATMENT PLANTS, BUSIA DISTRICT

NAME	AREA SERVED	CAPACITY	PRIORITY	REMARKS (ACTIVITIES UNDERTAKEN BY KFWWSP)
LOCATION	POPULATION	STORAGE		
Busia-Mundika W/S West Bukhayo	192 km2 55,000	1500m3/d 525m3	Busia District Water Engineer	- Repairing the level switch installation for the high lift pumps

ON-JOB TRAINING

DATE	DUTY	TRAINER	DESCRIPTION
8/02/ - 3/03/90	Plant mechanic Grade I, MoWD	Jos Hansen & Son Ltd Workshop Manager	Dismantling and assembling KSB centrifuge pump
30/04/ - 4/05/90	Foreman KFWWSP	Gailey & Roberts Ltd Service Manager	Overhauling of Lister pumps
1/05/ - 21/05/90	2x Mechanic Grade I, MoWD	Hymel meter Ltd Managing Director	Water meter assembly, repairs and testing
5/06/ - 7/07/90	Plumber KFWWSP	International Training Centre	Water technology
2/07/ - 6/07/90	2x Mechanic 1x Electrician MoWD	KFWWSP	Chemical dosing pump assembly maintenance
2/07/ - 3/07/90	2x Mechanic MoWD	KFWWSP	Lister engine overhauling and servicing
9/07/ - 12/07/90	Secretary KFWWSP	Kenya Management Institute	Secretaries seminar

SHOP AND PLANT TRAINING REPORT

Work: **KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME**

Department: **OPERATION AND MAINTENANCE**

Subject: **SHOP AND PLANT TRAINING REPORT**

Place:
District:_____ Water plant:_____

Date:_____ Sign:_____

Name of trainer:_____

List of Participants:

Name:	Duty:

Description of training:

Documents given to participants:

WORK PROGRAMME FOR TRAINING AND MANPOWER DEVELOPMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
1. TRAINING AND MANPOWER DEVELOPMENT PLAN	Plan for training and manpower development	1. Data collection of existing W/S systems	Plan ready & accepted	-	Plan ready and accep.	100				
		2. Manpower inventory/survey				100				
		3. Identification of training needs				50				
		4. Preparation of the plan				-				
		5. Implementation				-				
2. LOCAL COMMUNITY TRAINING	Local communities are able to manage their own water supplies with support from their leaders and District level administration.	1. Getting water consumers to understand the relationships between health, water and sanitation by film shows, radio programmes, campaigns etc.	800,000 cons.	8,000 cons.	25,000 cons.	10				
		2. Training of the locational leaders to create awareness of the benefits of safe and sustainable water supplies through community involvement.	2,500 L/L	1,700 L/L	540 L/L seminars	140				
					12 study tours	-				
		3. Training of executive committee members (covering 120 wells) and executive tap committee members	16,000 commit. members	756	540 commit. members	80				

WORK PROGRAMME FOR TRAINING AND MANPOWER DEVELOPMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
		(covering about 45 taps in schemes) to strengthen their administrative and management skills.	220 tap commit. members	40 tap commit. members	180 tap commit. members	-				
		4. Training in operation and maintenance for - Pump attendants (Nira AF 85 and Afridev)	5,000 pump attend.	1,012 pump attend.	720 pump attend.	60				
		- Spring attendants	1,500 spring attend.	19 spring attend.	160 spring attend.	50				
3.LOCAL CONTRACTOR	Contractors are available for water point construction and pump repair men are available for water point maintenance in every location	1. Training for contractors on technical and managemental issues related to water point construction .	50 contractors	-	25 contractors	100				
		2. Training of pump repairmen to do major maintenance of all types of hand pumps and to repair water points (on-the-job training with mobiled maintenance team and contractors)	54 prm	14 prm	16 prm	75				

WORK PROGRAMME FOR TRAINING AND MANPOWER DEVELOPMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
4. PIPED SCHEME AND WTP OPERA_ TORS TRAIN- ING	Operators properly operating and main- taining water treat ment plants and piped schemes	1. Training of inspectors and operators on WTP operation & management	150 Oper.	-	50 Oper.	25				
			30 Insp.	-	10 Insp.					
5. TRAINING FOR SPECIAL GROUPS	Key groups, who are involved in the develo- pment of water supply in the pro- vince, are aware of the targets and activities of the prog. and ready to contribute	1. Training of women groups on development and management of income generating activities	2,000 women group members	-	100 women group members	50				
		2. Management training for the staff of MoWD in the region.	120 officers	-	40 officers	50				
		3. District water engineers annual conference	80 engin.& offic.	-	80 engin. & offic.	-				
		4. Staff training mainly by on- the-job training and short co-urses and seminars	150 staff members	50 staff members	50 staff members	50				

WORK PROGRAMME FOR TRAINING AND MANPOWER DEVELOPMENT

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
		5. Training of community extension workers to upgrade their skills	60 com. ext. work.	-	60 com. ext. work.	50				
		6. Field and industrial attachments to trainees from KEWI, WECO and other training institutes.	500 trainees	150 trainees	120 trainees	100				
6. TRAINING ABROAD	Professionals available to take more responsibility on the water supply development in the province	1. Short term courses and seminars abroad (if not available locally) according to training plan.	20 persons	10 persons	5 persons	20				

APPENDIX 5.1 1/1

LOCATIONAL LEADERS TRAINED (JULY 1989 - JUNE 1990)

DISTRICT	LOCATION	VENUE	NO.OF PARTS	DATE
Kakamega	Chevaywa	Matete S.A. Church	45	19-21/07/1989
"	N. Marama	Lunza P. School	64	20-22/09/1989
Busia	E. Bunyala	Sirimba M. Church	33	25-27/10/1989
"	S. Bunyala	Makunda Sec. School	47	6- 8/12/1989
Kakamega	W. Kabras	Malava G.H. School	39	14-16/12/1989
Busia	W. Buhkayo	Matayos H. Centre	51	10-12/01/1990
"	N. Teso	Moding H. Centre	40	17-19/01/1990
Bungoma	N. Bukusu	Nalondo Sec. School	37	14-16/02/1990
Kakamega	E. Isuhka	Shambere Sec. School	40	21-23/02/1990
Bungoma	Sirisia	Sirisia Y.Poly.Tech	37	7- 9/03/1990
Kakamega	N. Butsotso	Ingotse Sec. Sch.	45	14-16/03/1990
Bungoma	Namubira	Namubira market	62	3- 5/04/1990
Kakamega	S. Butsotso	Eshisiru Sec. Sch.	42	18-20/04/1990
Bungoma	Lwandanyi	Lwandanyi Sec. Sch.	52	8-11/05/1990
Siaya	S. Ugenya	Simenyal Church	52	22-26/05/1990
Bungoma	Malakisi	Butonge CPK Church	50	5- 8/06/1990
TOTAL	16		736	

APPENDIX 5.2 1/1

WATER COMMITTEE MEMBERS TRAINED (JULY 1989 - JUNE 1990)

DISTRICT	LOCATION	VENUE	NO. OF PARTS	DATE
Busia	W. Teso	Adungos C. Church	32	5- 8/ 9/1989
"	W. Bunyala	Port Victoria Church	33	12-15/ 9/1989
"	S. Teso	Amukura Youth Polyt.	27	16-19/10/1989
"	E. Bunyala	Sirimba M. Church	38	7-10/11/1989
Bungoma	Elgon/Kaptama	Kabuk C. Church	36	11-13/ 7/1989
Kakamega	C. Mumias	Urban Council Hall	37	23-26/ 1/1990
"	Bunyala	Health Centre Hall	39	20-23/ 3/1990
Bungoma	Chwele	Busakala Sec. School	54	24-27/ 4/1990
Kakamega	Chevaywa	Nambirima P. School	51	15-18/ 5/1990
"	E. Isukha	Kambiri Church	48	19-22/ 6/1990
Bungoma	Sirisia	Binyanya P. School	51	12-15/ 6/1990
	11		444	

APPENDIX 5.3 1/1

FILM SHOWS (JULY 1989 - JUNE 1990)

DISTRICT	LOCATION	VENUE	NO. OF PARTS	DATE
Kakamega	Chevaywa	Matete S.A Church	60	19-21/07/1989
Busia	W. Teso	Adungos Health Centre	50	8-10/08/1989
"	W. Bunyala	Port Victoria Church	45	12-15/09/1989
Kakamega	N. Marama	Lunza P. School	220	20-22/09/1989
Busia	S. Teso	Amukura Polytechnic	45	16-19/10/1989
"	E. Bunyala	Sirimba M. Church	38	25-28/10/1989
"	- " -	- " -	40	7-10/11/1989
"	S. Bunyala	Makunda sec. school	55	6- 8/12/1989
Kakamega	W. Kabras	Malava G.H. school	40	14-16/12/1989
Bungoma	Elgon/Kaptama	Kabuk M. church	42	11-13/07/1989
Busia	W. Bukhayo	Matayos Hospital	76	10-12/01/1990
"	N. Teso	Adungos Hospital	55	17-19/01/1990
Kakamega	C. Mumias	Urban Council Hall	50	23-26/01/1990
Bungoma	N. Bukusu	Nalondo sec. school	90	14-16/02/1990
Kakamega	E. Isukha	Shamberere sec. school	150	21-23/02/1990
Bungoma	Sirisia	Sirisia Y. Polytechnic	50	7- 9/03/1990
Kakamega	N. Butsotso	Ingotse sec. school	330	14-16/03/1990
"	Bunyala	Health centre hall	70	23-26/03/1990
Bungoma	Namubira	Namubira market	70	2- 5/04/1990
Kakamega	S. Butsotso	Shisiru sec. school	80	18-20/04/1990
Bungoma	Chwele	Busakala sec. school	101	24-27/04/1990
"	Lwandanyi	Lwandanyi sec. school	-	8-11/05/1990
Kakamega	Chevaywa	Nambirima P. school	58	15-18/05/1990
Siaya	S. Ugenya	Simenya A.S. church	50	22-26/05/1990
Bungoma	Malakisi	Butonde CPK church	55	5- 8/06/1990
Kakamega	E. Isukha	Kambiri C. Church	69	19-22/06/1990
Bungoma	Sirisia		120	12-15/06/1990
TOTAL			2,109	

