MINISTRY OF WATER DEVELOPMENT, KENYA
MINISTRY FOR FOREIGN AFFAIRS, FINLAND

KENYA-FINLAND WESTERN WATER SUPPLY PROGRAMME

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HELSINKI, FINLAND
KAKAMEGA, KENYA

KENYA – FINLAND WESTERN WATER SUPPLY PROGRAMME

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ABBREVIATION AND ACRONYMS

DDC	District Development Committee
DFP	District Focus Policy
DHT–Drilling	Down –the–Hole drilling
FINNIDA	Finish International Development Agency
KANU	Kenya African National Union
KEWI	Kenya Water Institute
KFPHCP	Kenya–Finland Primary Health Care 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 and 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
PWE	Provincial Water Engineer
DWE	District Water Engineer

1.0 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 it 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 of the third phase. The programme covers the whole of Busia district, part of Kakamega and Bungoma districts and two Divisions from Siaya district.

From the initiation of the programme up to the end of the report period, the programme has protected 1163 springs, constructed 1118 hand dug wells and 1039 borehole wells. In addition to this, the programme has constructed, rehabilitated or augmented 34 water supplies or water treatment plants. These provide safe water for about 1,080,000 people. The total costs of the programme to the end of the third phase will be FIM 260 million (approximately Ksh 1,300 million). While the total cost of the third phase is FIM 140 million (approximately Ksh 700 million) out of which FIM 126 million is the Finnish contribution.

The programme was reviewed in January–February 1991 by an international mid–term review team led by Mr. Han Heijnen from the International Reference Centre (IRC), the Netherlands. The findings and recommendations of the team were incorporated to the activities of the Programme during 1991.

The programme has been co–operating in collaboration with the Kenya–Finland Primary Health Care Programme and Livestock Development Programme in Kisumu. During the report period a joint diarrhoea study was undertaken between the Primary Health Care Programme and the Water Supply programme. The programme activities are supervised by the Resident Engineer who is appointed by the Ministry of Water Development, who is assisted by the District Water Engineers.

This report covers the period between 1st July 1990 to 31st December 1991. The progress achieved was generally according to the approved work plans for 1990 and 1991.

1.1 EXECUTIVE SUMMARY

This report covers the period between the 1st of July, 1990 and the 31st of December, 1991. The progress of work was in general according to the work plans for 1990 and 1991. During the review period the activities of the programme were strongly decentralized to the districts. The decentralization moved on smoothly. Monthly co-ordination meetings which are chaired by the District Water Engineer were started in each district. Some expatriate posts were extended due to lack of experienced staff from MoWD and also some posts were recommended to be continued by the mid-term review mission. By the end of the report period all the counterpart staff from the MoWD had been provided.

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. The plan was completed in September, 1991 and presented to districts during October and November, 1991. The WSDP was well received in the districts. An inventory of the water points was started in 1991 and will be completed in 1992.

The design of piped water schemes lagged behind during the report period due to shortage of staff and concentration of staff in preparation of WSDP. The situation is expected to improve due to additional staff seconded by MoWD. At 31st of December, 1991, 7 schemes were at various stages of planning and design. The field investigation sited a total of 205 boreholes and test pumped 160 boreholes. Test pumping for low yielding wells was usually 6 hours while for production wells with good yield, test pumping time was 24 hours. Ground water level measurements were carried out twice a month covering the observation network in the programme area.

Field and laboratory operations in Water Quality Section 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 in the importance of proper maintenance of the wells and their environment. Towards the end of the report period, the Water Quality Section concentrated on monitoring the water points to be handed over to beneficiaries.

The programme has 22 micro computers all with hard disk, 14 matrix printers, 5 laser printers and one plotter. All micro computers are supported by Unbreakable Power Supply (UPS). The computerization of the follow-up methods and daily routines of the programme proceeded according to the work plans.

Water point construction which included construction of new hand dug wells (shallow wells) and spring protection were done from the District Bases. The total number of water points completed during the review period was 329. In addition a total of 1106 water points including 162 borehole slabs were rehabilitated. Borehole wells for hand pump use and for production well continued to be drilled by using two Rotamec drilling rigs. A total of 139 boreholes were drilled during the review period. A total of 9 piped schemes were completed while works at 15 schemes are on going. Several buildings were constructed or rehabilitated during the report period. The maintenance of the vehicle fleet 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 hand pump 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.

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

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 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 and 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 availability of equipments. Towards the end of the report period emphasis was laid on handing over of completed water points to beneficiaries.

2.0 PLANNING & DESIGN DEPARTMENT

2.1 WATER SUPPLY DEVELOPMENT PLAN

The preparation of WSDP which started in 1989 was completed in June 1991. The printing of the plan was completed in September, 1991 and the plans were distributed to various authorities. Originally the plan was to cover only the programme area. This original idea was changed in 1990 and now it covers Kakamega, Bungoma and Busia districts which means the whole Western Province. The change necessitated additional time to complete the WSDP.

A draft report was presented to the district personnel with attendance of a representative from MoWD Headquarters in a seminar held between 5th and 6th November, 1990 at Golf Hotel, Kakamega. The recommendations from the seminar were incorporated in the draft which was subsequently presented to MoWD and FINNIDA. They recommended that the final version should be completed after the draft had been reviewed by the mid term review mission in February, 1991.

The WSDP was presented to the district authorities in a series of meetings as follow:-

Bungoma	- 22/10/91
Busia	- 24/10/91
Kakamega	- 20/11/91

The WSDP was well received by the districts authorities. Also during the presentation, discussions were held on how to integrate the WSDP to the five year District Development Plans.

2.1.2 Water Supply Usage

Piped Schemes

There are altogether 84 piped water supply systems in Western Province at present. The water supplies cover an area with an estimated population of 850,000. During the report period some of 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 recommendations for remedial measures are given in the WSDP 1991.

Point Source Water Supplies

Point source water supplies which include protected springs, dug wells and borehole wells constructed by the Programme were 3,300 by the end of December 1991. The 3,300 water points are estimated to serve about 990,000 people in the programme area.

2.2 DESIGN

2.2.1 Design Guidelines

During the report period, the number of guideline drawings remained 30 in number. Modification of the drawings such as those of spring protection continued to suit the site characteristics.

2.2.2 Design of Water Supplies

During the report period 24 piped water supply schemes were under feasibility and rehabilitation studies out of which 6 were completed. The designs of 12 water supplies were completed while 7 remained under design. Details are shown in Appendix 2.1. The delay of the design of the water supplies was caused by the design staff being involved in the preparation of WSDP.

2.3 WATER POINT INVENTORY

Data on all existing water points was collected from the field for the purpose of preparing un updated inventory for handing over and monitoring. Four groups were mobilized to carry out the inventory and each group was operating in one district.

The field work was started in September 1991 and the aim was to complete the whole exercise by the end of 1991, but because of several break-downs of vehicles approximately 90% was achieved. Computerization and checking of the field data is on-going and about 60% of collected data has been computerized.

2.4 FIELD INVESTIGATIONS

2.4.1 Geophysical Investigations

Shallow refraction seismic method was used in surveying proposed borehole sites. In addition, a WADI was acquired during this period to supplement the seismic system. This is an electromagnetic method based on Very Low Frequency (VLF). It is useful in the identification of fractured zones in bedrock. In both cases, the data is interpreted using a computer programme.

Towards the end of the report period, a geologging system from OYO Company, UK, was acquired. This is used in studying a borehole after drilling to establish the actual locations of fractures, aquifers, aquicludes, etc, with a view of efficient completion of the boreholes. This is a computerised system with a computer programme for data interpretation. During the report period, a total of 205 borehole sites were surveyed.

2.4.2 Hydrogeological Investigations

Test Pumping

Test pumping of boreholes continued during the report period. A total of 160 boreholes were test pumped. Duration of test pumping for low yielding boreholes was 6 hours and 24 hours for production boreholes and other high yielding ones. During this period, a 10-hour step draw-

down test was introduced in high yielding boreholes to establish their performance and efficiency before the 24-hour aquifer test was undertaken.

2.4.3 Groundwater Monitoring

Groundwater Level

Groundwater level measurements were continued within the observation point network covering the programme area. There are 11 boreholes and 37 shallow wells in the network and measurements were taken twice a month at each point.

Spring Discharge

Spring discharge measurements were carried out twice a month within the observation network consisting of 32 points. Other discharge measurements were for proposed piped schemes and these were carried out on a regular basis. A total of 2,730 new springs were identified within the programme area during the report period.

2.5 COMPUTERIZATION

2.5.1 General

At the end of the report period the number of microcomputers were 22 and nearly all sections had easy access to computers. The main tasks were development of new systems, ensuring data reliability, upgrading of the Water Point System, user training and compiling the Water Supply Development Plan. There has been improvement in computer user friendliness which has made the existing applications more fluent and this has increased their output and accuracy.

Computer applications are well utilized in the Programme to follow up physical progress, costs, stores and data processing for planning. Systems created in 1989-90, such as mechanical and construction store control systems, cost control, cash ledger and payroll are at an advanced level and users can utilize them without major difficulties (see Appendix 2.2).

2.5.2 Water Point Data Base

The Water Point register has been improved by describing the water points by location and coordinates. The correct names of locations and sub-locations have been checked and updated. A physical check of all water points in the field and updating of the database was started and will continue in 1992. Also included in the database is the community information and the overall condition of the water points.

2.5.3 Water Supply Development Plan

The Water Supply Development Plan System was developed in cooperation with WRAP in MoWD. The system was further modified to work with the Programmes sub-location database and several parameters had to be changed from constants to variables to meet the circumstances in Western Province. Two independent sub-systems were developed to support the plan including

water supply coverage and cost follow-up for water supply rehabilitations.

2.5.4 Manpower System

Education, training and work experience of some 1200 people from the MoWD, Western Province and 400 people working for the Programme were registered in the manpower register.

2.5.5 Water Treatment Plant System

Information of 84 water supplies and their engines and pumps was collected to a database and a program was created to utilize that data.

2.5.6 Invoice Control System

An invoice control system to control local purchase orders, invoices and payments was developed.

2.5.7 Vehicle Control System

A database for 125 vehicles for FINNIDA financed programmes in Western Kenya was created. It also controls maintenance costs on monthly basis.

2.5.8 Reporting

The structure of quarterly reports was kept the same as before and quarter by quarter reporting was more fluent. For 1992 a new structure was created and graphical output was introduced. Transfer from WordPerfect version 4.2 to 5.1 is ongoing. A Graphics software, Harvard Graphics 3.0, was introduced.

2.5.9 Documentation

Short descriptions of 20 developed systems were written. They include database descriptions.

2.5.10 Kenya-Finland Primary Health Care Programme

Source programs and programming support was given to PHCP on payroll, budgeting, cost control and cash ledger. Some technical and system maintenance assistance was also given when needed.

2.6 WATER QUALITY MONITORING

2.6.1 Introduction

The water quality activities concentrated on the handing over of water points, studies on diarrhoeal diseases versus water supply, studies on heavy metals and on poor water quality complaints in both point and piped water supplies.

2.6.2 Laboratory Operations

The total number of samples analyzed in the laboratory in the report period was 4,904. Most of the samples were collected during the study period while a good number were collected during inspection of wells to be handed over to the communities. The other activities concentrated on routine monitoring, analyzing samples from test pumping of new wells and dealing with complaints of poor water quality.

The number of qualified technologists remained two until April, 1991 when the number increased to four. One of the two additionals was transferred back to Nairobi on health grounds while the Head of the Section left for further studies at the University of Nairobi.

Water quality monitoring activities concentrated on bacteriological analysis, except for new wells where chemical quality was also analyzed.

2.6.3 Field Operations

The area covered during the report period involved the handing over of water points and the diarrhoeal/water supply study. Only specific wells were inspected and sampled for the diarrhoeal study. For handing over all wells in a location were monitored and tested for water quality.

2.6.4 Analysis of Problems Affecting the Bacteriological Water Quality in Point Water Supplies

The total number of samples tested for bacteriological quality was 3372 out of which 2067 were free from contamination, which represents 61%. The most probable cause of contamination was poor maintenance. A summary of bacteriological analyses of water quality is presented in Appendix 2.3.

3.0 PHYSICAL IMPROVEMENTS

3.1 GENERAL

The organization of the construction department was adjusted several times during the report period to match better the phase of activities and to increase sustainability. At the end of 1991 the department consisted of four sections:

- Piped Schemes Section
- Mechanical Section
- Water Point Section
- Material and Transportation Section

The last two sections are new as compared with the Project Document. The Water Point Section covers the activities of the former Drilling and District Base Sections. The Material and Transportation Section is a new section and it is responsible for material management, monitoring the use of vehicles and providing transportation services. In line with the organizational changes the role of Kenyan officers has been emphasized. At the beginning of the report period all of the four sections were headed by Finnish consultants. By the end of the report period two of them were headed by Kenyans.

The Programme continued to use local contractors and material suppliers in the construction of both point source and piped water supplies. Contracts for piped schemes were issued through tendering process, while water point contractors were nominated by a water point committee in each district. This committee consists of the DWE as the chairman, coordinators and RE assistant as members.

The water point contractors are small local contractors (artisans), which the Programme has trained and authorized to construct and repair water points. The contractors have formed a self-help group called the United Western Civil Contractors consisting of 48 artisans.

Traditionally the beneficiaries continued supplying stones for spring protection and fencing material for all types of water points. Filter sand for boreholes was purchased from a self-help group as part of the income generating activities.

Some special works e.g. installation of borehole pumps, manufacturing of cover slabs and prefabrication of steel structures continued to be implemented by the Programme organization. The tendency is, however, to contract these activities to the private market.