APPENDIX 5.4 1/1

PUMP, SPRING AND IRON REMOVAL PLANT ATTENDANTS TRAINED
(JULY 1989 - JUNE 1990)

DISTRICT	LOCATION	NO. OF WELLS	NO. OF ATTENDS	TYPE OF TRAINING	DATE DURING TRAINING
Kakamega " " "	E.Isukha) W.Kabras) Bunyala) E.Wanga)	11	22	Iron Removal Plant	5- 7/07/1989
Busia	E.Marachi	40	50	Nira AF 85 Handpump	12-29/07/1989
Kakamega	E.Wanga	16	16	-"-	17-30/07/1989
Busia	S.Samia	18	34	Afridev Handpump	5-22/10/1989
Kakamega	N.Idakho	6	14	Nira AF 85 Handpump	11-27/10/1989
Bungoma	N.Bukusu	18	36	-"- -"-	14-30/11/1989 & 5- 8/12/1989
"	Kanduyi	17	33	-"-	28/11-14/12/89
Busia "	N.Teso W.Teso	11	22	-"- -"-	18/12/1989 TO 12/01/1990
Bungoma	N.Bukusu	13	24	Spring	5-16/02/1990
"	W.Bukusu	7	18	Nira AF 85 Handpump	19/2-2/3/1990
"	Bumula	14	22	-"-	-"-
"	S.Bukusu	6	12	-"-	-"-
Busia	E.Bukhayo W.Bukhayo	17	36	-"- -"-	19-30/03/1990 -"-
" "	C.Bukhayo E.Bukhayo	13	25	Afridev Handpump -"-	-"- -"-
"	W.Bukhayo	13	24	Spring	2-12/04/1990
Bungoma	W.Bukusu	12	30	-"-	5-16/03/1990
Busia "	W.Marachi C.Marachi	19	33	Nira AF 85 Handpump -"-	17/04/1990 TO 2/05/1990
"	E.Marachi	13	28	Spring	8-18/05/1990
Bungoma "	Cheptais Lwandanyi	14	30	Nira AF 85 Handpump	23/05/1990 TO 8/06/1990
TOTAL		278	509		

APPENDIX 5.5

TRAINEES ON ATTACHMENT (APRIL - JUNE 1990)

INSTITUTIONS	NO. OF STUDENTS	AVERAGE TRAIN.MONTH	TOTAL MONTHS
Kenya Polytechnic	12	3	36
Mombasa Polytechnic	1	2	2
Kevey Youth Polytechnic	1	1	1
WECO	14	2	28
KEWI	3	3	9
RIAT	2	3	6
Maseno	1	3	3
Sigalagala	1	3	3
Shamberere	6	2	12
"	4	3	12
Mumias	2	2	4
Others	1	2	3
TOTAL	48	29	119

APPENDIX 6

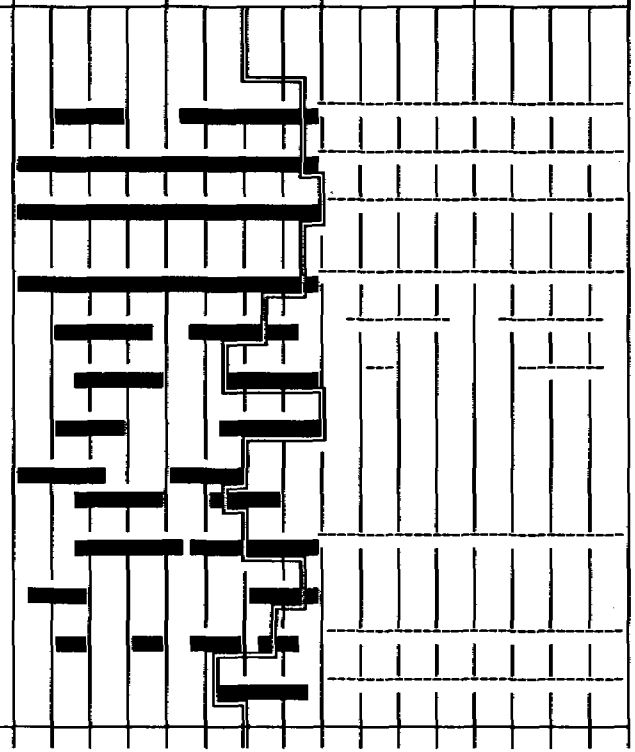
WORK PROGRAMME FOR COMMUNITY DEVELOPMENT SECTION

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
CONSTRUCTION	Community contribution (participation) in construction of water points.	MOBILIZATION OF THE COMMUNITIES TO PROVIDE LABOUR & MATERIAL								
		Site investigation	500 sites	50 sites	100 sites	53				
		Clearing routes to sites	1,200 sites	700 sites	100 sites	40				
		Digging pits to water level	1,300 wp	900 wp	100 wp	82				
		Collection of stones	1,400 wp	800 wp	150 wp	75				
		Digging and back filling trenches (gravity schemes)	9 schemes	5 schemes	2 schemes	50				
OPERATION AND MAINTENANCE COMPETENCE	Right candidates available for training in operation and maintenance activities.	RECRUITMENT OF COMMUNITY REPRESENTATIVES								
		Pump attendants	5,000 PA	1,500 PA	300 PA	40				
		Spring attendants	1,500 SA	400 SA	100 SA	56				
		Tap attendants	200 TA	50 TA	40 TA					
		Iron removal plant att.	100 IA	30 IA	20 IA					
		Pump repairmen	54 prm	14 prm	16 prm	50				

APPENDIX 6

WORK PROGRAMME FOR COMMUNITY DEVELOPMENT SECTION

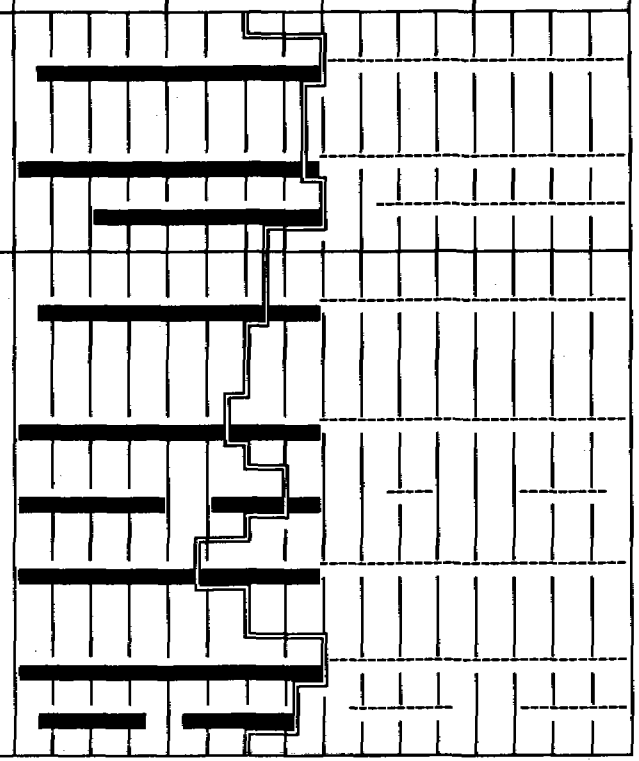
COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
MANAGEMENT OF FACILITY	Use and adm of facility	PROVISION OF EXTENSION SERVICES, FOLLOW UP AND REPORTING								
		Extension workers	55 Ext.w.	42 Ext.w.	13 Ext.w.	91				
		Funds collection	1.5M KES	500,000 KES	200,000 KES	77				
		Opening & operation of bank/ postal accounts	1,000 accounts	300 accounts	100 accounts	111				
		Development of the sites								
		- Vegetable gardens	1,500 gardens	700 gardens	200 gardens	96				
		- Fish ponds	100 ponds	30 ponds	10 ponds	60				
		- Tree nurseries	200 nurser.	50 nurser.	30 nurser.	17				
		- Zero grazing	50 farms	15 farms	10 farms	120				
		- Cattle troughs	200	35	50	50				
		- Wash basins	200 pcs	70 pcs	20 pcs	35				
		- Bathing hides	400 hides	40 hides	50 hides	50				
		- Brick/Block making	50 sites	20 sites	10 sites	90				
		Preliminary handing over	1,000 wp	125 wp	400 wp	65				
		Final handing over	400	_	200					



APPENDIX 6

WORK PROGRAMME FOR COMMUNITY DEVELOPMENT SECTION

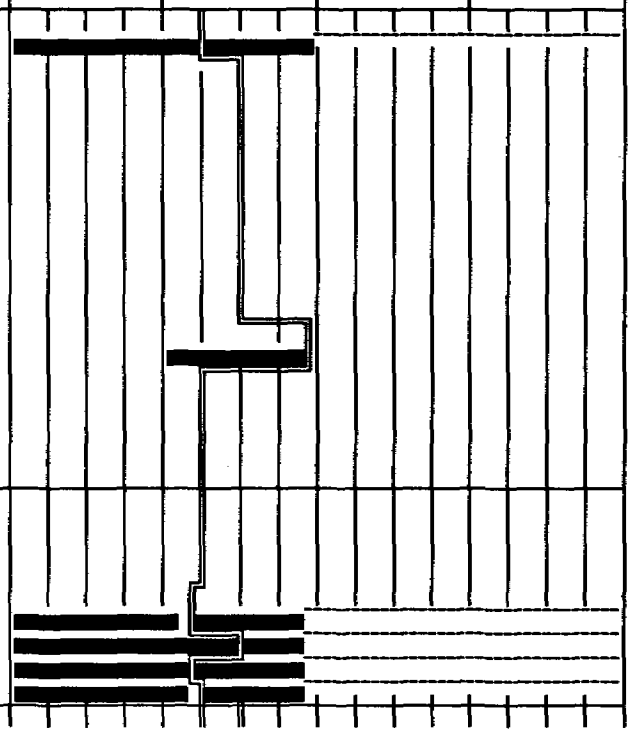
COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV.				
HEALTH	Creation of awareness of safe water & sanitation	PUBLIC MEETINGS AND BARAZAS								
		Participation of local community members in public meetings.	600,000 water consum.	450,000 water consum.	50,000 water consum.	110				
		Fencing sites	2,000 sites	1,000 sites	300 sites	91				
		Preparation of duty roasters to keep the wells clean.	500 wells	50 wells	100 wells	124				
DECISION MAKING, PLANNING AND DESIGN	Full involvement of community in water development activities	AGREEMENTS MADE WITH COMMUNITY								
		Siting meetings	4,500 meetings	3,000 meetings	350 meetings	68				
		Committees								
		- Formation	4,600 comm.	3,200 comm.	400 comm.	47				
		- Activation	3,000 comm.	1,200 comm.	600 comm.	75				
		- Registration	3,000 comm.	1,100 comm.	500 comm.	22				
		Land easements								
		- Done	3,500 pcs	1,500 pcs	400 pcs	116				
		- Registered	3,500 pcs	420 pcs	100 pcs	84				



APPENDIX 7

WORK PROGRAMME FOR SOCIO-ECONOMIC SECTION

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV. %				
STUDIES AND SURVEYS	Incorporation of community views, social and economic aspects in the planning and designing of water systems	- Socio-economic surveys in relevant locations	4) undefined		30	30				
	Attention to operation & maintenance aspects of water points	- Feasibility study in programme area for identification of suitable places and agents for spare parts distribution	2) undefined		1) undefined	100				
ECONOMIC ACTIVITY	Encourage communities to start income generating activity	- Initiating income generating programmes beneficial to communities such as vegetable gardens, fish ponds etc								
		- fish ponds	100	30	10					
		- block making	50	20	10					
		- vegetable gardens	1,500	700	200					
		- tree nurseries	200	50	30					



APPENDIX 7

WORK PROGRAMME FOR SOCIO-ECONOMIC SECTION

COMPONENT	OUTPUT	DETAILED ACTIVITIES	COVERAGE				1989	1990	1991	1992
			TOTAL TARGET	1981-89 ACHIEV.	1990 TARGET	1990 ACHIEV.				
WOMEN GROUPS	Knowledge of women groups activities and the identification of suitable projects for implementation	- Feasibility studies for women groups in selected Districts as a preliminary stage in support programme, etc.	8		2	100				
	Development via women groups as special target groups in the programme area	- Support programmes to women groups	18		6	17				
		- Women group activities	1)							
		* Credit scheme	undefined		4					
		* Income generation	9		3	11				

FOOTNOTES

* As dictated by the total number of locations in the programme area.
1) Involves whole programme area
2) Subject to response from prospective clients and funds available
3) Subject to programme's activities in engaging in both water points and piped water schemes as well as programme's expansion.

STAFFING PROGRAMME 1990

01 ADMINISTRATION

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PROJECT MANAGER	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
OFFICE MANAGER	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
SECRETARY	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
SECRETARY	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL OFFICER	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
ACCOUNTANTS	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
STAFF	KFWWSP	18	18	18	18	18	18	18	18	18	18	18	18
PLANNED	CONSULTANT	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL	CONSULTANT	2	2	2	2	2	2						
PLANNED	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
ACTUAL	MoWD	4	5	5	5	5	5						
PLANNED	KFWWSP	19	19	19	19	19	19	19	19	19	19	19	19
ACTUAL	KFWWSP	18	18	18	18	18	18						
PLANNED	TOTAL	25	25	25	25	25	25	25	25	25	25	25	25
ACTUAL	TOTAL	24	25	25	25	25	25						

02 PLANNING & DESIGN

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD of DEPARTMENT	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of PLANN. SECT	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of FIELD. INV SEC.	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of WATER. Q. SEC	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
GEOLOGIST	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
PLANNING ENG.	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
DESIGN ENG.	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
SYSTEM ANALYST	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
GROUNDWATER ENG.	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
ASS. SYSTEM. ANAL.	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
PLANNING ADVISOR	CONSULTANT	1	1	1	1	1	1						
PLANNING ASSISTANT	CONSULTANT			1	1	1	1						
LABORATORY STAFF	MoWD	3	3	3	3	3	3	3	3	3	3	3	3
STAFF	KFWWSP	31	31	31	31	31	31	31	31	31	31	31	31
STAFF	MoWD	8	8	8	8	8	8	8	8	8	8	8	8
PLANNED	CONSULTANT	4	4	5	5	5	5	3	3	3	3	3	3
ACTUAL	CONSULTANT	4	4	5	5	5	5						
PLANNED	MoWD	18	18	18	18	18	18	18	18	18	18	18	18
ACTUAL	MoWD	14	15	16	16	16	16						
PLANNED	KFWWSP	31	31	31	31	31	31	31	31	31	31	31	31
ACTUAL	KFWWSP	31	31	31	31	31	32						
PLANNED	TOTAL	53	53	54	54	54	54	52	52	52	52	52	52
ACTUAL	TOTAL	53	54	55	55	55	56						

APPENDIX 8

STAFFING PROGRAMME 1990

03 CONSTRUCTION DEPARTMENT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD of DEPARTMENT	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of DRILLING SECTION	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
DRILLING SUPERVISOR	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of PIPED SCHEME SEC	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
WATER SUPPLY SUPERVISOR	MoWD	2	2	2	2	2	2	2	2	2	2	2	2
" " "	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of MECHENICAL SEC.	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
ASS. HEAD OF MECH. SEC.	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
DREDGING	CONSULTANT	1	1	1	1	-	-	-					
STAFF	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	KFWWSP	155	155	155	155	155	155	155	155	155	155	155	155
PLANNED	CONSULTANT	5	5	5	5	4	4	4	4	4	4	4	4
ACTUAL		5	5	5	5	4	4						
PLANNED	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
ACTUAL		4	4	4	4	3	3						
PLANNED	KFWWSP	157	157	157	157	157	157	157	157	157	157	157	157
ACTUAL		160	160	160	159	161	165						
PLANNED	TOTAL	166	166	166	166	165	165	165	165	165	165	165	165
ACTUAL	TOTAL	169	169	169	168	168	173						

04 OPERATION & MAINTENANCE

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD of DEPARTMENT	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of O&M P.S. SECTION	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of O&M W.P. SECTION	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
ELECTR.ENGINEER	CONSULTANT				1	1	1	1	1	1	1	1	1
ASS. EL.ENGINEER	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
MECHAN.ENGINEER	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
WATER.SYST.OFFICER	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
HANDPUMP.MAINT.OFFICER	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
STRUCT.MAINT.OFFICER	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	KFWWSP	36	36	36	36	36	36	36	36	36	36	36	36
PLANNED	CONSULTANT	1	1	1	2	2	2	2	2	2	2	2	2
ACTUAL		1	1	1	2	2	2						
PLANNED	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
ACTUAL		4	4	4	4	4	4						
PLANNED	KFWWSP	39	39	39	39	39	39	39	39	39	39	39	39
ACTUAL		33	33	33	33	33	33						
PLANNED	TOTAL	44	44	44	45	45	45	45	45	45	45	45	45
ACTUAL	TOTAL	38	38	38	39	39	39						