Quality control of contractor works and materials supplied continued to be carried out by the supervisory staff of sections and by the concrete laboratory of the Programme. The laboratory is able to test the quality of aggregates, concrete and concrete blocks.

Construction, rehabilitation and augmentation of piped water supplies and water treatment plants improved the water supply coverage by an estimated 53,000 people. The measures taken increased the total production capacity of water supplies by approximately 6000 m^3/d.

Construction of new water points increased the number of people having improved water supply by 117,000. A summary of construction during 1981–1991 is shown in Appendix 1.1.

3.2 POINT SOURCE CONSTRUCTION AND REHABILITATION

3.2.1 New Point Source Supplies

Construction of new water points continued according to practices and methods established earlier. The number of water points constructed was reduced in 1991 from 425 (Project Document) to 300 per year in line with the recommendations of Mid-term Review/1991.

A total of 469 new water points were completed during the report period (Appendix 3.1). It is estimated that a total of 117,000 people were thus provided with improved water supply through these activities.

3.2.2 Rehabilitation of Existing Point Source Supplies

Rehabilitation of water points constructed during earlier phases continued as new constructions were carried out. Towards the end of the report period repairing efforts were intensified in line with the extensive handing over program.

During the report period a total of 463 water points were rehabilitated (Appendix 3.1).

3.3 PIPED SCHEME CONSTRUCTION AND REHABILITATION

3.3.1 Construction of Piped Schemes

The construction and augmentation of the following water supplies were completed during the report period:

- Funyula–Nangina W/S (Busia)
- Ugunja W/S (Siaya)
- Nambale W/S (Busia)
- Kibabii W/S (Bungoma)
- Busia Town B/H (3 boreholes)

All of the above mentioned water supplies are undertaken by MoWD.

Construction and augmentation works at the following water supplies were started or ongoing during the report period:

- Kapsakwony W/S, Phase III (Bungoma)
- Ingotse W/S (Kakamega)
- Sira–Nyawita W/S (Siaya)
- Navakholo W/S (Kakamega)
- Maturu–Luandeti W/S (Kakamega)
- Khwisero W/S (Kakamega)

- Hamisi W/S (Kakamega)
- Muchi-Milo W/S (Bungoma)
- Butere W/S (Kakamega)

The Programme continued constructing water supply facilities for health centres and hospitals constructed or renovated by KFPHCP. Water supplies for the following health centres were completed:

- Mukhobola H/C
- Ipali H/C
- Matayos H/C
- Bungoma Hospital
- Webuye Hospital

work is ongoing in the following health centres:

- Hamisi H/C
- Khwisero H/C

3.3.2 Rehabilitation of Piped Schemes

Survey and repair of distribution network in Kakamega W/S continued. One B/H with a good yield was equipped and connected to the network. Similar works within the network of Chesikaki W/S in Bungoma District were continued while renovation of Kabuchai W/S (Bungoma) was started.

3.4 WATER TREATMENT PLANTS

The rehabilitation and augmentation of the following water treatment plants (WTP) were started or continued during the report period:

- Kaimosi WTP (Kakamega)
- Maseno WTP (Kakamega)
- Busia- Mundika WTP (Busia)
- Kakamega WTP (Kakamega)

3.5 ALTERNATIVE WATER SUPPLIES

Work on roof catchment in Kolanya Girls School were started during the last quarter of 1991.

3.6 BUILDING CONSTRUCTION

3.6.1 District Bases

Land easement formalities for the plot of Kakamega District Base were settled and the plot now belongs to MoWD. Siaya District Base and the connection of Ugunja W/S were completed.

3.6.2 MoWD District Water Offices

Rehabilitation and augmentation of MoWD District Water Offices in Kakamega, Busia and Bungoma were completed. Works at Siaya District Water Office were started. Minor repairs were also carried out in the Provincial Water Offices/ Kakamega. MoWD District Water Offices as well as the Programme's District Bases are now in good condition to face the present and future needs.

3.6.3 Provincial Workshop

Rehabilitation of the MoWD Provincial Workshop was completed. The works included renovation and augmentation of buildings and paving of the yard area.

3.6.4 KFWWSP Office Block

The drawing office was extended. Normal maintenance works were carried out in the Programme offices and the road leading to the Programme offices was paved.

3.6.5 Reinforced Concrete Elevated Tank

The 50 m^3 tank and the offices under it, were taken into use. The offices house the National Water Conservation and Pipeline Corporation/MoWD.

3.7 WORKSHOPS, MATERIAL MANAGEMENT AND TRANSPORTATION

3.7.1 Workshops

The central workshop in Kakamega continued to provide efficient maintenance services for the two FINNIDA financed Programmes (KFWWSP and KFPHCP) operating from Kakamega and for a new program, Kenya–Finland Livestock Development Programme (KFLDP), which started operating from Kisumu in 1991.

The number of vehicles regularly serviced at the workshop was 170 at the end of the report period. Maintenance of Programme equipment such as compressors and de–watering pumps continued. The workshop also continued repairing and overhauling pumps and equipment of a number of water treatment plants in the Programme area.

Service garages in Bungoma and Busia continued providing smaller scale maintenance services for vehicles and equipment. The metal workshop continued providing prefabrication services as before. Development of the activities of the Provincial Workshop continued in co–operation with O&M department.

3.7.2 Material Management

The Programme has four central stores in Kakamega namely:

- Construction Store
- Pipe Store

- Drilling Store and
- Mechanical Store

There are small store in Bungoma, Busia and Siaya district bases serving mainly the water point construction, pump installation and maintenance activities. Computerized monitoring of deliveries, stored items and issues of materials to different jobs was further developed. The system now facilitates the control of use of materials and provides cost reports of individual jobs. The practice of annual stock taking was continued. The value of the stores at the end of the report period was 8 MFIM.

3.7.3 Transportation and Control

A transportation pool was established in June, 1991 to facilitate a more optimized utilization of vehicles, especially the heavy ones. A Kenyan transportation officer was nominated to coordinate the activities. So far the experiences are encouraging as the efficiency of individual vehicles has clearly improved. Services of the pool are available for all departments of the Programme and in special cases for MoWD and KFPHCP.

Monitoring of the costs of Programme vehicles continued intensively. The reports show that the operational costs of the vehicles remained at a very reasonable level: the average cost/km increased by 4.1% comparing 1990 and 1991 figures. The summary of costs for Programme vehicles in 1990 and 1991 is presented in Appendices 3.2 and 3.3.

The purchase value of the vehicle fleet including the drilling rigs and trailers was estimated to be roughly 10 MFIM, while the real value could be estimated at 5 MFIM. At the end of the report period the fleet included 125 vehicles including trailers.

4.0 OPERATION AND MAINTENANCE

4.1 COMMUNITY OPERATED WATER POINTS

4.1.1 Installations

Installations of hand pumps was largely done by construction department until February, 1991 when water point section of O&M department took over the responsibility. Installations have been done by mobile teams in the district. Installations during the report period are as detailed in Appendix 4.1.

4.1.2 Maintenance

Three mobile teams continued to operate where local maintenance system was not yet established. Each team comprised five people; two of them KFWWSP employees and three trainees. These teams attended problems of faulty hand pumps.

Locational repairmen and pump attendants continued to serve their communities in maintenance of the hand pumps in their various locations. More of them will be recruited and trained so that every location is covered, thereby reducing the work-load on the two mobile teams. The aim is that they will eventually replace the mobile teams in maintaining the water points. To be in a position to solve the problem of iron content in wells due to pipe corrosion, there is a scheduled programme to change India MK II to Afridev and Nira AF 76 to Nira AF 85, whose pipes were contributing towards the high iron content.

The mobile teams and the locational repairmen have been charging the well committees the costs incurred on spare parts, repairs and labour.

4.1.3 Changing of Hand Pumps

The changing of AF 76 pumps to the AF 85 types continued to be done by the mobile teams. Some were done by the contractors after deepening and reconstruction works. The number of pumps changed by the mobile teams are as follows:

1) Seventy eight Nira AF 76 changed to Nira AF 85 (Dug wells)
2) Thirty five Nira AF 76 changed to Nira AF 85 (Boreholes)
3) Seven Nira AF 85 changed to AFRIDEV (Boreholes)
4) One Volanta changed to AFRIDEV (Borehole)
5) Four MK II changed to Nira AF 2000 (Boreholes)
6) Seven MK II changed to Nira AF 85 (Boreholes)
7) Five Nira AF 76 changed to AFRIDEV (Boreholes)
8) One hundred and seventy seven MK II changed to AFRIDEV (Boreholes)

4.1.4 Handing Over Water Points

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

LOCATION	INSPECTED W/POINTS	FINAL HANDED OVER	DISTRICT	DATE OF HANDING/OVER
C.Mumias	62	54	KAKAMEGA	29.10.91
E.Wanga	133	42	"	13.11.91
E.Isukha	66	31	"	22.11.91
W.Wanga	105	42	"	13.12.91
W.Ugenya	64	29	SIAYA	15.11.91
S.Kabras	149	74	KAKAMEGA	6.12.91
E.Marachi	92	62	BUSIA	6.12.91
E.Ugenya	50	32	SIAYA	17.12.91
N.Ugenya	39	19	"	3.12.91
TOTAL	760	385		

4.1.5 Manuals and Repairs

The AFRIDEV and Nira AF 85 hand pump manuals are ready. There is no urgent need for preparing a manual for India MK II due to its cumbersome nature of maintaining it. It is also not in the category that can enhance the achievement of village level Operation and Maintenance. Once a suitable Village Level Operation and Maintenance (VLOM) deep well pump is identified a manual will be prepared for it. The table below shows the repairs that were done during the report period.

	KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
Repairs	234	175	250	148	807
Invoiced Sh	67,795.60	32,143.00	45,772.00	30,558.00	113,003
Paid kSh	41,079.80	14,125.90	18,933.00	16,693.00	62,805.50
Perc.paid %	61%	44%	41%	55%	50.25%

NIRA AF 85	66	34	17	11	128
AFRIDEV	31	25	54	18	128
NIRA AF 76	37	23	38	4	102
NIRA AF 83	-	-	-	-	-
INDIA MK II	100	93	141	115	449
TOTAL	234	175	250	148	807

The Nira AF 85 hand pumps 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. Pipes used are of polyethylene material and therefore have no corrosion problems. Their only problem is the disconnection of piston rods and pipes and jamming of valves in areas with siltation problems.

AFRIDEV pumps are also relatively easy to dismantle and reassemble. An AFRIDEV pump does not have corrosion problems because the pipes used are of P.V.C. material. The problem it experiences include occasional breaking of piston rods, leather seal cups turning inside out and bearings have to be changed once every year.

Nira AF 76 and Indian MK II pumps have been experiencing the problem of 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. These are more reliable and will enhance the achievement of (VLOM) Village Level Operation and Maintenance.

Manuals for community operated wells equipped with submersible pumps are under preparation. 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.

4.1.6 Spare Parts Delivery System

A study carried out by the Socio-Economic Section on spare parts delivery system came up with recommendations which are now ready for a pilot trial. These are:-

1) Community operated shops

2) Hardware shops

Hardware shops have been identified where potential businessmen will acquire spare parts from manufacturers for the communities. The manufacturers have sent letters to hardware shops requesting their confirmation of the business interest. The shops will be decentralized to the districts. If these pilot schemes prove effective, then shops will be used in the whole Programme area.

4.2 PIPED WATER SUPPLIES

4.2.1 General

Progress on piped scheme continued steadily as per guidance stipulated in the work plan.

4.2.2 Assessment of Existing Situation

Inventory of mechanical and electrical equipments of water supplies was carried out during this period. Identification and analysis of data was done in some water supplies. This is covered in survey report and WSDP.

4.2.3 Suggestions for Improvements and Rehabilitations

Updating of plans and layouts for Mukumu complex and Malava W/S were completed. Implementation of the rehabilitation works at Malava w/s was completed. The performance of the water supply is being monitored.

4.2.4 Operation and Maintenance Procedures for Piped Schemes

Preparation of flow diagrams were carried out for Malava, and Mukumu complex w/supplies. A total of 16 signboards (posts) were made and erected. Instructions for daily operations was carried out. Fifteen (15) manuals for the operators were made ready for distribution to various water supplies. Mechanical and Service cards for each pump and Engine/motor were computerized.

Operators training for constructed water supplies was withheld due to lack of testing equipments. On the job training was achieved in Malava, Likuyani, Ipali, Shikusa, Chwele, Funyula Nangina and Mukumu complex water supplies.

4.3 WATER TREATMENT PLANTS

4.3.1 Assessment of Existing Situation

Assessment of the MoWD and NWCPC operated water treatment plants were completed. Management and personnel studies proceed as scheduled. The training section of community department is undertaking this together with the manpower requirement.

4.3.2 Suggestions for Improvements and Rehabilitations

Updating of plans and layouts for eight water treatment plants was completed. Suggestions for improvements and Rehabilitation for two plants were made. Detail planing and programming for Mbale and Matisi was completed in co-ordination with District Water Engineer and District Development Committee. Also completed were Kaimosi, Mumias and Busia Mundika water Treatment Plants. Work is already in progress in Kaimosi, Mumias and Busia Mundika.

4.3.3 Operation and Maintenance Procedures for Water Treatment Plants

Nomination of trainees of water supply inspectors and plant operators cadre was done for both MoWD and NWCPC operated schemes. The training schedule is to be drawn soon.