STAFFING PROGRAMME 1990

05 COMMUNITY AND TRAINING

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD of DEPARTMENT	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of TRAINING SECTION	"	1	1	1	1	1	1	1	1	1	1	1	1
HEAD of COMM.DEV.SECTION	KFWWSP	-	-	-	-	1	1	1	1	1	1	1	1
HEAD of SOCIO-Econ SEC.	"	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	"	63	63	68	68	68	76	76	76	76	76	76	76
STAFF	MoWD	2	2	2	2	2	2	2	2	2	2	2	2
STAFF	MoCSS	7	12	18	22	25	25	25	25	25	25	25	25
PLANNED	CONSULTANT	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL	"	2	2	2	2	2	2						
PLANNED	KFWWSP	64	64	69	69	70	78	78	78	78	78	78	78
ACTUAL	"	64	64	64	67	71	74						
PLANNED	MoWD	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL	"	2	2	2	2	2	2						
PLANNED	MoCSS	7	12	18	22	25	25	25	25	25	25	25	25
ACTUAL	"	12	15	16	18	18	18						
PLANNED TOTAL		75	80	91	95	99	107	107	107	107	107	107	107
ACTUAL TOTAL		80	83	84	89	93	96						

DISTRICT BASES

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD of D.B	MoWD	3	3	3	3	3	3	3	3	3	3	3	3
SUPERVISORS	KFWWSP	7	7	7	7	7	7	7	7	7	7	7	7
OTHER STAFF	KFWWSP	30	36	43	43	43	43	43	43	43	43	43	43
PLANNED	CONSULTANT	-	-	-	-	-	-	-	-	-	-	-	-
ACTUAL	CONSULTANT	-	-	-	-	-	-						
PLANNED	MoWD	3	3	3	3	3	3	3	3	3	3	3	3
ACTUAL	MoWD	3	3	3	3	3	3						
PLANNED	KFWWSP	37	43	50	50	50	50	50	50	50	50	50	50
ACTUAL	KFWWSP	36	45	53	51	51	53						
PLANNED	TOTAL	40	46	53	53	53	53	53	53	53	53	53	53
ACTUAL	TOTAL	39	48	56	54	54	56						

APPENDIX 9

STANDARD GUIDELINE DRAWINGS FOR KFWWSP

	Name of drawing	Reference No.
1	Hand Dug well Cover Slab	KFWWSP/001
2	Borehole Cover Slab	KFWWSP/002
3	Cattle trough (3m x 1m)	KFWWSP/003
4	Communal Wash Basin	KFWWSP/004
5	Typical Shower for Schools	KFWWSP/005
6	Typical Shower Room at a C.W.P	KFWWSP/006
7	Rural Communal Water Point,Single tap	KFWWSP/007
8	Rural Communal Water Point, Double tap	KFWWSP/008
9	Typical Water Kiosk	KFWWSP/009
10	Valve Chamber for Cattle troughs	KFWWSP/010
11	Manhole chamber	KFWWSP/011
12	Detail Anchor block	KFWWSP/012
13	Detail Thrust block	KFWWSP/013
14	River & deep Valley pipe crossing	KFWWSP/014
15	Road crossing	KFWWSP/015
16	Breaking pressure tank, capacity 2m3	KFWWSP/016
17	Masonry storage water tank, 5m3	KFWWSP/017
18	Ground level masonry storage tank, 10m3	KFWWSP/018
19	Ground level masonry storage tank, 25m3	KFWWSP/019
20	Type 50m3 storage tank	KFWWSP/020
21	Type 100m3 storage tank	KFWWSP/021
22	Reinforced concrete cover, 100m3 tank	KFWWSP/022
23	Typical pipe installations for G.L Tanks for 10m3-150m3 tank.	KFWWSP/023
24	A spring protection plan and section	KFWWSP/024
25	Principal connection from a mainline to a house	KFWWSP/025
26	Marker posts/indicator posts	KFWWSP/026
27	Pipe crossing in River Bed	KFWWSP/027
28	Fume Chamber for Laboratory	KFWWSP/028
29	Small size Septic Tank (for population up to 50 persons)	KFWWSP/029
30	Elevated Reinforced concrete tank 50m3	KFWWSP/030

APPENDIX 10

COMMUNITY DEVELOPMENT ACTIVITIES ANNUAL PROGRESS JULY 1989 - JUNE 1990

ACTIVITY	KAKAMEGA				BUNGOMA				BUSIA				SIAYA				
	Jul_Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	TOTAL
SITING																	
Meetings	19	11	46	34	-	-	43	23	20	100	46	24	15	-	13	9	403
Attendance women	361	187	1178	687	-	-	965	205	466	1832	590	549	343	-	355	284	8002
Attendance men	546	379	1630	912	-	-	1366	545	556	2497	555	575	313	-	270	456	10600
Total attendance	907	566	2808	1599	-	-	2331	750	1022	4329	1145	1124	656	-	625	740	18602
Sites selected	15	34	29	28	-	28	36	16	15	96	8	15	7	-	8	5	340
Tech. investigated	1	4	8	6	-	-	-	13	-	-	10	13	5	-	10	3	73
Trad. sources impr.	-	-	10	-	-	-	7	4	-	3	-	2	-	-	-	2	28
WATER COMMITTEES																	
Formed	21	34	29	28	4	-	35	16	9	85	9	15	5	-	12	5	317
Activated	81	50	50	109	46	30	30	65	120	40	53	74	63	4	45	120	980
Filled forms	-	-	51	84	-	-	37	55	-	-	38	46	-	-	15	4	330
Registered MoCSC	109	26	29	22	13	29	9	10	43	21	-	24	93	2	6	11	447
CREATION OF AWARENESS																	
Public meetings	473	161	156	420	171	95	81	184	424	102	109	195	231	38	153	116	3564
Attendance women	10225	3937	2543	13001	3586	2282	1275	2980	7511	3653	1718	5691	11429	1260	5066	4869	81026
Attendance men	10716	5670	3634	14139	6467	4261	3256	5060	8859	4742	1512	4984	9501	622	5019	6039	94481
Total attendance	20941	9607	6177	27140	10053	6543	4531	8040	16370	8395	3230	10675	20930	1882	10085	10908	175507
COMMUNITY ADVISED ON HEALTH AND SANITATION ASPECTS																	
Consumers reached	21848	10173	6684	36527	10053	6543	4531	10525	17392	10224	3565	15147	21486	1882	11025	15005	202610
PREPARED BY ROSTERS																	
Prepared	-	-	26	78	-	-	4	106	-	-	14	35	-	-	32	87	382
LAND EASEMENT																	
Forms filled	21	23	87	67	4	21	25	21	6	20	23	48	14	-	22	75	477
Registered easements	19	6	-	34	10	29	3	6	19	13	5	15	11	-	7	11	178

APPENDIX 10

COMMUNITY DEVELOPMENT ACTIVITIES ANNUAL PROGRESS JULY 1989 - JUNE 1990

ACTIVITY	KAKAMEGA				BUNGOMA				BUSIA				SIAYA				
	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Jul-Sep 1989	Oct-Dec 1989	Jan-Apr 1990	Apr-Jun 1990	TOTAL
O&M FUNDS																	
Collected	111643	20000	38685	14138	40890	15000	30492	15480	69443	13000	26446	4470	86192	13000	26446	19080	544405
A\C opened	47	16	16	23	8	41	7	5	27	22	7	25	12	1	7	21	275
RECRUITMENT OF TRAINEES																	
Nominated P/A	9	6	14	11	-	-	27	7	10	51	19	15	12	-	8	17	206
Nominated S/A	6	5	15	17	-	-	9	9	5	24	3	-	-	-	-	2	95
Selected Prm	-	-	-	3	-	-	3	1	-	-	3	1	-	-	1	1	13
HANDING OVER																	
Water points repaired	-	-	75	-	30	-	22	20	-	-	80	-	-	-	-	-	227
Preliminary H.over	20	-	-	70	-	28	-	24	-	41	-	-	77	-	-	-	260
DEVELOPMENT ACTIVITIES																	
VG	107	35	41	48	51	15	10	28	47	40	28	22	39	8	50	34	603
FE	110	4	8	117	16	5	22	41	44	5	22	20	7	-	4	39	466
BM	-	-	1	3	-	-	-	3	1	-	-	1	1	-	-	-	10
TN	4	6	1	16	1	15	2	3	6	5	-	8	3	-	2	18	90
FP	5	-	-	4	4	-	-	-	2	-	-	-	4	-	-	1	20
CP	-	-	-	2	-	-	-	-	-	5	-	1	2	-	-	-	10

AGENDA:
A/C Account
P/A Pump Attendants
S/A Spring Attendants
Prm Pump repairmen

APPENDIX 11

WATER POINT CONSTRUCTION AND REPAIRS

KAKAMEGA DISTRICT 1ST JULY 1989 - 30TH JUNE, 1990

LOCATION	A	B	C	D	E	F	G	H	I
EAST WANGA	3	3	4	4	11	-	18	-	22
CENTRAL KABRAS	7	5	8	8	3	3	-	-	1
SOUTH KABRAS	2	2	12	13	4	8	11	-	4
CHEVAYWA	10	8	10	10	2	4	6	1	-
WEST KABRAS	4	4	9	9	2	4	8	2	2
NORTH IDAKHO	7	6	6	3	2	-	1	7	-
NORTH MARAMA	8	8	8	8	-	3	-	13	-
SOUTH MARAMA	6	6	5	5	-	1	-	3	-
EAST MARAMA	-	-	-	-	-	-	-	4	-
EAST ISUKHA	-	-	-	-	4	2	5	4	-
NORTH BUTSOTSO	-	-	1	1	9	1	1	2	1
SOUTH BUTSOTSO	-	-	1	1	5	-	2	-	1
BUNYALA	3	3	1	-	3	1	6	6	9
CENTRAL WANGA	-	-	4	10	1	-	-	-	-
SOUTH WANGA	-	-	-	-	2	1	3	-	1
WEST WANGA	-	-	-	1	-	-	-	-	-
NORTH WANGA	-	-	-	1	1	-	7	-	3
CENTRAL MARAMA	4	4	4	4	2	1	4	5	1
KAKAMEGA TOWN	1	1	1	1	-	-	-	-	-
SOUTH IDAKHO	3	3	-	-	-	-	-	2	-
TOTAL	58	53	74	79	51	29	72	49	45

KEY:

A - Boreholes Drilled
B - Boreholes, Succesful
C - Slabs Constructed
D - Pumps Installed in Boreholes
E - Slabs Repaired
F - Shallow Wells Constructed
G - Shallow Wells Repaired
H - Springs Constructed
I - Springs Repaired

WATER POINT CONSTRUCTION AND REPAIRS

BUNGOMA DISTRICT 1ST JULY 1989 - 30TH JUNE, 1990

LOCATION	A	B	C	D	E	F	G	H	I
NAMUBIRA	-	-	-	-	-	-	-	-	-
LWANDANYI	-	-	2	2	1	-	1	-	-
CHWELE	-	-	-	-	2	-	2	-	-
BUMULA	1	1	1	1	-	-	-	-	-
SOUTH BUKUSU	7	6	2	-	5	6	9	7	-
SIRISIA	-	-	-	-	-	-	-	-	-
KANDUYI	8	4	4	4	8	9	2	-	-
MUSIKOMA	1	-	-	-	-	-	-	1	-
MALAKISI	-	-	1	-	-	-	-	-	-
NORTH BUKUSU	1	1	2	4	12	4	17	10	7
WEST BUKUSU	-	-	4	4	7	3	13	1	2
CHEPTAIS	-	-	-	-	2	-	-	-	-
KOPSIRO	-	-	-	-	-	-	-	-	-
TOTAL	18	12	16	15	37	22	44	19	9

KEY:

A - Boreholes Drilled
B - Boreholes, Succesful
C - Slabs Constructed
D - Pumps Installed in Boreholes
E - Slabs Repaired
F - Shallow Wells Constructed
G - Shallow Wells Repaired
H - Springs Constructed
I - Springs Repaired

APPENDIX 11

WATER POINT CONSTRUCTION AND REPAIRS

BUSIA DISTRICT 1ST JULY 1989 - 30TH JUNE, 1990

LOCATION	A	B	C	D	E	F	G	H	I
SOUTH SAMIA	8	5	1	4	10	-	-	-	-
NORTH SAMIA	8	8	-	-	-	-	-	1	-
SOUTH BUNYALA	2	2	-	-	-	-	1	-	-
WEST BUNYALA	-	-	-	-	-	-	1	-	-
NORTH TESO	3	3	1	1	7	-	-	-	3
EAST BUNYALA	4	3	-	-	-	-	-	-	-
SOUTH TESO	7	7	7	-	1	-	6	4	-
CENTRAL TESO	-	-	-	-	-	-	-	-	-
WEST TESO	7	7	9	1	10	-	2	8	2
CENTRAL MARACHI	-	-	-	4	8	-	9	5	4
WEST MARACHI	-	-	-	-	-	-	-	-	-
EAST MARACHI	-	-	1	5	13	-	20	-	3
WEST BUKHAYO	4	4	4	-	1	-	1	2	-
EAST BUKHAYO	5	5	4	-	2	-	2	1	1
CENTRAL BUKHAYO	1	1	1	-	3	-	2	-	-
BUSIA TOWN	2	2	-	-	-	-	-	-	-
TOTAL	51	47	28	15	55	-	44	21	13

KEY:

A - Boreholes Drilled
B - Boreholes, Succesful
C - Slabs Repaired
D - Pumps Installed in Boreholes
E - Slabs Repaired
F - Shallow Wells Constructed
G - Shallow Wells Repaired
H - Springs Constructed
I - Springs Repaired

APPENDIX 11 4/5

WATER POINT CONSTRUCTION AND REPAIRS

SIAYA DISTRICT 1ST JULY 1989 - 30TH JUNE 1990

LOCATION	A	B	C	D	E	F	G	H	I
SIHAY	-	-	-	-	6	-	5	5	5
EAST UGENYA	-	-	-	-	5	4	5	7	13
SOUTH UGENYA	1	1	2	5	3	-	1	-	-
UHOLO	14	14	12	1	5	1	2	-	-
UKWALA	-	-	-	3	4	-	2	-	-
NORTH UGENYA	-	-	1	1	1	-	1	-	-
WEST UGENYA	1	1	-	-	5	-	2	-	-
SOUTH ALEGO	1	1	-	-	-	-	-	-	-
TOTAL	14	14	15	10	29	5	17	12	18

KEY

A - Boreholes Drilled
B - Boreholes, Successful
C - Slabs Constructed
D - Pumps Installed in Boreholes
E - Slabs Repaired
F - Shallow Wells Constructed
G - Shallow Wells Repaired
H - Springs Constructed
I - Springs Repaired

APPENDIX 11 5/5

WATER POINT CONSTRUCTION AND REPAIRS
1ST JULY, 1989 - 30TH JUNE, 1990

	A	B	C	D	E	F	G	H	I
KAKAMEGA I	22	20	10	4	20	7	36	9	21
KAKAMEGA II	7	6	18	21	8	1	14	17	3
KAKAMEGA III	15	13	8	11	10	12	12	6	12
KAKAMEGA IV	14	14	38	43	13	9	10	17	9
SUB-TOTAL	58	53	74	79	51	29	72	49	45
BUNGOMA I	9	6	8	6	12	3	3	1	-
BUNGOMA II	4	2	1	-	11	6	19	11	1
BUNGOMA III	-	-	4	-	12	5	18	2	8
BUNGOMA IV	5	4	3	9	2	8	4	5	-
SUB-TOTAL	18	12	16	15	37	22	44	19	9
BUSIA I	4	3	1	8	15	-	17	-	1
BUSIA II	9	9	2	3	8	-	15	5	3
BUSIA III	23	22	7	-	20	-	4	4	4
BUSIA IV	15	13	18	4	12	-	8	12	5
SUB-TOTAL	51	47	28	15	55	-	44	21	13
SIAYA I	-	-	3	9	3	-	6	5	-
SIAYA II	11	11	1	1	10	-	5	7	17
SIAYA III	1	1	11	-	3	-	1	-	1
SIAYA IV	2	2	-	-	13	5	4	-	-
SUB-TOTAL	14	14	15	10	29	5	16	12	18
TOTAL	141	126	133	119	172	56	177	101	85

NEW WATER POINTS 283

REHABILITATIONS 434

KEY

I	1st Jul - 30th Sep 1989
II	1st Oct - 31st Dec 1989
III	1st Jan - 31st Mar 1990
IV	1st Apr - 30th Jun 1990