4.3.4 Programme for WTP Rehabilitations 1991

Investigation for programming of water treatment plants rehabilitation and preliminary feasibility studies was done for all WTP's in the programme area. Implementation for Kaimosi, Mumias and Busia-Mundika is in progress. In-service training for water supply plant operators has taken place in Kakamega, Maseno, Kaimosi, Shitoli, Chesikaki, Webuye and Busia-Mundikia. Water meter installation for house connection continued in Kakamega scheme and towards the end of the year most connections had been metered for easy accountability.

4.3.5 Training of Operators and Pump Attendants in Water Treatment Plants

Training plan is still being prepared by the training section. Training of operators is continuing at Shitoli, Kaimosi, Mumias and Busia Mundika water supplies.

In-service training for specific duties i.e filter back washing, chemical preparation and adjustment of intake flows took place in Kaimosi, Shitoli and Busia Mundika. Courses held by suppliers and manufacturers were extended to electricians and mechanics. One electrician was sent to SKF Kenya Ltd for one week and four mechanics were sent to Gailley & Roberts in Kisumu.

4.3.6 Material System

Inventory of spare parts required for mechanical and electrical equipment in water treatment plants has been finalised. List of spares for various machines has been submitted for procurement.

4.3.7 Workshop for Operation and Maintenance Facilities

The Provincial central workshop extension for operation and maintenance is now in operation. MoWD staff are now working with the programme's O&M mobile teams within the Province.

The water meter calibrating device already ordered has not been received. Two mechanics were trained for this purpose and are awaiting the arrival of the device. Tools for the necessary workshop duties have been supplied to the workshop as well as the District Water Engineers within the Project area. Development of workshop procedures and training for special duties is already finalized and in force. The job card system created is in use and has improved cost control.

5.0 TRAINING AND MANPOWER DEVELOPMENT

5.1 GENERAL

The main objective of 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 target groups that benefitted besides the staff members were: locational leaders, water point committee members and attendants, local small-scale contractors and artisans. In addition the programme offered many field (industrial) attachments opportunities for trainees from institutions like KEWI and WECO which are supposed to produce skilful manpower to the sector.

5.2 LOCAL COMMUNITY TRAINING

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

5.2.1 Leaders Training

In line with the District Focus Policy the programme has organised seminars for leaders from government organizations, party leaders, women leaders and other opinion leaders. During the training participants shared ideas on water, health and sanitation. At the end of the four days seminar, participants are supposed to disseminate the information learnt to other community members through meetings called "Barazas". During the period under review, leaders seminars were covered according to schedule. See Appendix 5.1.

5.2.2 Community Training

The target groups covered include water committee members and water consumer in general. Training of executive water committee members is to strengthen their management and administrative skills. The training methods used included grass-root level seminars, film shows, study tours, group discussions, songs, dances and drama. During the period under review thirty one seminars were organized and a total of one thousand four hundred and fifty four executive committee members of water committees were trained as shown in Appendix 5.2.

Film shows were used to reach both illiterate and literate community members who learnt by hearing and seeing. The films emphasized health education, environmental sanitation and operation and maintenance aspects. Details are shown in Appendix 5.3.

5.2.3 Training of Pump, Spring and Iron Removal Plant Attendants

The objective of this activity is to reinforce the technical skills of water point attendants so that they can maintain community managed water points and do preventive maintenance work.

The trained pump attendants assist the programme in training others so that the multiplier effect can enable the programme to cover more well in a short time. Pump attendants were trained on Nira AF 85 and Afridev hand pumps. Spring attendants were trained to take care of the already protected springs in their areas. See Appendix 5.4.

5.3 TRAINING OF LOCAL CONTRACTORS

5.3.1 Training of Contractors

The programme continued using local small scale contractors in groups of two to four artisans in construction, pump installation and major repairs of water points.

During the report period a day's workshop was organized for water point construction supervisors in the districts to clarify their responsibilities and improve their technical knowledge and supervising skills.

5.3.2 Training of Locational Pump Repairmen

It has been felt necessary to have one repairman in each location to do major repairs for hand pumps which cannot be done by pump attendants. The training is done by attaching the pump repairmen to mobile hand pump maintenance team for about four months. Some repairmen have been trained in slab making and repair, pump installation and spring protection to expand their working knowledge. After the training, the pump repairmen are supposed to become self employed artisans in their respective locations. In all 30 pump repairmen were trained during the period under review.

5.3.3 Water Point Operators Training

Operators received on-the-job training to maintain water treatment plants and piped schemes. A total of twenty operators were trained during the period under review.

5.4 TRAINING FOR SPECIAL GROUPS

5.4.1 Training for Women Groups

Women group leaders were trained in income generating activities, water and hygiene in Western Province. It is important to point out that training of water point committees and pump attendants is meant to benefit women; nearly half of the committee members and all pump attendants are women.

5.4.2 Staff Training

In addition to the daily on-the-job guidance given by the programme personnel, there were various training events taking place in which the MoWD staff, programme and district personnel participated during the report period.

Two staff members of the programme participated in the Annual District Water Engineers

conference organized in Kakamega by the MoWD. Provincial Planning Officer, Kakamega District Development Officer, two District Social Development Officers, District Water Engineers from Siaya and Trans Nzoia Districts, Provincial Water Engineer and all District Water Engineers from the Western Province and three staff members of the programme participated in the course on District Water Development Planning which was prepared and conducted by the TNO–Institute of Applied Geoscience, the Netherlands, in co–operation with the WRAP programme in the MoWD.

One Motor Vehicle Mechanic from the provincial mechanical workshop and one plumber from the programme participated in six weeks evening class course in Kisumu Industrial Training Centre to sit for a trade test for an upper grade. One Motor Vehicle Mechanic from the MoWD staff attached to the programme completed successfully an advanced skill upgrading course in Kisumu Industrial Training Centre and received a certificate. Twenty location representatives from Busia and Siaya districts were trained in a five days course in order to improve their practical skills and performance as community extension workers.

Ten drivers attended a two day workshop organised in co–operation with KPHCP. Two Electricians participated in a one month workshop training on the wiring of control panels, distribution panels and motor centres given by Switch gear and Controls Ltd, Nairobi. Seven programme staff members toured UNICEF and Ruwasa Water and Sanitation Project in Uganda. Seven Engineers/Technicians made a study tour to Meru to acquaint themselves on community managed gravity schemes.

Seventeen trainers attended Training of Trainers Seminar organized by Rania Consultants at KFPHCP Hall. A Material Development Workshop was held at Golf Hotel in which 18 programme staff members plus two external trainers participated. Nine Secretaries attended a one week Secretarial Development Course in Kakamega. Four Supervisors attended a one week supervisory course in Kisumu. One seconded staff member from MoWD joined Nairobi University to take M.Sc. Course in Public Health Engineering (PHE).

Two staff members and one seconded staff member from MoWD participated in one week workshop on Participatory Evaluation organized by the World Bank in Kibwezi, Kenya. A two days seminar was organized in Kakamega for twenty six Water Point Construction Supervisors in the districts to clarify their responsibilities and to improve their technical knowledge and supervisory skills. The District Water Engineer from Busia participated in a three weeks course on Operation and Maintenance of Rural Water Supply Schemes conducted by CEFIGRE. One Store Supervisor was accepted by the Association of Supervisors in Purchasing and Supply (ASPS) to do examinations to obtain the a first and second certificates in purchasing and stores.

A one day co–ordination workshop was organized for programme and seconded staff at KFPHCP in order to improve the organization and operations of district bases. A one day training of trainees workshop was organized for twenty community trainees. Mr Ron Sayer from the World Bank facilitated the workshop where emphasis was on participatory skills in training and in the use of appropriate teaching aids.

Nine programme officers made a study tour to Kwale and Kilifi Water & Sanitation Projects. Fifteen Storekeepers under sponsorship of KFWWSP and KPHCP received training on stock

control in Kisumu. Two Electricians received a one month training in Nairobi on wiring. Three secretaries took one day computer examination in Kisumu. Ten geologists and ground water inspectors attended a 5 days geologer 3030 operation course organized in Kakamega in December 1991. One MoWD staff and two consultants attended a 4 days planning and design workshop organized by FINNIDA.

Three MoWD staff members completed a three months practical training course in Tampere City Water Works – Tampere, Finland. One Finnish junior engineer continued with his month practical training in KFWWSP – Kakamega, Kenya. One staff member attended a 12 days micro computer engineering course at Kenya polytechnic. Two programme secretaries continued with 1 hour evening secretarial courses from January, 1991.

5.4.4 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 equip them with skills needed on grass root level in community work. Fifty seven community extension workers were trained to upgrade their field skills during the report period.

5.4.5 Trainees Attached to KFWWSP

During the period under review a total of two hundred and nine trainees were attached to the programme. They were drawn from national training institutions as shown in Appendix 5.5

5.4.6 Training Abroad

One staff member of MoWD left for a two years M.Sc. course in Public Health Engineering at the University of Leeds, England. One senior staff member from MoWD Headquarters participated in a one week international conference in India. Two staff members took part in a Workshop on Community Based Water Maintenance Systems which was organized in Kampala, Uganda, by UNICEF. One programme staff member attended a six month diploma course at Coady International Institute in Canada.

One other programme staff member participated in eight week Course in Project Planning and Management of Effective Communication and Skill Training for extension officers at Panafric Institute for Development in Zambia.

5.4.7 Exchange of Trainees

Three MoWD staff members left for a three months practical training in Tampere City Waterworks, Tampere, Finland. One Finnish junior engineer arrived for six month practical training in KFWWSP, Kakamega, Kenya.

6.0 COMMUNITY INVOLVEMENT

6.1 GENERAL

The main objective of this sector is to involve the beneficiaries in all the stages of the water supply development i.e. planning, designing, implementation, operation and maintenance of the facilities. This sector comprises of Socio-economic and Community development Sections.

Socio economic Section is charged with the responsibilities of carrying out feasibility studies on the communities' social and economic set up in order to establish levels of acceptability, affordability and ultimately, the sustainability of the water facilities. The Section also assists the communities to initiate and develop income generating activities. In addition, women as special groups in the use and maintenance of the water facilities are catered for through the provision of management skills and monitoring of their group activities.

Community development is mainly concerned with mobilisation of communities to create awareness in the communities to actively participate in all the stages of water development. During the report period the community involvement section continued to decentralise its staff to the district based offices in order to strengthen the coordination of the programme activities.

To facilitate the mobilisation and monitoring of the community activities, the community involvement section collaborates with the Ministry of Culture and Social Services staff i.e. District Social Development Officers and Community Development Assistants. The Ministry has also fully seconded to the programme one Social Development Officer who works as the Head of Section. Further collaboration could still be enhanced by provision of training to the senior staff of MoCSS within the programme area.

The Sector also works closely with the Ministry of Health and Kenya-Finland Primary Health Care Programme in training of the beneficiaries on health issues.

6.2 DECISION MAKING, PLANNING AND DESIGN

During the report period the beneficiaries participated in decision making and planning processes of the construction of water points. The drawing of community development work plan incorporated the views expressed by the communities through letters of application and personal visits to the programme offices.

To enable the beneficiaries make appropriate decisions, the programme mobilised the communities through local leaders and extension workers who discussed with the consumers on the benefits of using safe and clean water. The recommendations of the beneficiaries channelled through the various local development committees which exist right from the lowest (village) levels to district levels were taken into account during the planning of the development of the facilities.

Communities expressed their opinions freely during the various community meetings held before and after the implementation of the community development work plan. To mark a consensus between the programme and the local people, the communities signed agreement forms

concerning their roles towards the planning and designing, the construction and the maintenance of the water facilities. The communities' views were taken into consideration during the drawing of the designs for the springs and pipes schemes.

6.2.1 Siting

Siting of the water points is one of the most important aspects of water development process where community participation in planning and decision making is very decisive towards the acceptability and sustainability of the water facilities. During the report period, siting meetings were held for the beneficiaries under the facilitation of the local leaders and the programme's representatives. During the meetings the communities identified sites for the construction of the water points according to their own needs.

During the report period a total of 384 meetings were held. The siting meeting achievement was rather low because the target for the water points to be constructed during 1991 was changed from 425 to 200 in the middle of the year.

Figure 6.1 Siting meeting

The photograph above shows one of the locational siting meetings where the communities expressed their views on site selection. Feasibility studies for the sites selected by the communities are carried out to determine whether they are feasible or not. The communities were involved in the investigation of sites in order to make them understand and appreciate the technical aspects that affect the sites. The beneficiaries participated in feasibility studies by providing labour for the hand auger investigation before the construction of hand dug wells.

Feasibility studies on the social and economic aspects of the affected communities were also carried out in order to assess the sustainability of the water points before the construction. Appendixes 6.1, 6.4 and 6.6 show the results of siting meetings and feasibility studies.

6.2.2 Land Easements

Community participation in decision making was also realised through land easements. During the period under review landowners voluntarily signed written documents (letters of no objections) to confirm their willingness to allow the construction of water points on their land for communal use. A total of 262 land easements were registered during the report period. Appendix 6.2 summarises the easements accomplished according to the districts and locations.

The achievements on land easement was a bit low because of the long processes involved at the land registration offices. Some of the land owners stay far from their homes; there were also complications where the land owner had died.

6.3 COMMUNITY PARTICIPATION IN CONSTRUCTION

Generally, community contribution during construction of the water facilities was realised through provision of labour and locally available construction materials such as stones, sand and fencing poles. In specific terms the roles played by the community during the construction varied according to the different types of water points constructed as follows:-

* Shallow wells - the community dug pits down to the water level.

* Boreholes - the communities cleared the access routes to sites, dug mud holes and provided manual labour on demand.

* Springs - the community collected hard core and assisted during construction work.

* Gravity/piped schemes - communities cleared routes and dug trenches.