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

SUMMARY OF COSTS FOR PROGRAMME VEHICLES DURING

THE PERIOD 1. JANUARY - 31. DECEMBER 1989

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Average fuel c. 1/100km	Cost/Km Ksh
1	PEUGEOT KUA 773	42,666.35	4,478.80	11,252.25	1,530.00	3,675.00	63,602.40	11,954	13.56	5.32
2	L/ROVER KDV 526	38,696.65	9,289.80	12,862.35	1,620.00	7,070.00	69,538.80	13,892	12.78	5.01
3	L/ROVER KDV 527	110,837.65	4,848.15	27,292.40	1,620.00	13,632.50	158,230.70	29,150	13.58	5.43
4	L/ROVER KDV 536	218,162.00	4,456.10	19,648.40	1,620.00	27,650.00	271,536.50	22,425	12.98	12.11
5	L/ROVER KDV 552	87,751.75	6,229.40	27,586.55	1,620.00	10,511.00	133,698.70	29,402	13.87	4.55
6	L/ROVER KDV 553	153,120.00	3,536.30	31,605.60	1,620.00	22,252.25	212,134.15	40,121	12.83	5.29
7	L/ROVER KDW 403	92,946.15	17,320.30	23,943.30	1,530.00	21,336.00	157,075.75	24,886	13.88	6.31
8	L/ROVER KDW 414	39,456.40	933.65	35,361.10	1,530.00	7,713.75	84,994.90	37,874	13.82	2.24
9	L/ROVER KDW 415	175,240.50	12,361.25	31,596.70	1,620.00	25,933.75	246,752.20	31,350	14.06	7.87
10	L/ROVER KDW 416	118,078.75	12,019.60	56,141.40	1,620.00	17,292.50	205,152.25	58,866	14.80	3.49
11	L/ROVER KDW 423	192,980.85	12,820.70	36,615.30	1,620.00	42,867.50	286,904.35	41,321	14.38	6.94
12	L/ROVER KDW 424	78,988.60	13,577.30	46,495.00	1,620.00	10,395.00	151,075.90	51,360	13.97	2.94
13	L/ROVER KDW 425	85,630.50	3,125.35	34,040.60	1,620.00	11,427.45	135,843.90	40,439	13.03	3.36
14	L/ROVER KDW 426	52,373.35		91,740.65	1,530.00	4,305.00	149,949.00	52,069	17.67	2.88
15	L/ROVER KDW 461						0.00			
16	L/ROVER KDW 462						0.00			
17	L/ROVER KDW 463						0.00			
18	L/ROVER KDW 464						0.00			
19	L/ROVER KDW 465						0.00			
20	L/ROVER KDW 466						0.00			
21	L/ROVER KDW 467						0.00			
22	L/ROVER KDW 468						0.00			
23	L/ROVER KDW 469						0.00			
24	L/ROVER KDW 470						0.00			
25	L/ROVER KDW 471						0.00			
26	L/ROVER KDW 472						0.00			
27	L/ROVER KDW 473						0.00			
28	L/ROVER KDW 474						0.00			
29	L/ROVER KDW 475						0.00			
30	L/ROVER KDW 476						0.00			
31	L/ROVER KDW 478						0.00			
32	L/ROVER KDW 479						0.00			
33	L/ROVER KKU 126	51,906.15	6,040.00	36,429.65	1,530.00	9,301.25	105,207.05	39,319	14.20	2.68
34	L/ROVER KKU 127	73,717.45	6,745.65	34,744.35	1,530.00	10,438.75	127,176.20	37,579	13.23	3.38
35	L/ROVER KKU 128	46,766.30		39,136.40	1,620.00	13,038.75	100,561.45	46,259	13.71	2.17
36	L/ROVER KKU 129	58,522.70	6,418.70	31,348.65	1,530.00	5,040.00	102,860.05	39,105	13.88	2.63
37	L/ROVER KKU 130	190,439.00	218.70	38,789.80	1,530.00	16,003.75	246,981.25	37,425	15.35	6.60
38	L/ROVER KKU 131	213,841.90	15,385.05	52,689.20	1,620.00	38,838.75	322,374.90	38,626	14.69	8.35
39	L/ROVER KKU 132	153,518.15	12,969.55	55,685.20	1,620.00	19,862.80	243,655.70	56,788	14.61	4.29
40	L/ROVER KKU 133	99,946.05	6,803.10	32,258.35	1,620.00	12,818.75	153,446.25	35,094	13.27	4.37
41	L/ROVER KKU 134	107,869.85	11,471.25	37,583.45	1,530.00	17,237.50	175,692.05	29,803	13.97	5.90
42	L/ROVER KKU 135	67,956.05		38,310.75	1,530.00	10,622.00	118,418.80	44,886	13.49	2.64
43	L/ROVER KKU 136	206,545.30	20,491.55	42,168.85	1,620.00	10,552.50	281,378.20	45,688	14.03	6.16
44	L/ROVER KKU 138	140,093.05	17,269.50	41,860.15	1,530.00	21,681.25	222,433.95	46,904	13.71	4.74
45	L/ROVER KKU 139	254,300.55	3,209.35	41,699.75	1,530.00	20,361.25	321,100.90	44,224	13.68	7.26
46	L/ROVER KYG 689	60,065.10	10,933.30	27,615.55	1,530.00	7,446.25	107,590.20	33,635	12.91	3.20
47	L/ROVER KYG 690	68,251.65	2,755.75	42,468.10	1,620.00	7,909.60	123,005.10	36,803	14.42	3.34
48	L/ROVER KYG 691	120,040.25	11,293.70	47,783.10	1,620.00	16,520.00	197,257.05	52,744	13.86	3.74
49	L/ROVER KYG 692	29,157.50	19,566.70	18,936.20	1,530.00	12,670.00	81,860.40	22,346	12.46	3.66
50	L/ROVER KYG 697	131,499.50	15,668.15	29,888.15	1,530.00	17,911.25	196,497.05	33,828	13.47	5.81
		3,561,366.00	272,236.70	1,175,577.25	50,490.00	494,316.10	5,553,986.05	1,206,165		4.60

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

SUMMARY OF COSTS FOR PROGRAMME VEHICLES DURING

THE PERIOD 1. JANUARY - 31. DECEMBER 1989

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Average fuel c. l/100km	Cost/Km Ksh
51	TROOPER KXC 481						0.00			
52	SUBARU KDW 441	2,466.70	1,165.90	14,006.30	1,620.00	577.50	19,836.40	10,231	11.48	1.94
53	SUBARU KDW 442	26,276.45	959.90	13,331.85	1,620.00	831.25	43,019.45	10,615	11.22	4.05
54	SUBARU KDW 443	7,358.85	250.00	11,325.55	1,620.00	682.50	21,236.90	10,773	11.86	1.97
55	SUBARU KDW 446	2,388.55	251.70	17,287.35	1,620.00	481.25	22,028.85	14,437	11.26	1.53
56	SUBARU KDW 447	1,338.20	230.00	7,783.10	1,620.00	140.00	11,111.30	5,775	12.00	1.92
57	SUBARU KDW 448	50,880.60	4,552.25	12,375.55	1,620.00	3,780.00	73,208.40	10,592	11.59	6.91
58	SUBARU KDW 449	1,434.25	2,034.50	17,830.05	1,620.00	647.50	23,566.30	14,307	11.53	1.65
		92,143.60	9,444.25	93,939.75	11,340.00	7,140.00	214,007.60	76,730		2.79
59	ISUZU KXX 581	65,214.75	41,806.60	55,098.65	1,620.00	16,376.25	180,116.25	49,403	16.33	3.65
60	SISU LORRY KUA 782	158,506.80	20,496.50	51,974.65	5,670.00	14,187.50	250,835.45	27,797	28.09	9.02
61	SISU LORRY KDV 518	313,245.55	38,857.50	81,490.15	5,670.00	20,348.75	459,611.95	38,318	30.91	11.99
62	SISU LORRY KDV 534	177,426.35	45,864.75	106,892.45	5,670.00	32,326.80	368,180.35	43,578	36.33	8.45
63	SISU LORRY KDV 540	107,658.00	57,586.10	150,588.15	5,670.00	19,851.25	341,353.50	69,150	34.20	4.94
64	SISU LORRY KDW 409	193,952.85	10,451.20	56,067.40	5,670.00	26,673.75	292,815.20	29,900	31.29	9.79
65	SISU LORRY KDW 480						0.00			
66	SISU LORRY KKY 043	106,036.60	40,790.00	77,516.00	5,670.00	15,688.75	245,701.35	29,330	37.21	8.38
67	M/B LORRY KDW 439	12,609.40	14,211.00	66,277.90	8,100.00	6,772.50	107,970.80	28,076	33.77	3.85
68	M/B LORRY KDW 460	44,544.90			8,100.00	910.00	53,554.90			
		1,179,195.20	270,063.65	645,905.35	51,840.00	153,135.55	2,300,139.75	315,552		7.29
69	V.TRACTOR KDW 458						0.00			
70	V.TRACTOR KDW 459						0.00			
71	V.TRACTOR KDW 477						0.00			
72	V.TRACTOR KDW 485						0.00			
73	M/B RIG KDV 545	55,371.10	23,512.30	162,931.55	6,300.00	11,285.00	259,399.95	0		
74	M/B RIG KDW 451	79,208.75	113,831.00	329,222.70	7,290.00	15,232.50	544,784.95	0		
75	L.EXCAVATOR KUA775	96,257.70	36,584.70	16,911.30	708.75	10,436.55	160,899.00	0		
76	L.EXCAVATOR KDW432	19,866.15	3,294.35	80,258.80	708.75	8,146.25	112,274.30	0		
		5,083,408.50	728,966.95	2,504,746.70	128,677.50	699,691.95	9,145,491.60	1,598,447		