The achievement of community participation in construction work is as shown in Appendix 6.3.

6.4 COMMUNITY PARTICIPATION IN OPERATION AND MAINTENANCE

Communities participated actively by nominating their own local representatives as pump attendants, local repairmen and local contractors. The communities continued to raise money to pay for labour and spare parts during the operation and maintenance work. A total of Ksh.321,014 was collected for Operation & Maintenance activities as shown in Appendix 6.4.

6.5 COMMUNITY PARTICIPATION IN HEALTH EDUCATION

Awareness on the benefits that accrue from use of clean and safe water was created among the consumers. Health education campaigns were facilitated by the communities' representatives namely the Community Development Assistants (CDAs), Locational Representatives, community administration personnel and other government extension workers. In addition, a study on

improved water collection vessels was carried out.

Dissemination of health education messages to the communities was also realised through working in collaboration and co-operation with the Primary Health Care Programme who trained the community health workers and facilitated on health programmes during the seminars organized by Kenya-Finland Western Water Supply Programme.

The consumers were advised to clean well surroundings, make duty rosters and fence the water points to guard against animals and children who might contaminate the water. Achievements on duty rosters prepared and fencing done are stated in the Appendix 6.4.

6.6 ECONOMIC ACTIVITIES

The main impact of providing local communities with water can be felt when the communities use the water effectively, but also when they use time and energy saved to engage into other income generating activities.

Women have been identified as the best managers and users of community water supply systems. In recognition of the role played by women in the development of rural areas, a special workshop on Income-generating Possibilities and Potentials for Women Groups in Western Province was held at Golf Hotel Kakamega. Two seminars on simple management skills were also realised in Busia and Bungoma during the period under review. The Programme has further designed activities which enable the women groups to generate incomes. Women have been given the responsibility to supply construction materials such as sand and blocks to the district bases. Mama Safi Women Group in Busia district is one such group that has shown communities' initiatives to manage their facilities.

Although it was proposed to start a women's credit scheme, it was not possible because the provision of credit facilities is not within the scope of the programme. However, co-operation with other organizations in Western Province working on credit schemes is being encouraged. During the period under review the communities started various income-generating activities as described in the Appendix 6.7.

6.7 COMMUNITY PARTICIPATION IN MANAGEMENT OF THE FACILITIES

For the water facilities to be sustainable, stable management committees comprising of the consumers have to be established. In order to form a strong community management base for the various water facilities the communities participated through the following aspects:-

- formation of new water committees where non existed,
- reactivation of old and weak committees,
- registration of the committees with the Ministry of Culture and Social Services,
- collection of operation and maintenance funds,
- opening of bank/postal accounts for the operation and maintenance funds.

6.8 HANDING OVER OF WATER POINTS

During the report period the procedures for handing over of water points were developed further. The programme worked in agreement with the consumers in the preparation of handing over ycriteria. The activities carried out in liaison with people included the designing and signing of handing over certificates, follow up of the water points to be handed over, discussing with the community leaders and fixing appropriate dates for handing over of the water facilities to the affected water committees.

Since appropriate procedures to be followed during handing over were not fully developed and spare part distribution system was still under scrutiny, coupled with various problems that comprised of reconstructions, operation and maintenance and some community management problems, only 385 water points out of 760 water points were handed over in 9 locations. However, those who received their certificates of ownership did this with a lot of happiness as shown in figures 6.2 and 6.3.

With intensification of rehabilitation programme in 1992 all the pending water points are hoped to be handed over to the water committees by August 1992.

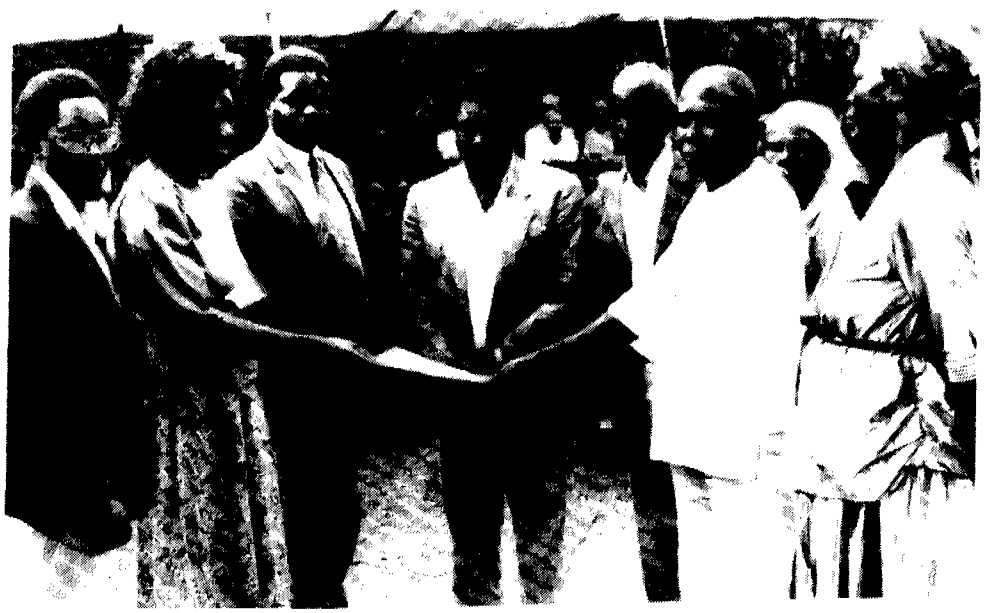

Figure 6.2 A member of water committee receives a certificate of ownership for a water point from the District Officer which is witnessed by the Head of Community and Training Department.

Figure 6.3 Members of the communities took to dancing during the handing over ceremony to express their feelings towards the taking over of the responsibilities of the water points.

7.0 IMPLEMENTATION SUPPORT

7.1 PERSONNEL ORGANIZATION

During the report period the detailed organization charts for each departments were prepared and presented in the work plans 1990 and 1991. At the end of the plan period, the staff was as follows

	Actual No.	Planned No.
Consultant	12	11
Ministry of water Development	39	44
Ministry of Culture & Social Services	35	36
Programme staff	386	391

7.2 COST

The total costs during the report period were FIM 43,455,250 (KES 293,670,000). The total cost are presented in Appendices 7.2 and 7.3.

7.3 RESIDENT ENGINEER'S OFFICE

During the period under review, the office carried out supervision of various activities by the programme during which the rehabilitation and extensions of the DWE's offices in Kakamega, Bungoma, Busia and Siaya districts were undertaken. Also rehabilitated was the Provincial Mechanical/Electrical Workshop and the PWE's offices at Kakamega.

Augmentation of Kakamega WTP and rehabilitation of Shitoli, Kaimosi, Maseno and Mumias WTPs in Kakamega district was undertaken. Also rehabilitated were Chesikaki and Bungoma water treatment plant both in Bungoma district, and Busia–Mundika WTP in Busia district.

Construction of the following piped scheme water supply systems was carried during the period under review:

* Kapsakwony–Chemoge water supply in Bungoma district,
* Funyula–Nangina water supply and Malaba water supply in Busia district,
* Ukwala, Ugunja, Sigomere and Sega water supply in Siaya district.

Consequently, the office continued working in co-operation with the other departments of the programme. Similarly, the R.E. and his assistants continued over-seeing the legalization of the constructed communal water points by the Ministry of Culture & Social Services. This enhanced the take over of the facilities by the relevant communities. After the official handing over by the programme, the water points are operated and maintained by the well committees on behalf of beneficiaries as self-help projects.

During the period under review, the handing over of all the satisfactorily constructed and rehabilitated water points were inspected and finally handed over to the relevant well committees in the programme area.

Through the inter-sectorial and interdepartmental meetings in the programme, the office was able to undertake the day-to-day supervision of the programme activities and advice where necessary. There is an overall improvement in performance within the programme activities and the relationship with the water sector. This can be attributed to the decentralization process that the programme has undergone in the last two years.

7.4 COORDINATION

Coordination of the programme with the Ministry of Water Development continued through out the report period at all levels. Monthly meetings chaired by the District Water Engineer took place in each district, attended by both the Ministry and programme's staff. The provincial Water Engineer/Resident Engineer was kept well briefed on all the programme activities including achievements, plans and targets.

The Embassy of Finland, Nairobi has continued to follow the programme activities closely. The programmes's home office coordinator and FINNIDA headquarters continued the coordination in Finland. Regular meetings of the management committee of the programme were held in Nairobi during the report period.

Coordination with the Primary Health Care Programme has continued with several technical committee meetings held during the report period. Also a joint workshop was held between 6th and 7th May, 1991 on future cooperation and evaluation of past activities. The workshop was attended by Finnish Embassy officials, FINNIDA water advisors, Provincial Medical Officer, Provincial Water Engineer and staff from both programmes. Coordination with other ministries such Ministry of Health, Ministry of Culture and Social Services had been undertaken at Divisional level where matters on community involvement in implementation of the programmes activities are discussed.

APPENDIX 1.1

SUMMARY OF WATER POINT CONSTRUCTION 1981 - 1991

TYPE OF SOURCE/PHASE	KAKAMEGA	BUSIA	BUNGOMA	SIAYA	TOTAL
SPRINGS					
- INV. PHASE	16	-	5	-	21
- PHASE I	106	26	32	19	183
- PHASE II	306	148	92	103	649
- PHASE III	157	53	71	29	310
SUB-TOTAL	585	227	200	157	1163
DUG WELLS					
- INV. PHASE	39	32	27	16	114
- PHASE I	195	61	29	9	294
- PHASE II	140	134	79	97	450
- PHASE III	102	64	72	22	260
SUB-TOTAL	476	291	207	144	1118
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	155	99	59	60	373
SUB-TOTAL	379	324	166	170	1039
GRAND TOTAL	1440	842	573	465	3320

APPENDIX 2.1

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

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. NAVAKHOLO W/SUPPLY	B/HOLE	(21,00m)		(1992)	(2002)	(2012)	(1992)	(2002)	(2012)
- KAKAMEGA DISTRICT - BUNYALA LOCATION	1NO.	Rising main - 160 mm ø upvc / "c" 2,874 m Distribution mains	7.6 mill	12,000	17,000	25,000	274	560	980
	40	upvc 24,246 m 160 mm ø "B" 4,860 m 110 mm ø "B" 6,400 m 90 mm ø "B" 4,822 m 63 mm ø "B" 8,290 m							
2. KAMBIRI W/SUPPLY	STREAMS	160 mm ø pvc - 1905m		(1992)	(2002)	(2012)	(1992)	(2002)	(2012)
GRAVITY SCHEME	1NO.	150 mm ø G.I - 1000m	5.6 mill	428	10,255	14,253	306	458	600
- KAKAMEGA		110 mm ø pvc							
- EAST ISUKHA		100 mm ø G.I - 170m							
- KAMIRI SUB-LOC.	29	90 mm ø pvc - 330m							
		80 mm ø G.I - 400m							
		50 mm ø pvc - 700m							
3. MATURU-LUANDETI W/SUPPLY	SPRINGS	90 mm ø pvc 5610 75 mm ø G.I 50 63 mm ø pvc 3000		(1992)	(2002)	(2012)	(1992)	(2002)	(2012)
GRAVITY SCHEME			1.07mill	4,201	6,094	9,041	79	118	196
- KAKAMEGA DISTRICT									
LUANDETI & MATURU SUB-LOCATIONS	13								
4. BUTERE WATER SUPPLY	B/HOLE	110 mm ø pvc 'B' 1200		(1989)	(1999)	(2009)	(1989)	(1999)	(2009)
- KAKAMEGA DISTRICT	2NO.								
- BUTERE TOWN		90 mm ø pvc 'B' 2310	1.5 mill	6,498	8,894	12,280	214	297	412
		40 mm ø G.I 253							
	3								
	6	32 mm ø pvc							
	3	1145							
5. MUKUMU COMPLEX W/SUPPLY - Kakamega District	Borehole 2 No. 5.37	-	603,000	-	-	-	167	243	362
6. HAMISI H/CENTRE WATER SUPPLY - Kakamega District - S. Tiriki Loc. - Gavundunyi s/loc.	Spring 10.3	50 mm ØG.I 600	300,000	270	385	500	6	9	11

APPENDIX 2.1 (Cont.)

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

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
7. LUKOLIS W/SUPPLY	SPRING	63 mm Ø pvc		(1992)	(2002)	(2012)	(1992)	(2002)	(2012)
GRAVITY SCHEME	1NO	(10,000)							
- BUSIA DISTRICT SOUTH TESO LOCATION	14		1 mill	4,100	6,000	8,300	82	142	208
8. MALABA W/SUPPLY		(9,000)		(1992) -	(2002) -	(2012) -	(1992)	(2002)	(2012)
- BUSIA DISTRICT	B/HOLE 2 NO. 30	63mm Ø PVC/B 500M	3 mill	7,230	10,700	15,800	200	400	720
9. KOTUR W/SUPPLY	SPRING	63 mm Ø pvc		(1990)	(2001)	(2011)	(1990)	(2001)	(2010)
BUSIA DISTRICT	1NO	(1550)							
S. TESO LOCATION	10		0.14mill	1,200	1,693	2,320	68	108	205
10. KAPSAKWONY PIPED SCHEME	SPRINGS 3 NO.	110 mm Ø pvc 700		(1989)	(1999)	(2009)	(1989)	(1999)	(2009)
WATER SUPPLY: PHASE II	6	75 mm Ø pvc 400	0.6 mill	2,198	3,254	4,917	250	360	520
BUNGOMA DISTRICT	13	63 mm Ø pvc 1600							
KAPSAKWONY LOC	21								
11. MUKHOBOLA H/CENTRE WATER SUPPLY	Borehole	60-							
- Busia District		50 mm Øpvc							
- Bunyala S.Location			206,000	295	405	590	8	11	15
- Magombe W. S/loc.	10.6								
12. IPALI H/CENTRE WATER SUPPLY	Spring	874-							
- Kakamega District		50 mm Ø 220,000	220,000	350	520	800	5	8	11
- West Bunyala Loc.									
- Ebusiekwe sub-loc.	1.80								
13. EREGI W/SUPPLY	Spring 6.5	2134							
- Kakamega Dsitrict	Boreholes 3No. 20	63 mm Ø pvc	1,500,000	5,000					

APPENDIX 2.1 (Cont.)

SUMMARY OF TECHNICAL DETAILS OF PIPED WATER SUPPLIES

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)
14. SIGOMERE W/SUPPLY - SIAYA DISTRICT	Borehole								37
15. NAITIRI H/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
16. SIRISIA H/ CENTRE WATER SUPPLY - Bungoma District - Kulusiru S/location	Borehole 1.5		209,000	442	657	975	13.50	20.11	30
17. CHEPKUBE - BUNGOMA DISTRICT	1500	15KM 150mm - 5km 110 - 1km 63 9km	7.2 mill	17,000	23,600	32,000	383	694	1,416
18. MATEKA W/SUPPLY - BUNGOMA DISTRICT	Spring/ BH	15KM 75mm 63m 50m 32mm	3.3 mill	11,840	16,700	23,560	300	410	600

APPENDIX 2.2

SUMMARY OF COMPUTER SOFTWARE

COMMERCIAL PROGRAM PACKAGES USED IN THE PROGRAMME

WordPerfect 4.2 and 5.1	Word processing
Lotus 1-2-3 R 3.1	Tables, calculations and graphics
Harvard Graphics 3.0	Graphics
dBASE IV	Databases and program developing
GW BASIC	Plotting program developing
GW1,...GW6	Ground water analyses
Grundfos Caps	Piped system calculations
GSX-86	Seismic VLF operations
GSFSEISMO	Analyses of refractional seismic soundings
TV-menu	System menu
Sidekick	System file and program writing
Norton Utilities 4.0	Extension utilities to DOS
PC Tools 4.0	Extension utilities to DOS
Virus Scan 8.1V85	Anti-virus system

APPLICATIONS CREATED IN THE PROGRAMME

Water Point Register	3400 boreholes, shallow wells & springs
- water points	depth, pump, yield, location, etc.
- water quality samples	
- water committees	
Water point drafting	maps of different water point aspects
Development Plan	up to year 2005, sublocation level
Water Source Coverage	on sublocation level, 380 sublocations
Undeveloped Springs	3300 known springs
Water Treatment Plants	100 plants
- pumps	
- electrical motors	
- diesel engines	
Water Treatment Plant Rehabilitation Costs	450 records, sublocation approach
Manpower System	1300 persons
Population Forecast	on sublocation level
Seismic interpretation	for borehole siting
Cash Ledger	for reporting and cost control
Invoice Control	LPO's, invoices and payments
Cost Control	budgeting and reporting
Store Control Systems	6700 different items
Vehicle Cost System	170 FINNIDA financed vehicles & m-bikes
Well Contractor System	50 subcontractors
Payroll	370 KFWWSP + 50 MoWD + 50 trainees

APPENDIX 2.3

BACTERIOLOGICAL WATER QUALITY

FAECAL COLI/100 ML	BOREHOLES		SHALLOW WELLS		SPRINGS		PIPE SCHEMES		TOTALS	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
0	855	87.2	506	49.9	376	44.8	330	61.6	2067	61.3
1-10	93	9.5	223	22.0	251	29.9	100	18.6	667	19.8
11-25	19	1.9	114	11.2	94	11.2	23	4.3	250	7.4
26-50	4	0.4	27	2.6	32	3.8	6	1.1	69	2.0
> 50	10	1.0	145	14.3	87	10.3	77	14.4	319	9.5
TOTAL	981	100	1015	100	840	100	536	100	3372	100

APPENDIX 3.1

SUMMARY OF CONSTRUCTION AND REPAIRS FOR POINT SOURCE SUPPLIES

		A	B	C	D	E	F	G	H	I
KAKAMEGA	I	–	–	2	5	7	7	13	28	5
KAKAMEGA	II	14	13	11	11	2	10	3	7	2
KAKAMEGA	III	15	15	11	3	10	11	14	5	4
KAKAMEGA	IV	12	12	15	18	17	10	15	10	4
KAKAMEGA	V	4	4	3	3	20	11	20	4	14
KAKAMEGA	VI	3	3	–	2	37	7	25	9	10
SUB-TOTAL		48	47	42	42	93	56	90	63	39
BUNGOMA	I	14	11	9	5	3	14	–	14	–
BUNGOMA	II	–	–	5	12	–	9	1	2	1
BUNGOMA	III	10	10	–	2	4	3	5	6	2
BUNGOMA	IV	5	5	6	6	11	10	4	4	2
BUNGOMA	V	5	5	9	9	6	6	2	5	13
BUNGOMA	VI	–	–	1	1	2	5	–	4	9
SUB-TOTAL		34	31	30	35	26	47	12	35	27
BUSIA	I	5	3	12	26	2	23	2	8	11
BUSIA	II	3	3	1	15	1	11	1	10	1
BUSIA	III	2	2	3	1	1	10	9	5	13
BUSIA	IV	6	5	3	3	1	8	4	3	9
BUSIA	V	10	10	10	3	19	2	8	2	18
BUSIA	VI	6	6	5	11	–	10	2	2	11
SUB-TOTAL		32	29	34	59	24	64	26	30	63
SIAYA	I	4	4	2	7	2	10	2	3	1
SIAYA	II	5	5	2	1	2	2	4	3	3
SIAYA	III	10	9	14	9	3	2	3	–	–
SIAYA	IV	2	2	1	–	3	1	2	3	8
SIAYA	V	8	8	4	–	2	–	4	3	5
SIAYA	VI	5	4	6	9	7	2	7	5	5
SUB-TOTAL		34	32	29	26	19	17	22	17	22
UASIN GISHU		1	1	–	–	–	–	–	–	–
GRAND TOTAL		149	140	135	162	162	184	150	145	151

POINT SOURCE SUPPLIES: NEW 469
: REPAIRS 463

KEY:

I – 01.07 – 30.09.1990
II – 01.10 – 31.12.1990
III – 01.01 – 31.03.1991
IV – 01.04 – 30.06.1991
V – 01.07 – 30.09.1991
VI – 01.10 – 31.12.1991

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 3.2

SUMMARY OF COSTS FOR PROGRAMME VEHICLES 1.1.1990 - 31.12.1990

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Averag fuel c l/100k	Cost /Km Ksh
1	L/ROVER KDV 552	50,553.50	1,338.90	31,610.10	2,500	5,713.75	91,716.25	24,689	13.75	3.71
2	L/ROVER KDV 553	91,719.75	11,207.15	31,746.45	2,500	9,765.90	146,939.25	25,944	13.54	5.66
3	L/ROVER KDW 414	118,936.85	7,596.55	46,496.50	2,500	10,264.00	185,793.90	41,403	12.01	4.48
4	L/ROVER KDW 415	86,798.10	19,057.65	25,749.65	2,500	14,647.50	148,752.90	20,710	13.35	7.18
5	L/ROVER KDW 416	191,121.05	6,944.75	56,098.40	2,500	25,365.00	282,029.20	42,470	12.83	6.64
6	L/ROVER KDW 423	65,184.55	6,830.15	35,130.10	2,500	8,003.75	117,648.55	24,960	14.32	4.71
7	L/ROVER KDW 424	103,054.35	14,651.25	63,874.25	2,500	10,903.00	194,982.85	52,806	11.85	3.69
8	L/ROVER KDW 425	140,758.70		39,398.40	2,500	8,023.75	190,680.85	31,515	13.75	6.05
9	L/ROVER KDW 426	60,003.45	6,638.30	79,703.70	2,500	3,666.25	152,511.70	36,637	15.70	4.16
10	L/ROVER KDW 461	39,585.20		24,948.90	2,500	2,738.75	69,772.85	24,782	11.72	2.81
11	L/ROVER KDW 462	20,175.15	3,739.60	34,850.10	2,500	2,056.25	63,321.10	29,835	12.47	2.12
12	L/ROVER KDW 463	34,025.35		29,930.65	2,500	2,817.50	69,273.50	22,879	13.12	3.03
13	L/ROVER KDW 464	38,954.10	216.35	41,686.15	2,500	5,110.75	88,467.35	35,579	11.11	2.48
14	L/ROVER KDW 465	54,852.05	231.35	41,021.40	2,500	6,152.50	104,757.30	36,453	10.57	2.87
15	L/ROVER KDW 466	19,398.10		24,730.90	2,500	1,250.00	47,879.00	22,173	11.43	2.16
16	L/ROVER KDW 467	78,517.00		51,530.35	2,500	5,105.00	137,652.35	40,046	13.02	3.43
17	L/ROVER KDW 468	32,175.25	59.85	36,888.20	2,500	3,065.50	74,688.80	30,812	11.38	2.42
18	L/ROVER KDW 469	72,719.40	13,523.95	57,415.60	2,500	6,978.75	153,137.70	51,262	10.70	2.99
19	L/ROVER KDW 470	59,079.80	311.55	46,358.15	2,500	5,801.25	114,050.75	43,265	10.15	2.64
20	L/ROVER KDW 471	33,087.55	216.50	51,200.50	2,500	2,926.25	89,930.80	39,548	12.31	2.27
21	L/ROVER KDW 472	26,363.80		66,838.40	2,500	3,010.00	98,712.20	47,878	13.51	2.06
22	L/ROVER KDW 473	23,787.25		23,123.80	2,500	3,078.75	52,489.80	19,326	11.96	2.72
23	L/ROVER KDW 474	47,115.50	216.35	50,509.45	2,500	5,106.25	105,447.55	42,320	11.54	2.49
24	L/ROVER KDW 475	47,299.25	3,306.90	34,275.75	2,500	2,108.75	89,490.65	26,604	12.26	3.36
25	L/ROVER KDW 476	42,163.35	432.70	73,234.25	2,500	4,445.00	122,775.30	56,898	12.66	2.15
26	L/ROVER KDW 478	80,698.60	13,443.95	72,455.25	2,500	7,717.50	176,815.30	55,546	12.88	3.18
27	L/ROVER KDW 479	113,590.30		10,744.95	2,500	4,348.75	131,184.00	8,825	11.99	14.87
28	L/ROVER KXU 126	171,313.35	13,456.20	48,574.40	2,500	10,255.00	246,098.95	34,928	13.89	7.04
29	L/ROVER KXU 127	121,941.15	6,657.40	49,286.90	2,500	10,141.25	190,526.70	39,868	12.21	4.78
30	L/ROVER KXU 128	229,218.35	17,277.40	35,694.75	2,500	29,060.00	313,750.50	29,067	12.34	10.79
31	L/ROVER KXU 129	103,964.20	6,522.35	45,664.55	2,500	10,773.75	169,424.85	37,538	12.00	4.51
32	L/ROVER KXU 130	72,820.55	7,541.30	45,051.20	2,500	8,242.50	136,155.55	32,281	14.10	4.21
33	L/ROVER KXU 131	183,431.30	10,353.40	56,090.15	2,500	14,431.25	266,806.10	45,031	12.61	5.92
34	L/ROVER KXU 132	149,050.55	3,306.90	35,172.85	2,500	15,541.25	205,571.55	30,162	11.69	6.81
35	L/ROVER KXU 133	182,102.90		44,622.00	2,500	21,737.00	250,961.90	33,421	13.15	7.50
36	L/ROVER KXU 134	119,856.95	3,317.60	50,966.20	2,500	12,665.00	189,305.75	43,901	11.62	4.31
37	L/ROVER KXU 135	154,539.50	6,613.80	43,611.15	2,500	8,286.25	215,550.70	39,439	12.35	5.46
38	L/ROVER KXU 136	156,370.00	6,613.80	55,874.40	2,500	11,672.65	233,030.85	42,719	13.13	5.45
39	L/ROVER KXU 138	302,505.25	6,613.80	17,772.55	2,500	28,590.00	357,981.60	12,448	15.14	28.75
40	L/ROVER KXU 139	96,954.95		46,113.35	2,500	7,192.50	152,760.80	35,201	13.66	4.33
41	L/ROVER KYG 689	86,577.60		23,048.65	2,500	9,065.00	121,191.25	20,060	11.58	6.04
42	L/ROVER KYG 690	200,171.30		52,460.35	2,500	14,253.75	269,385.40	35,265	14.33	7.63
43	L/ROVER KYG 691	164,410.95	13,443.95	36,878.65	2,500	14,070.00	231,303.55	29,912	12.62	7.73
44	L/ROVER KYG 692	54,417.85	216.35	44,727.45	2,500	6,105.00	107,966.65	35,381	13.42	3.05
45	L/ROVER KYG 697	167,992.35	10,240.65	41,114.50	2,500	13,588.75	235,436.25	35,292	11.66	6.67
	L/ROVER 110 TOTAL	4,489,356.35	222,138.65	1,954,274.35	112,500	415,841.30	7,194,110.65	1,547,079	12.54	4.65

APPENDIX 3.2 (Cont.)