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

SUMMARY OF COSTS FOR PROGRAMME VEHICLES DURING

THE PERIOD 1. JANUARY - 31. JUNE 1990

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Average fuel c. l/100km	Cost/Km Ksh
1	PEUGEOT KVA 773	17,656.60	4,017.00	8,437.50	2,500.00	2,126.25	34,737.35	7,262	13.58	4.78
2	L/ROVER KDV 526	7,047.10	119.25	4,554.45		525.00	12,245.80	4,314	9.92	2.84
3	L/ROVER KDV 527	12,339.95	2,227.30	3,577.55		1,330.00	19,474.80	2,895	12.16	6.73
4	L/ROVER KDV 536	23,558.35	65.45	505.35		1,592.50	25,721.65	320	17.50	80.38
5	L/ROVER KDV 552	14,891.10	216.35	17,712.90	2,500.00	2,677.50	37,997.85	15,060	14.06	2.52
6	L/ROVER KDV 553	17,728.80	7,141.70	15,505.00	2,500.00	2,310.00	45,185.50	15,610	10.61	2.89
7	L/ROVER KDW 403	51,143.30		494.45		9,280.55	60,918.30	370	16.29	164.64
8	L/ROVER KDW 414	41,945.55	3,306.90	23,035.70	2,500.00	4,979.00	75,767.15	23,938	11.16	3.17
9	L/ROVER KDW 415	48,987.30	19,057.65	16,792.25	2,500.00	8,715.00	96,052.20	15,494	12.55	6.20
10	L/ROVER KDW 416	124,339.80	114.60	25,256.05	2,500.00	15,250.00	167,460.45	19,554	15.08	8.56
11	L/ROVER KDW 423	23,112.25	6,613.80	15,710.80	2,500.00	3,088.75	51,025.60	12,620	14.76	4.04
12	L/ROVER KDW 424	62,810.80	762.15	31,720.50	2,500.00	6,317.50	104,110.95	27,391	13.58	3.80
13	L/ROVER KDW 425	117,808.45		25,433.15	2,500.00	5,022.50	150,764.10	22,043	13.82	6.84
14	L/ROVER KDW 426	37,750.30		40,186.70	2,500.00	2,485.00	82,922.00	19,939	17.05	4.16
15	L/ROVER KDW 461	20,106.40		10,519.45	2,500.00	2,030.00	35,155.85	10,818	10.77	3.25
16	L/ROVER KDW 462	11,646.45		11,777.85	2,500.00	805.00	26,729.30	13,043	11.15	2.05
17	L/ROVER KDW 463	14,406.90		9,398.10	2,500.00	875.00	27,180.00	8,912	11.61	3.05
18	L/ROVER KDW 464	16,964.70		15,746.75	2,500.00	1,286.25	36,497.70	14,779	9.65	2.47
19	L/ROVER KDW 465	17,323.90		16,779.25	2,500.00	2,292.50	38,895.65	16,008	9.50	2.43
20	L/ROVER KDW 466	11,393.00		10,548.65	2,500.00	420.00	24,861.65	11,236	9.00	2.21
21	L/ROVER KDW 467	15,847.40		16,929.10	2,500.00	1,902.50	37,179.00	16,266	12.69	2.29
22	L/ROVER KDW 468	11,274.25		9,487.55	2,500.00	875.00	24,136.80	9,171	9.18	2.63
23	L/ROVER KDW 469	30,478.35		20,370.85	2,500.00	1,772.50	55,121.70	19,665	11.68	2.80
24	L/ROVER KDW 470	21,964.25		12,659.80	2,500.00	2,030.00	39,154.05	13,783	10.29	2.84
25	L/ROVER KDW 471	15,201.25		11,706.90	2,500.00	1,438.75	30,846.90	11,777	11.76	2.62
26	L/ROVER KDW 472	13,744.20		21,101.65	2,500.00	1,785.00	39,130.85	16,602	14.58	2.36
27	L/ROVER KDW 473	11,886.50		7,851.10	2,500.00	1,295.00	23,532.60	7,548	12.15	3.12
28	L/ROVER KDW 474	12,732.50		14,939.25	2,500.00	2,263.75	32,435.50	13,964	12.18	2.32
29	L/ROVER KDW 475	18,441.25	3,306.90	10,725.50	2,500.00	1,190.00	36,163.65	9,110	13.42	3.97
30	L/ROVER KDW 476	16,890.75		17,624.95	2,500.00	1,855.00	38,870.70	17,167	12.40	2.26
31	L/ROVER KDW 478	36,664.85		26,032.10	2,500.00	1,986.25	67,183.20	21,480	14.21	3.13
32	L/ROVER KDW 479	12,121.75		3,691.20	2,500.00	1,085.00	19,397.95	3,306	11.11	5.87
33	L/ROVER KKU 126	95,176.20	13,239.85	19,133.00	2,500.00	5,180.00	135,229.05	15,490	14.46	8.73
34	L/ROVER KKU 127	72,773.00	43.60	26,410.55	2,500.00	5,136.25	106,863.40	21,532	14.50	4.96
35	L/ROVER KKU 128	162,161.40	6,674.00	13,021.35	2,500.00	23,901.25	208,258.00	11,229	13.97	18.55
36	L/ROVER KKU 129	70,947.85	3,340.00	20,878.15	2,500.00	8,096.25	105,762.25	18,586	13.35	5.69
37	L/ROVER KKU 130	38,028.05	711.15	22,561.15	2,500.00	4,270.00	68,070.35	17,346	15.67	3.92
38	L/ROVER KKU 131	86,061.85		21,402.75	2,500.00	7,361.25	117,325.85	21,189	14.03	5.54
39	L/ROVER KKU 132	80,662.90		16,116.25	2,500.00	11,647.50	110,926.65	14,851	12.58	7.47
40	L/ROVER KKU 133	77,191.80		20,660.50	2,500.00	6,396.65	106,748.95	17,768	13.16	6.01
41	L/ROVER KKU 134	57,906.60	3,317.60	26,760.40	2,500.00	8,307.50	98,792.10	24,302	12.79	4.07
42	L/ROVER KKU 135	98,365.75	6,613.80	20,340.50	2,500.00	4,515.00	132,335.05	17,485	13.87	7.57
43	L/ROVER KKU 136	123,916.05	3,306.90	34,783.05	2,500.00	8,137.50	172,643.50	27,928	14.73	6.18
44	L/ROVER KKU 138	77,500.95	3,306.90	14,837.45	2,500.00	6,205.00	104,350.30	11,285	14.66	9.25
45	L/ROVER KKU 139	35,724.70		20,841.80	2,500.00	4,305.00	63,371.50	18,847	13.20	3.36
46	L/ROVER KYG 689	69,128.30		11,062.55	2,500.00	7,700.00	90,390.85	10,751	12.62	8.41
47	L/ROVER KYG 690	94,280.80		21,657.10	2,500.00	8,951.25	127,389.15	16,326	14.66	7.80
48	L/ROVER KYG 691	80,452.25		17,993.05	2,500.00	6,002.50	106,947.80	15,816	13.17	6.76
49	L/ROVER KYG 692	26,680.40		19,522.00	2,500.00	3,955.00	52,657.40	17,839	13.16	2.95
50	L/ROVER KYG 697	83,810.70	10,024.30	18,557.10	2,500.00	6,921.25	121,813.35	17,947	12.32	6.79
	TOTAL	2,340,977.85	97,527.15	843,351.05	115,000.00	229,876.20	3,626,732.25	737,962	13.03	4.91

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

SUMMARY OF COSTS FOR PROGRAMME VEHICLES DURING

THE PERIOD 1. JANUARY - 31. JUNE 1990

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Average fuel c. l/100km	Cost/Km Ksh
51	TROOPER KXC 481	8325.00	4668.90	13931.15		735.00	27660.05	7293	16.35	3.79
52	SUBARU KDW 441	1942.25		8602.70	2500.00	533.75	13578.70	5,551	12.31	2.45
53	SUBARU KDW 442	2571.50		10817.60	2500.00	813.75	16702.85	8,423	11.57	1.98
54	SUBARU KDW 443	6901.50	3287.00	15405.85	2500.00	1916.25	30010.60	10,367	10.70	2.89
55	SUBARU KDW 446	14696.65	1801.35	17663.50	2500.00	2137.50	38799.00	13,971	10.99	2.78
56	SUBARU KDW 447	5796.00	3461.70	11363.30	2500.00	542.50	23663.50	9,723	10.56	2.43
57	SUBARU KDW 448	45639.90	282.00	10563.40	2500.00	1715.00	60700.30	7,529	11.51	8.06
58	SUBARU KDW 449	20198.05		17860.95	2500.00	1391.25	41950.25	12,629	11.63	3.32
	TOTAL	106070.85	13500.95	106208.45	17500.00	9785.00	253,065.25	75,486	11.73	3.35
59	ISUZU KXX 581	105,057.05	2,145.80	19,513.80	2,750.00	9,280.00	138,746.65	13,158	16.50	10.54
60	SISU LORRY KUA 782	98,382.70	8,507.75	33,986.60	3,800.00	3,552.50	148,229.55	14,812	28.11	10.01
61	SISU LORRY KDV 518	98,287.95	22,684.35	32,499.80	3,800.00	7,840.00	165,112.10	9,692	33.93	17.04
62	SISU LORRY KDV 534	95,497.80	31,254.20	47,606.05	3,800.00	9,765.00	187,923.05	15,552	39.07	12.08
63	SISU LORRY KDV 540	50,844.30	30,245.80	39,287.65	3,800.00	5,215.00	129,392.75	12,780	36.29	10.12
64	SISU LORRY KDW 409	14,258.95	30,315.00	23,862.35		3,456.25	71,892.55	8,752	32.73	8.21
65	SISU LORRY KDW 480	5087.05		32729.70	3800.00	3115.00	44,731.75	8,818	47.36	5.07
66	SISU LORRY KDW 043	36,674.40	8,034.60	29,229.00	3,800.00	6,877.50	84,615.50	10,411	40.41	8.13
67	M/B LORRY KDW 439	26574.65		45234.25	3800.00	7087.50	82,696.40	15,238	32.79	5.43
68	M/B LORRY KDW 460	3,694.30		19,060.95	3,800.00	840.00	27,395.25	5,931	28.55	4.62
	TOTAL	534,359.15	133,187.50	323,010.15	33,150.00	57,028.75	1,080,735.55	115,144	33.24	9.39
69	V.TRACTOR KDW 458	14,840.35		31,657.65	750.00	3,795.00	51,043.00			
70	V.TRACTOR KDW 459	14,629.75		52,420.75	750.00	2,677.50	70,478.00			
71	V.TRACTOR KDW 477	1,714.00		8,891.80	750.00	630.00	11,985.80			
72	V.TRACTOR KDW 485	4,858.55		29,244.70	750.00	1,872.50	36,725.75			
	TOTAL	36,042.65		122,214.90	3,000.00	8,975.00	170,232.55			
73	M/B RIG KDV 545	24,015.00		115,879.35	6,000.00	3,972.50	149,866.85			
74	M/B RIG KDW 451	29,832.35	946.30	188,553.00	10,000.00	4,522.50	233,854.15			
75	L.EXCAVATOR KUA775	20,774.00	17,903.30	10,182.90	750.00	7,288.75	56,898.95			
76	L.EXCAVATOR KDW432	31,789.90		49,530.40	750.00	7,268.75	89,339.05			
		3,123,861.75	263,065.20	1,758,930.20	186,150.00	328,717.45	5,660,724.60	928,592		