SUMMARY OF COSTS FOR PROGRAMME VEHICLES 1.1.1990 - 31.12.1990

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Averag fuel c l/100k	Cost /Km Ksh
46	L/ROVER KDV 526	7,047.10	119.25	4,554.45		525.00	12,245.80	4,314	9.92	2.84
47	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
48	L/ROVER KDV 536	23,558.35	65.45	505.35		1,592.50	25,721.65	320	17.50	80.38
49	L/ROVER KDW 403	51,143.30		494.45		9,280.55	60,918.30	370	16.29	164.64
	L/ROVER 109 TOTAL	94,088.70	2,412.00	9,131.80	0	12,728.05	118,360.55	7,899	11.35	14.98
50	TROOPER KXC 481	15,397.95	5,725.20	20,178.50		2,152.50	43,454.15	11,408	14.38	3.81
51	PEUGEOT KVA 773	49,493.65	4,017.00	9,707.35	2,500	7,131.25	72,849.25	8,082	13.43	9.01
52	SUBARU KDW 441	3,388.90	3,331.05	19,006.05	2,500	1,128.75	29,354.75	11,753	12.23	2.50
53	SUBARU KDW 442	4,364.50	3,242.95	22,017.00	2,500	1,225.00	33,349.45	13,748	9.50	2.43
54	SUBARU KDW 443	10,656.00	5,648.70	22,267.25	2,500	2,353.75	43,425.70	15,722	11.60	2.76
55	SUBARU KDW 446	21,655.30	1,942.35	30,586.75	2,500	3,896.65	60,581.05	22,807	10.29	2.66
56	SUBARU KDW 447	12,993.05	3,461.70	37,697.55	2,500	1,485.50	58,137.80	26,243	11.23	2.22
57	SUBARU KDW 448	83,166.15	282.00	20,585.35	2,500	3,473.75	110,007.25	13,588	11.38	8.10
58	SUBARU KDW 449	23,862.25	151.70	29,446.50	2,500	2,161.25	58,121.70	19,783	10.98	2.94
	SUBARU TOTAL	160,086.15	18,060.45	181,606.45	17,500.00	15,724.65	392,977.70	123,644	10.98	3.18
59	ISUZU NKR KXX 581	132,624.95	18,086.55	45,326.70	2,750	13,935.00	212,723.20	28,278	15.84	7.52
60	SISU LORRY KUA 782	139,093.40	16,069.20	64,871.65	3,800	10,822.50	234,656.75	24,397	26.02	9.62
61	SISU LORRY KDV 518	159,645.35	30,245.80	78,760.15	3,800	12,197.50	284,648.80	20,824	27.69	13.67
62	SISU LORRY KDV 534	324,329.00	46,899.90	93,694.05	3,800	19,171.25	487,894.20	28,064	33.54	17.39
63	SISU LORRY KDV 540	106,265.85	38,492.35	75,292.60	3,800	11,602.50	235,453.30	22,833	37.07	10.31
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	16,508.50	473.15	81,492.50	3,800	6,203.75	108,477.90	21,088	38.97	5.14
66	SISU LORRY KDW 043	56,445.70	38,753.55	93,546.55	3,800	12,463.75	205,009.55	24,249	38.85	8.45
67	M/B LORRY KDW 439	129,554.75	24,134.85	102,527.10	3,800	12,442.50	272,459.20	31,022	33.30	8.78
68	M/B LORRY KDW 460	3,694.30		19,060.95	3,800	840.00	27,395.25	5,931	28.55	4.62
	LORRY TOTAL	1,082,420.75	243,470.35	678,434.60	33,150	103,135.00	2,140,610.70	215,438	31.10	9.94
69	V.TRACTOR KDW 458	28,079.25		80,941.00	750	9,062.50	118,832.75			
70	V.TRACTOR KDW 459	32,029.45	26,003.80	121,358.05	750	5,197.50	185,338.80			
71	V.TRACTOR KDW 477	4,787.60		15,346.05	750	1,671.25	22,554.90			
72	V.TRACTOR KDW 485	40,425.15		72,726.05	750	7,446.25	121,347.45			
73	L.EXCAVATOR KUA775	35,180.25	17,903.30	23,115.05	750	11,410.00	88,358.60			
74	L.EXCAVATOR KDW432	303,991.50	22,684.35	91,760.15	750	12,125.00	431,311.00			
	TRACTOR TOTAL	105,321.45	26,003.80	290,371.15	3,000	23,377.50	448,073.90			
75	M/B RIG KDV 545	86,861.85		271,914.25	6,000	13,492.50	378,268.60			
76	M/B RIG KDW 451	92,899.50	946.30	382,014.65	10,000	9,072.50	494,932.95			
	RIG TOTAL	409,312.95	26,003.80	382,131.30	3,750	35,502.50	879,384.90			
	GRAND TOTAL	6,538,102.90	565,917.80	3,571,162.20	175,150.00	629,527.75	11,502,545.00	1,941,828		

APPENDIX 3.3

SUMMARY OF COSTS FOR PROGRAMME VEHICLES 1.1.1991 - 31.12.1991

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Averag fuel c l/100k	Cost /Km Ksh
1	PEUGEOT KVA 773	17,997.35		6,750.65	3,500.00	1,120.00	29,368.00			
2	L/ROVER KDV 552	104,665.70	16,967.20	43,706.35	3,500.00	12,571.50	181,410.75	24,518	11.91	7.40
3	L/ROVER KDV 553	130,435.90	6,830.15	58,457.30	3,500.00	16,528.75	215,752.10	33,849	14.34	6.37
4	L/ROVER KDW 414	182,310.60	7,046.50	64,096.15	3,500.00	10,027.00	266,980.25	46,829	11.13	5.70
5	L/ROVER KDW 415	116,157.25	2,662.40	43,596.00	3,500.00	10,176.25	176,091.90	25,681	14.28	6.86
6	L/ROVER KDW 416	169,661.85	9,635.00	61,360.00	3,500.00	14,760.85	258,917.70	36,364	13.48	7.12
7	L/ROVER KDW 423	220,631.90	216.35	31,692.35	3,500.00	17,167.50	273,208.10	23,759	11.66	11.50
8	L/ROVER KDW 424	132,212.60	10,102.00	84,760.35	3,500.00	14,805.00	245,379.95	52,781	12.76	4.65
9	L/ROVER KDW 425	138,642.85	737.60	36,579.05	3,500.00	9,913.75	189,373.25	21,580	13.02	8.78
10	L/ROVER KDW 426	47,420.50		61,025.90	3,500.00	12,915.05	124,861.45	25,367	17.85	4.92
11	L/ROVER KDW 461	59,211.15	26,208.95	66,275.15	3,500.00	5,416.35	160,611.60	46,140	11.91	3.48
12	L/ROVER KDW 462	36,607.90	6,613.80	67,347.30	3,500.00	4,436.25	118,505.25	45,499	12.00	2.60
13	L/ROVER KDW 463	150,437.75	20,941.60	58,561.75	3,500.00	5,626.25	239,067.35	39,820	12.80	6.00
14	L/ROVER KDW 464	81,910.50	24,067.20	79,499.65	3,500.00	7,745.00	196,722.35	53,961	12.07	3.65
15	L/ROVER KDW 465	71,179.05	13,596.40	67,233.10	3,500.00	6,815.00	162,323.55	47,761	11.36	3.40
16	L/ROVER KDW 466	27,167.05	13,812.75	42,093.20	3,500.00	3,193.75	89,766.75	30,837	11.11	2.91
17	L/ROVER KDW 467	77,989.95	13,227.60	109,004.60	3,500.00	9,283.75	213,005.90	56,525	13.85	3.77
18	L/ROVER KDW 468	35,277.40	17,517.30	73,254.25	3,500.00	8,881.25	138,430.20	49,877	11.97	2.78
19	L/ROVER KDW 469	80,406.05	709.35	84,507.90	3,500.00	9,047.50	178,170.80	56,775	12.32	3.14
20	L/ROVER KDW 470	89,530.25		76,166.80	3,500.00	9,345.00	178,542.05	57,723	10.54	3.09
21	L/ROVER KDW 471	59,016.60	20,607.85	105,781.10	3,500.00	6,834.75	195,740.30	64,151	13.43	3.05
22	L/ROVER KDW 472	80,286.10	13,227.60	94,827.80	3,500.00	5,075.00	196,916.50	58,817	14.31	3.35
23	L/ROVER KDW 473	50,368.55	13,660.30	67,795.95	3,500.00	6,055.10	141,379.90	43,998	12.44	3.21
24	L/ROVER KDW 474	83,535.85	13,537.10	75,135.05	3,500.00	8,225.00	183,933.00	49,425	12.21	3.72
25	L/ROVER KDW 475	45,611.20	6,982.60	49,271.95	3,500.00	3,012.50	108,378.25	32,458	12.50	3.34
26	L/ROVER KDW 476	23,650.20		38,994.90	3,500.00	2,563.75	68,708.85	21,240	14.53	3.23
27	L/ROVER KDW 478	99,638.60		81,475.70	3,500.00	9,387.10	194,001.40	47,346	13.58	4.10
28	L/ROVER KDW 479	63,917.30	20,572.80	93,817.00	3,500.00	6,728.75	188,535.85	69,326	10.90	2.72
29	L/ROVER KXU 126	168,236.55	16,430.10	73,931.80	3,500.00	18,128.25	280,226.70	42,541	13.49	6.59
30	L/ROVER KXU 127	218,816.70	29,363.40	61,427.00	3,500.00	13,842.50	326,949.60	43,866	12.63	7.45
31	L/ROVER KXU 128	186,171.65	26,817.80	78,946.25	3,500.00	13,615.00	309,050.70	52,924	12.41	5.84
32	L/ROVER KXU 129	107,173.30	3,237.55	55,610.00	3,500.00	5,958.75	175,479.60	31,725	13.58	5.53
33	L/ROVER KXU 130	87,431.55	10,492.85	64,743.55	3,500.00	8,146.25	174,314.20	44,335	12.45	3.93
34	L/ROVER KXU 131	156,194.00	6,613.80	65,325.90	3,500.00	7,794.50	239,428.20	37,408	12.87	6.40
35	L/ROVER KXU 132	109,677.55	11,548.95	51,160.35	3,500.00	7,323.75	183,210.60	35,492	11.94	5.16
36	L/ROVER KXU 133	175,178.55	6,613.80	43,789.65	3,500.00	14,227.50	243,309.50	30,825	13.34	7.89
37	L/ROVER KXU 134	127,532.25	21,411.75	83,073.85	3,500.00	15,871.50	251,389.35	50,103	13.11	5.02
38	L/ROVER KXU 135	156,460.95	10,938.55	61,579.85	3,500.00	18,348.75	250,828.10	40,333	12.68	6.22
39	L/ROVER KXU 136	181,244.15	7,046.50	59,742.05	3,500.00	16,625.60	268,158.30	36,996	12.73	7.25
40	L/ROVER KXU 138	128,235.90	585.15	83,939.20	3,500.00	49,655.85	265,916.10	49,448	11.85	5.38
41	L/ROVER KXU 139	68,869.55	13,777.70	52,043.90	3,500.00	14,717.50	152,908.65	28,960	14.29	5.28
42	L/ROVER KYG 689	49,844.40	12,951.10	32,604.40	3,500.00	4,509.75	103,409.65	22,201	12.11	4.66
43	L/ROVER KYG 690	154,806.40	6,830.10	75,525.15	3,500.00	18,261.25	258,922.90	41,992	14.28	6.17
44	L/ROVER KYG 691	174,695.80	585.10	47,199.20	3,500.00	17,342.50	243,322.60	29,978	12.78	8.12
45	L/ROVER KYG 692	39,371.05	4,364.65	46,349.15	3,500.00	7,840.00	101,424.85	31,049	13.13	3.27
46	L/ROVER KYG 697	214,194.15	10,470.80	57,165.10	3,500.00	11,506.25	296,836.30	36,082	12.79	8.23
	TOTAL	4,980,012.40	479,560.05	2,917,223.60	161,000.00	501,373.15	9,039,169.20	1,848,665	12.54	4.89

APPENDIX 3.3 (Cont.)

SUMMARY OFCOSTS FOR PROGRAMME VEHICLES 1.1.1991 - 31.12.1991

No	Vehicle	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh	KM driven	Averag fuel c l/100k	Cost /Km Ksh
47	TROOPER KXC 481	19857.10	9314.00	22968.20		3552.50	55,691.80	8663	14.37	6.43
48	SUBARU KDW 441	4738.50	470.00	24136.55	3500.00	1408.75	34,253.80	16,635	11.55	2.06
49	SUBARU KDW 442	7988.70	235.00	23594.10	3500.00	1050.00	36,367.80	13,506	10.72	2.69
50	SUBARU KDW 443	10230.35	1595.35	28887.20	3500.00	2345.00	46,557.90	15,161	11.94	3.07
51	SUBARU KDW 446	14409.15	2455.70	37626.75	3500.00	2143.75	60,135.35	19,540	12.26	3.08
52	SUBARU KDW 447	18092.30	1605.35	45707.25	3500.00	1683.00	70,587.90	26,750	11.16	2.64
53	SUBARU KDW 448	48368.30	3331.05	32903.15	3500.00	3998.75	92,101.25	17,813	11.54	5.17
54	SUBARU KDW 449	28130.35	4676.40	31916.85	3500.00	2126.25	70,349.85	20,198	10.37	3.48
	TOTAL	151814.75	23682.85	247740.05	24500.00	18308.00	466,045.65	138,266	11.54	3.37
55	ISUZU KXX 581	123,085.10	26,209.05	72,721.95	3,850.00	24,003.50	249,869.60	31,286	16.60	7.99
56	SISU LORRY KUA 782	98,797.05	23,723.80	120,527.55	5,320.00	16,345.00	264,713.40	25,914	30.06	10.22
57	SISU LORRY KDV 518	176,695.60	46,788.15	101,310.80	5,320.00	10,841.25	340,955.80	24,630	33.99	13.84
58	SISU LORRY KDV 534	201,642.65	53,403.30	113,560.85	5,320.00	18,940.00	392,866.80	29,566	31.48	13.29
59	SISU LORRY KDV 540	222,486.20	16,069.20	38,674.00	5,320.00	17,780.00	300,329.40	10,205	34.06	29.43
60	SISU LORRY KDW 409						0.00			
61	SISU LORRY KDW 480	59429.95	71977.10	156187.10	5320.00	20483.75	313,397.90	33,296	37.78	9.41
62	SISU LORRY KXY 043	165,905.90	18,042.65	105,356.80	5,320.00	26,596.50	321,221.85	23,417	34.91	13.72
63	M/B LORRY KDW 439	47279.55	48769.90	106114.00	5320.00	9922.50	217,405.95	27,348	32.66	7.95
64	M/B LORRY KDW 460						0.00			
	TOTAL	1,095,322.00	304,983.15	814,453.05	41,090.00	144,912.50	2,400,760.70	205,662	31.03	11.67
65	V.TRACTOR KDW 458	15,224.30	63,500.30	46,793.75	1,050.00	5,066.30	131,634.65			
66	V.TRACTOR KDW 459	256,592.20	46,158.20	171,416.95	1,050.00	12,153.75	487,371.10			
67	V.TRACTOR KDW 477	15,322.05	2,522.75	96,591.00	1,050.00	8,277.50	123,763.30			
68	V.TRACTOR KDW 485	17,056.65		79,828.65	1,050.00	8,513.75	106,449.05			
	TOTAL	304,195.20	112,181.25	394,630.35	4,200.00	34,011.30	849,218.10			
69	M/B RIG KDV 545	153,979.95	16,069.20	419,478.00	8,400.00	23,537.50	621,464.65			
70	M/B RIG KDW 451	213,270.70	1,419.45	652,562.65	14,000.00	18,882.50	900,135.30			
71	L.EXCAVATOR KUA775	15,349.90	6,253.05	24,465.40	1,050.00	4,628.75	51,747.10			
72	L.EXCAVATOR KDW432	26,078.05	1,283.15	66,147.75	1,050.00	4,533.00	99,091.95			
	GRAND TOTAL	6,940,022.95	945,432.15	5,536,700.85	255,290.00	750,186.70	14,427,632.65	2,192,593		

APPENDIX 3.3 (Cont.)

SUMMARY OF COSTS FOR PROGRAMME MOTOR BIKES 1.1.1991 - 31.12.1991

No	Motorbike	Spare parts Ksh	Tyres and tubes Ksh	Fuel and lubr. Ksh	Licences & insur. Ksh	Labour cost Ksh	Total Cost Ksh
1	SUZUKI KWK 727	17,148.55	2,690.00	11,378.00	700.00	1,618.75	33,535.30
2	SUZUKI KWK 728	13,303.70	439.70	7,072.45	700.00	1,190.00	22,705.85
3	SUZUKI KWK 730	8,118.90	280.00	4,940.95	700.00	752.50	14,792.35
4	SUZUKI KWK 731	11,045.00	1,440.00		700.00	857.50	14,042.50
5	SUZUKI KWX 707	13,003.10	1,539.70	4,202.90	700.00	595.00	20,040.70
6	SUZUKI KWX 708	12,644.85	1,449.40	6,312.80	700.00	1,531.25	22,638.30
7	SUZUKI KWX 709	29,651.65	1,712.95	27,348.50	700.00	2,117.50	61,530.60
8	SUZUKI KWX 710	11,578.00			700.00	542.50	12,820.50
9	SUZUKI KWX 711	3,260.00			700.00	105.00	4,065.00
10	SUZUKI KWX 712	3,555.00			700.00	70.00	4,325.00
11	SUZUKI KWX 713	1,350.00			700.00	17.50	2,067.50
12	SUZUKI KWX 714				700.00		700.00
13	SUZUKI KWX 715	33,417.00	106.45	6,929.80	700.00	1,102.50	42,255.75
14	SUZUKI KXV 778	21,787.40	2,986.45	43,420.30	700.00	2,467.50	71,361.65
15	SUZUKI KXV 779	39,134.95	106.45	11,715.50	700.00	1,478.75	53,135.65
16	SUZUKI KXV 780	26,111.70	3,030.00	7,792.55	700.00	1,540.00	39,174.25
17	SUZUKI KXV 781	20,803.00		840.80	700.00	402.50	22,746.30
18	SUZUKI KXV 782	26,903.30	106.45	7,282.50	700.00	1,872.50	36,864.75
19	SUZUKI KXV 783	29,789.90	1,780.00	13,474.05	700.00	1,225.00	46,968.95
20	SUZUKI KXV 787	11,391.25	1,562.60	8,212.90	700.00	385.00	22,251.75
21	SUZUKI KXV 788	19,688.10	1,870.00	17,016.35	700.00	1,330.00	40,604.45
22	SUZUKI KXV 789	6,364.30	1,546.45	5,866.30	700.00	1,426.25	15,903.30
23	SUZUKI KXV 790	24,029.30	1,440.00	38,230.95	700.00	1,312.50	65,712.75
24	SUZUKI KXV 791	39,013.30	3,310.00	21,017.80	700.00	1,767.50	65,898.60
25	SUZUKI KXV 792	27,421.30	299.10	25,713.80	700.00	1,662.50	55,796.70
26	SUZUKI KAA 729E	9,779.90	340.00	12,101.50	700.00	1,697.50	24,618.90
27	SUZUKI KAA 730E	5,931.80	2,956.20	16,062.50	700.00	682.50	26,333.00
28	SUZUKI KAA 762E	31,177.10	4,526.15	25,842.65	700.00	2,248.75	64,494.65
29	SUZUKI KAA 763E	10,878.50	3,030.00	15,955.45	700.00	1,531.25	32,095.20
30	SUZUKI KAA 764E	13,014.05	4,379.70	22,819.40	700.00	2,056.25	42,969.40
31	SUZUKI KAA 765E	8,365.30	2,036.45	13,885.85	700.00	1,610.00	26,597.60
32	SUZUKI KAA 767E	11,376.80	1,696.45	8,890.40	700.00	1,785.00	24,448.65
33	SUZUKI KAA 768E	10,398.90	1,349.70	11,349.15	700.00	1,802.50	25,600.25
34	SUZUKI KAA 789F	11,371.50	3,030.00	14,998.60	700.00	1,323.00	31,423.10
35	SUZUKI KAA 714X	9,609.90		20,699.05	700.00	525.00	31,533.95
36	SUZUKI KAA 715X	7,251.90	3,370.00	16,157.25	700.00	857.50	28,336.65
37	SUZUKI KAA 716X	3,691.35		11,136.85	700.00	997.50	16,525.70
38	SUZUKI KAA 717X	14,914.40	1,590.00	10,442.65	700.00	927.50	28,574.55
39	SUZUKI KAA 718X	7,052.10		22,897.50	700.00	1,470.00	32,119.60
40	SUZUKI KAA 719X	3,237.10		21,324.00	700.00	1,146.25	26,407.35
41	SUZUKI KAA 720X	1,819.60		8,290.70	700.00	822.50	11,632.80
42	SUZUKI KAA 721X	4,031.10	1,780.00	20,461.15	700.00	1,373.75	28,346.00
43	SUZUKI KAA 722X	2,742.30	1,780.00	20,171.20	700.00	1,330.00	26,723.50
44	SUZUKI KAA 723X	5,171.40		20,557.25	700.00	402.50	26,831.15
	TOTAL	622,328.55	59,560.35	582,812.30	30,800.00	51,959.25	1,347,460.45

APPENDIX 4.3

HAND PUMP REPAIRS AND COST RECOVERY

	KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
Number of *	358	157	279	170	1964
Pumps +	434	181	266	138	1019
TOTAL	792	338	545	308	1973
NIRA AF 85	66	34	17	11	128
AFRIDEV	31	25	54	18	128
NIRA AF 76	37	23	38	4	102
INDIA MK II	100	93	141	115	449
Total Repaired	234	175	250	148	807
Invoiced Sh	67,796	32,143	45,772	30,558	113,003
Paid Sh	41,080	14,124	18,933	16,693	62,806
Perc. paid	61%	44%	41%	55%	50%

* Hand Pumps installed in Boreholes
\+ Hand Pumps installed in Hand-Dug Wells

APPENDIX 4.4

WATER TREATMENT PLANTS AND WATER SUPPLIES IN W. PROVINCE

District	KAKAMEGA		BUNGOMA		BUSIA		TOTAL	
Undertaker	No.	Popul.	No.	Popul.	No.	Popul.	No.	Popul.
MoWD	14	260,000	6	235,000	11	95,000	31	590,000
NWCP	2	126,000	1	24,000	0		3	150,000
Self Help	6	40,000	4	8,000	4	2,000	14	50,000
Industrial (Sugar Co.)	1	8,000	1	2,000	0		2	10,000
Local Authority	0		0		10	8,000	10	8,000
Institutional	3	8,000	3	5,000	6	7,000	12	20,000
Ministry of Health	0		0		4	2,000	4	2,000
TOTAL	26	442,000	16	274,000	37	114,000	79	830,000

APPENDEX 4.5

REHABILITATIONS OF PIPED WATER SUPPLIES

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (UNDERTAKEN BY KFWWSP)
Malava w/s	1.5 sq.km	12 m3/h	Letter from DDC	- Erection of elevated steel Tank of cap 24m3
Central Kabras	5,000	36m3	workplan 1991	- Laid 2" G.I pipeline to elevated tank - Normal service of generator carried out. - Completion of electrical works. - Repair of leakages and installation of 50 No. water meters. rehabilitation of spring protection. Laying of 4" P.E pipe approx. 1.5km.
Mukumu complex	0.5km2	8m3/h	KFWWSP	- Changing the power supply for the B/Hole.
West Isukha	1,000	100m3		- Modification of pipe system to the tank. - Fencing the B/Hole.
Shikusa	0.3km2	8m3/h	KFWWSP	- Overhaul of diesel generator.
Lubao	1,000	113m3		
Hamisi w/s	6km2	20m3/d 20m3	KFWWSP	- Electrical works for the w/s.
Butere B/Hole	15km2	160m3/d		- Electrical works for the w/s. - Replacement of submersible pump.
Ingotse w/s				- Supply and supervision of water meters installations 25 No.
Ipali H/C w/s				- Supply and installation of new generator.
Likuyani w/s				- Over hauling diesel engine engine.
Vihiga w/s	5km²			- Rewinding and changing of motor.
Eregi w/s	1km²	50m3/d		- Overhauling of pumping set

APPENDIX 4.5 (Cont.)

REHABILITATIONS OF PIPED WATER SUPPLIES

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (UNDERTAKEN BY KFWWSP)
Funyula Nangina w/s	50km² 4000	360m3/d 200m3	KFWWSP workplan 1991	- Installation of generator temporarily. - Servicing of engine.
Port Victoria West Bunyala	30km² 10,000	150m3/d 150m3	Busia DWE KFWWSP	- Overhauling of pumping set
Nambale w/s	5.0km² 4,700	170m3/d 115m3	KFWWSP	- Removal of generator prior to installation of power supply. - Rehabilitation of electrical works.
Bumala "B"	0.5km² 500	5m3/h 12m3		- Changing B/Hole pump and repairing the solar system.
Mukhobola H/C w/s				- Installed new generator
Malaba Boarder Police Post w/s	0.5km²			- Installation of B/Hole pump. - Rehabilitation of electrical works.
Bokoli w/s	1.0km² 500	7m3/h 50m3	KFWWSP	- Installation of new solar inventor and tested the system.
Chwele w/s	1 km²	40m3/d		- Changing and connecting new B/Hole pump. - Servicing the Solarsystem
Naitiri H/C w/s	0.8km² 500	233m3/d 12m3		- Supply and installation of new generator.
Kabuchai H/C w/s	2.5km²	50m3/d 50m3	KFWWSP	- Servicing of pump and engine. - Repair of pipe system.
Ukwala w/s	1.2km² 1,000	100m3/d 50m3	KFWWSP	- Changing B/Hole pump - Repairing feeder cable - Servicing of Lee Haul piston pump.

APPENDIX 4.6

REHABILITATIONS OF WATER TREATMENT PLANTS

NAME LOCATION	AREA SERVED POPULATION	CAPACITY STORAGE	PRIORITY	REMARKS (UNDERTAKEN BY KFWWSP)
Kakamega WTP	28km²	202m3/h	Project Document KFWWSP WORKPLAN 1991	- Installation of new low lift pumps. - Installation of new pannel for struja pumps. - Installation of rehabilitated low lift intake pannel. - Modification of pipe system in the pump house. - Installation of level control and indication instruments. - Installation of high lift pump motor. - Servicing of low and high lift pumps. - Electrical installation for new chemical house.
W.Isukha	72,000	1800m3		
Mumias WTP	10 km²	120m3/d	Letter from DDC on 19.390	- Rehabilitation of main switch Board and electrical instal-lations. - Supply of drainage system. - Installation of master meter on rising main. - Rehabilitation of sand filters. - Repair of pumphouse and chemical house roof. - Installation of steel doors and window grills. - Construction of valve chambers on raw water main. - General painting works. - Servicing of valves.
Central Wanga	34,000	550m3		
Kaimosi WTP	40km²	34m3/h	Kakamega District Water Officer	- Rehabilitation of sand filters - Cleaning of intake furrow. - Installation of new electrical pannel. - Rehabilitation of electrical installation. - Modification of piping for struja. - Servicing of valves.
Shamakhokho	23,000	466m3		
Shitoli WTP	60km²	85m3/h	KFWWSP	- Rehabilitation of 2 filters
	55,000	925m3		- Repair of backwashpumps.
S.Bunyore	40,000	1900m3		- Rehabilitation of electrical works.