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME
COST CONTROL SHEET 1989

ITEM		JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
ADMINISTRATION	FIM	93,754	50,038	53,294	129,706	82,995	39,425	449,212
	KES	453,576	242,902	265,146	648,532	425,614	203,221	2,238,991
PLANNING AND DESIGN	FIM	86,966	127,729	83,181	144,801	157,492	89,634	689,802
	KES	420,734	620,046	413,833	724,003	807,649	462,032	3,448,297
CONSTRUCTION	FIM	1,101,429	2,003,735	1,143,591	1,036,555	1,095,882	795,144	7,176,335
	KES	5,328,635	9,726,867	5,689,509	5,182,774	5,619,909	4,098,678	35,646,372
OPERATION AND MAINTENANCE	FIM	27,614	68,594	45,409	50,814	30,242	37,708	260,380
	KES	133,593	332,980	225,915	254,068	155,088	194,369	1,296,012
COMMUNITY AND TRAINING	FIM	74,306	96,432	85,042	91,337	105,681	77,238	530,036
	KES	359,488	468,118	423,094	456,684	541,953	398,134	2,647,471
INVESTMENTS	FIM	212,400	182,868	120,851	406,486	199,977	36,739	1,159,321
	KES	1,027,576	887,709	601,251	2,032,431	1,025,522	189,376	5,763,865
INDIRECT COSTS	FIM	78,622	172,210	137,797	89,903	207,687	187,075	873,295
	KES	380,366	835,973	685,558	449,515	1,065,064	964,305	4,380,780
TECHNICAL ASSISTANCE	FIM	533,085	454,221	511,310	603,593	642,579	717,054	3,461,842
	KES	2,579,030	2,204,957	2,543,832	3,017,963	3,295,276	3,696,153	17,337,211
EQUIPMENT AND VEHICLES	FIM	940,153	587,219	303,524	1,357,621	629,678	1,738,066	5,556,261
	KES	4,548,393	2,850,576	1,510,070	6,788,107	3,229,116	8,959,104	27,885,366
MONITORING AND EVALUATION	FIM	7,754	1,050		5,765	875	28,179	43,624
	KES	37,514	5,097	0	28,827	4,487	145,253	221,178
TOTAL	FIM	3,156,083	3,744,096	2,484,000	3,916,581	3,153,087	3,746,261	20,200,108
	KES	15,268,904	18,175,224	12,358,208	19,582,904	16,169,678	19,310,625	100,865,544
RATE		0.207	0.206	0.201	0.200	0.195	0.194	

COST CONTROL SHEET JUL-DEC 1989 (FIM, KES)

COST CONTROL SHEET JAN-JUN 1990 (FIM)

KFWWSP — 1990 COST REPORT, IN FIM

			JAN	FEB	MAR	APR	MAY	JUN	JAN-JUN	% USED	TOTAL
		FIM rate:	0.1845	0.1833	0.1790	0.1734	0.1734	0.1720		TO DATE	LEFT
01	ADMINISTRATION	budget	68,200	73,200	68,200	73,200	68,200	73,200	424,200		
	B: 848,400	actual	115,560	43,683	36,513	36,394	109,866	28,937	370,954	87.4 %	477,446
02	PLANNING & DESIGN	budget	66,700	81,700	101,700	101,700	101,700	86,700	540,200		
	B: 1,000,400	actual	99,995	104,998	88,625	113,077	107,186	98,408	612,290	113.3 %	388,110
03	CONSTRUCTION	budget	2,091,400	1,298,400	1,078,900	1,356,500	895,300	841,300	7,561,800		
	B: 13,167,700	actual	1,044,550	1,208,589	1,478,435	575,958	2,212,707	635,841	7;156,080	94.6 %	6,011,620
04	OPERATION & MAINTENANCE	budget	147,500	174,500	163,500	185,500	187,500	174,500	1,033,000		
	B: 2,047,000	actual	337,173	61,228	151,547	231,490	211,903	112,704	1,106,043	107.1 %	940,957
05	COMMUNITY PARTICIPATION	budget	142,000	143,000	169,000	144,000	142,000	148,000	888,000		
	B: 1,799,000	actual	96,030	60,574	93,135	102,375	96,599	112,230	560,944	63.2 %	1,238,056
06	INVESTMENTS	budget	70,000	70,000	30,000	0	0	0	170,000		
	B: 170,000	actual	39,802	46,280	9,225	5,676	11,858	43,604	156,446	92.0 %	13,554
07	INDIRECT COSTS	budget	36,000	36,000	36,000	256,000	36,000	36,000	436,000		
	B: 677,000	actual	154,283	159,215	22,423	1,003	91,746	18,335	447,005	102.5 %	229,995
08	TECHNICAL ASSISTANCE	budget	618,500	618,500	618,500	746,500	630,500	505,500	3,738,000		
	B: 6,942,500	actual	652,655	729,299	672,323	707,553	631,100	493,274	3,886,205	104.0 %	3,056,295
09	EQUIPMENT & VEHICLES	budget	0	0	320,000	200,000	500,000	100,000	1,120,000		
	B: 1,570,000	actual	1,533	59,573	392,145	0	47,001	99,728	599,979	53.6 %	970,021
10	MONITORING & EVALUATION	budget	0	0	0	0	0	300,000	300,000		
	B: 350,000	actual	0	0	0	8,040	0	0	8,040	2.7 %	341,960
11	PURCHASES SPECIFIED LATER	budget	20,000	116,000	66,000	66,000	146,000	46,000	460,000		
	B: 1,428,000	actual	17,216	10,381	17,437	12,916	3,341	41,369	102,659	22.3 %	1,325,341
	30,000,000	budget	3,260,300	2,611,300	2,651,800	3,129,400	2,707,200	2,311,200	16,671,200		
		actual	2,558,797	2,483,820	2,961,807	1,794,483	3,523,308	1,684,431	15,006,645	90.0 %	14,993,355

KFWWSP — 1990 COST REPORT, IN KES

			JAN	FEB	MAR	APR	MAY	JUN	JAN-JUN	TOTAL
		FIM rate:	0.1845	0.1833	0.1790	0.1734	0.1734	0.1720		LEFT
01	ADMINISTRATION	budget	369,648	399,345	381,006	422,145	393,310	425,581	2,391,036	
	B: 4,857,315	actual	626,343	238,315	203,983	209,885	633,600	168,239	2,080,364	2,776,950
02	PLANNING & DESIGN	budget	361,518	445,717	568,156	586,505	586,505	504,070	3,052,472	
	B: 5,728,053	actual	541,977	572,819	495,114	652,119	618,145	572,141	3,452,315	2,275,738
03	CONSTRUCTION	budget	11,335,501	7,083,470	6,027,374	7,822,953	5,163,206	4,891,279	42,323,784	
	B: 74,916,225	actual	5,661,517	6,593,502	8,259,412	3,321,559	12,760,711	3,696,749	40,293,450	34,622,775
04	OPERATION & MAINTENANCE	budget	799,458	951,991	913,408	1,069,781	1,081,315	1,014,535	5,830,488	
	B: 11,725,837	actual	1,827,494	334,032	846,629	1,335,006	1,222,045	655,254	6,220,459	5,505,378
05	COMMUNITY PARTICIPATION	budget	769,648	780,142	944,134	830,450	818,916	860,465	5,003,754	
	B: 10,300,266	actual	520,487	330,466	520,306	590,399	557,090	652,502	3,171,250	7,129,016
06	INVESTMENTS	budget	379,404	381,888	167,598	0	0	0	928,889	
	B: 928,889	actual	215,728	252,483	51,534	32,735	68,388	253,514	874,381	54,508
07	INDIRECT COSTS	budget	195,122	196,399	201,117	1,476,355	207,612	209,302	2,485,909	
	B: 3,887,071	actual	836,223	868,601	125,268	5,782	529,101	106,600	2,471,576	1,415,496
08	TECHNICAL ASSISTANCE	budget	3,352,304	3,374,250	3,455,307	4,305,075	3,636,101	2,938,953	21,061,991	
	B: 39,692,805	actual	3,537,427	3,978,718	3,755,994	4,080,470	3,639,561	2,867,873	21,860,043	17,832,762
09	EQUIPMENT & VEHICLES	budget	0	0	1,787,709	1,153,403	2,883,506	581,395	6,406,014	
	B: 9,022,293	actual	8,309	325,000	2,190,755	0	271,053	579,815	3,374,932	5,647,361
10	MONITORING & EVALUATION	budget	0	0	0	0	0	1,744,186	1,744,186	
	B: 2,034,884	actual	0	0	0	46,369	0	0	46,369	1,988,515
11	PURCHASES SPECIFIED LATER	budget	108,401	632,842	368,715	380,623	841,984	267,442	2,600,007	
	B: 8,227,914	actual	93,312	56,634	97,412	74,484	19,266	240,517	581,626	7,646,288
	171,321,551	budget	17,671,003	14,246,045	14,814,525	18,047,290	15,612,457	13,437,209	93,828,528	
		actual	13,868,817	13,550,570	16,546,407	10,348,808	20,318,960	9,793,204	84,426,765	86,894,786