APPENDIX 4.7

ON-JOB-TRAINING

DATE	DUTY	TRAINER	DESCRIPTION
7-10/5/91	1 No.Inspector w/s	SKF Kenya Ltd	Rolling Bearing course
11-14/7/91	1 No.Electrical inspector	SKF Kenya Ltd	"
	4 No.Mechanics	Gailley & Robbers Kisumu	Maintenance of Lister,Wiring and Petter engines.
11,3-6,4/91	2 No Electrician	Switch gear & Controls	Servicing of electric pannels.
9-12/4/91	10 No electrician	Olkaria	Power station and switchboard One day training for servicing.
18/10/91	1 No.electrical inspector.	Switch gear & control Ltd.	Wiring and servicing electrical panels. Installation and maintenance of solar systems.
8/91	1 No. Foreman	Soni Injection Ltd generators.	Maintenance of diesel engines

APPENDIX 5.1

TRAINING OF LOCATIONAL LEADERS

DISTRICT	LOCATION	VENUE	NO. OF PARTS.	DATE
Busia	C. Marachi	Bukhalalire Sec. Sch.	45	10-13/07/90
Kakamega	W. Wanga	Koyonzo Pri. Sch.	35	6-10/08/90
Busia	W. Teso	Chakol Girls High Sch.	36	21-24/08/90
Kakamega	N. Wanga	Matungu Pri. Sch.	36	4-7/09/90
Busia	N. Samia	Nangina Mission	47	18-21/09/90
Kakamega	N. Idakho	Isulu Lutherine Church	49	2-5/10/90
"	S. Wanga	Bukaya Sec. School	45	6-9/11/90
Bungoma	Bumula	Mabusi Pri. School	46	20-23/11/90
"	Musikoma	Samoya Pri. Schoool	44	4-7/12/90
Kakamega	N. Marama	Lunza Sec. School	60	18-21/12/90
Busia	C. Teso	Amagoro Y. Poly.	65	12-15/2/91
Bungoma	Chwele	Busakala Sec. School	40	26/2-1/3/91
"	Cheptais	Cheptais Sal. Army Chr.	53	19-22/3/91
Siaya	N. Ugenya	Kagonya Pri. School	45	9-12/3/91
Kakamega	Bunyala	Navakholo H. Centre	53	29/4-3/5/91
Busia	W. Marachi	Bukinda Pri. School	52	28-31/5/91
"	Kopsiro	Kopsro Y. Poly.	42	18-21/6/91
Bungoma	Sirisia	Namwela	50	27-30/8/91
"	S. Bukusu	Kabula Y. Poly.	55	26-29/11/91
Siaya	Uholo	Sigomre Sec. Sch.	54	9/13/12/91
Total			952	

APPENDIX 5.2

TRAINING OF WATER COMMITTEES

DISTRICT	LOCATION	VENUE	NO. OF PARTS.	DATE
Siaya	S. Ugenya	Ambira High School	39	13-17/8/90
Busia	N. Samia	Nangina High School	51	27-31/8/90
"	C. Marachi	Bukhalalire High Sch.	46	10-14/9/90
"	E. Bukhayo	Igara Pri. School	52	24-28/9/90
"	S. Samia	Ageng'a FLTC	50	16-19/10/90
Kakamega	W. Wanga	Mamboleo	41	23-26/10/90
Bungoma	Kanduyi	Kibabii Church	48	13-16/11/90
"	Kopsiro	Chelebei Pri. School	57	27-30/11/90
"	Musikoma	Siritanyi Pri. School	40	
"	S. Bukusu	Kabula Polytechnic	33	
"	W. Bukusu	Siboti Pri. School	46	
Kakamega	N. Marama	Lunza Pri. School	32	
Busia	W. Bukhayo	Mundika Mission	30	
Siaya	W. Ugenya		36	
Kakamega	S. Marama		42	
Busia	S. Teso		47	
Bungoma	Cheptais	Chebkube S. Army Church	47	23-26/7/91
"	W. Bukusu	Kimaiti Sec. School	57	24-27/9/91
"	Kapsokwony	Kapsokwony High School	52	1-4/10/91
Busia	S. Teso		49	
"	N. Teso		49	
Busia	C. Marachi		53	
"	S. Bunyala		55	
Kakamega	N. Wanga	Msamba Market	40	9-12/7/91
Kakamega	E. Marama	Muyundi Parish	51	6-9/8/91
Busia	C. Marachi	Kingandole Pri. School	54	6-9/11/91
Siaya	N. Ugenya	Kagonya Pri. School	52	4-7/12/91
"	S. Ugenya	Simenya Sec. School	55	17-20/12/91
Kakamega	S. Kabras	Kimang'eti Pri. School	50	19-22/11/91
"	C. Marama	Ibokolo Pri. School	55	16-19/12/91
Bungoma	S. Bukusu		45	3-6/12/91
Total	13 locations		1454	

APPENDIX 5.3

TRAINING OF PUMP ATTENDANTS

DISTRICT	LOCATION	NO. OF WELLS	NO. OF ATTENDS.	TYPE OF TRAINING	VENUE	DATE
Siaya	Uholo	31	50	P/att Nira 85	Sigomre School	10-23/7/90
Kakamega	E. Isukha	8	15	"	Mkomari Mission	19-26/8/90
Siaya	N. Ugenya	19	34	"	Infumbe School	14/7-3/8/90
"	W. Ugenya				Ambira	
"	S. Ugenya	12	23	"	Chiefs' Centre	
Bungoma	S. Bukusu	46	25	Nira AF 85 H.P	Kabula	17-28/10/90
Kakamega	Bunyala	50	28	Sp. Attendant	Nabakholo	13/11-2/12/90
"	S. Wanga	50	26	Nira AF 85	Musanda	13-29/12/90
Busia	C. & W. Marachi			"	Bukhalalire	6-22/02/91
Kakamega	S. Wanga	25	44	"	Musanda	01/02/91
Busia	C. & W. Marachi			"	Bukhalalire	06/03/91
Kakamega	C. & N. Marama	18	43	"	Ibukolo	11-28/3/91
"	N. Wanga	39	50	"	Matungu	23/4-6/5/91
"	W. Kabras	22	39	Nira 85 Afridev	Samitsi	21/5-6/6/91
"	S. Kabras	29	50	"	Kakunga	5-28/6/91
Bungoma	Lwandanyi	12	24	Nira 85	Lwandanyi S.A. Chuch	11-27/6/91
Busia	C. Marachi	23	43	Afridev	Bukhalalire	26/6-13/7/91
Bungoma	Musikoma	18	33	Nira 85 Afridev	Samuya	3-19/7/91
Kakamega	W. Wanga	12	20	"	Koyonzo	26/7-2/8/91
Busia	N. Teso	15	26	Nira 85	Moding	29/7-14/8/91
Bungoma	Bumula	24	45	"	Kimatuni	5-20/9/91
Kakamega	C. Kabras	19	42	Nira 85	Chebwai	26/9-15/10/91
Busia	N. Samia	11	28	Afridev	Funyula	16-3/11/91
Total		483	688			

APPENDIX 5.4

FILM SHOWS

DISTRICT	LOCATION	VENUE	NO. OF PARTS.	DATE
Busia	S. Samia	Ageng'a FCTC	50	17/10/90
Kakamega	N. Idakho	Isulu Church	50	03/10/90
"	S. Wanga	Bukaya Secondary Sch.	255	07/11/90
Bungoma	Bumula	Mabusi Pri. School	150	21/11/90
"	Musikoma	Samuya Pri. School	80	05/12/90
Kakamega	N. Marama	Lunza Secondary School	100	19/12/90
"	S. Wanga	Bumia Church	109	08/12/90
"	"	Bukaya Church	141	08/12/90
"	"	Musanda Market	268	"
"	N. Wanga	Namulungu Pri. School	75	09/12/90
"	"	Bulimbo Church	140	"
"	C. Mumias	Elukoye	190	"
Busia	S. Teso	Unyunyuri Pri. School	73	10/12/90
"	"	Kamarinyang	108	"
"	N. Samia	Wakhungu Primary School	93	11/12/90
Busia	N. Samia	Buradi Primary School	141	11/12/90
"	"	Luchululo Primary Sch.	118	"
"	S. Bunyala	Busagwa Primary School	65	14/12/90
"	"	Makunda Secondary Sch.	72	"
"	"	Musoma Primary School	171	"
"	E. Bunyala	Budalangi Primary Sch.	50	15/12/90
Busia	E. Bunyala	Sibuka Primary School	93	"
"	W. Bukhayo	Matayos Church	2000	16/12/90
"	"	Busibwabo Church	309	"
"	"	Mujuru Primary School	225	"
"	C. Bukhayo	Kwirale Primary School	180	29/12/90
"	"	Malanga Primary School	116	"
"	S. Samia	Sioport Church	260	30/12/90
"	"	Ageng'a FLTC	60	"
Siaya	N. Ugenya	Kagonya Primary School	90	12/4/91
Bungoma	Musikoma	Siritanyi Pri. School	150	
"	S. Bukusu	Kabula Polytechnic	40	
"	Sirisia	Namwela Church	70	30/8/91

APPENDIX 5.4 (Cont.)

FILM SHOWS

DISTRICT	LOCATION	VENUE	NO. OF PARTS.	DATE
"	Cheptais	Chepkube Sal. Army Chr.	120	26/7/91
"	W. Bukusu	Kimaiti Secondary Sch.	230	27/9/91
Busia	N. Teso		49	
"	C. Marachi		53	
Bungoma	S. Bukusu	Kabula Y. Polytechnic	106	26/11/91
"	Kapsokwony	Kapsokwony Y. Polytech.	80	4/10/91
Busia	W. Bukhayo	Mandika Mission	30	
Total		44 Film Shows	6760	

APPENDIX 5.5

TRAINEES ATTACHED TO THE PROGRAMME

COLLEGE/INSTITUTE	NO. OF STUDENTS	NO. OF TRAINING MONTHS
KEWI - Kenya Institute of Water	136	355
WECO - Western College of Applied Science	26	55
KTTI - Kitale Technical Training Insititute	5	5
Mombasa Polytechnic	1	3
Kenya Polytechnic	2	2
UoN - University of Nairobi	6	17
Keveye	3	3
Kaimosi	2	3
Moi Institute	2	2
Garisa	2	2
Sang'alo	3	6
Shamberere	3	2
Kabete Technical Institute	2	2
Bumbe Tech. Training Institute	3	7
Kilifi Youth Polytechnic	2	4
RVIST - Rift Valley Institute of Science and Technology	3	7
CITC - Christian Industrial Training College	2	4
RIAT - Ramogi Institute of Advanced Technology.	1	1
Kaiboi Technical Training Institute	1	3
Sigalagala Technical Institute	4	5
Total	209	488

APPENDIX 6.1

SITING OF WATER POINTS

DISTIRCT	No. OF MEETINGS HELD	SITING MEETINGS ATTENDANCE		SITES SELECTED BY COMMU-NITIES	SITES INVESTIGATED	No. OF NOT FEASIBLE SITES	No. OF SUCCESSFUL SITES
		WOMEN	MEN				
Kakamega	171	3121	4288	106	44	8	36
Bungoma	105	1964	2836	87	29	8	21
Busia	63	1472	2156	44	44	15	29
Siaya	45	1473	1524	24	11	5	6
Total	184	8020	10804	261	128	36	92

APPENDIX 6.2

REGISTRATION OF LAND EASEMENTS

DISTRICT	LOCATION	NUMBER OF LANDEASEMENTS REGISTERED
Kakamega	East Wanga	20
	South Wanga	3
	N. Butsotso	3
	C. Marama	1
	N. Idakho	7
	Bunyala	3
	C. Mumias	3
	Chevaywa	6
	W. Kabras	7
	S. Kabras	5
	N. Wanga	3
	TOTALS	61 WATERPOINTS
Bungoma	Bumula	4
	N. Bukusu	6
	Kanduyi	5
	W. Bukusu	11
	N. Bukusu	4
	Lwandanyi	6
	Chwele	3
	Sirisia	1
	Musikoma	5
	S. Bukusu	6
	Cheptais	1
	Malakisi	1
	TOTALS	53 WATER POINTS
Busia	C. Bukhayo	15
	W. Bukhayo	11
	S. Samia	12
	S. Bunyala	2
	E. Bunyala	4
	N. Samia	9
	C. Marachi	2
	N. Teso	3
	E. Marachi	3
	S. Teso	7
	TOTALS	68 WATER POINTS
Siaya	W. Ugenya	14
	Ukwala	1
	Sihay	33
	E. Ugenya	2
	S. Ugenya	27
	N. Ugenya	3
	TOTALS	80 WATER POINTS

APPENDIX 6.3

COMMUNITY PARTICIPATION IN CONSTRUCTION

ACTIVITY	TOTAL NUMBER OF SITES IN PPROGRAMME AREA
Digging of pits to water level	121
Routes cleared	132
Stones collected	117

APPENDIX 6.4

SUMMARY OF COMMUNITY DEVELOPMENT ACTIVITIES

ACTIVITY	KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
SITING					
No. Meetings held	171	105	63	45	384
Attendance: Women	3121	1964	1472	1473	8030
Men	4288	2836	2156	1524	10804
Total attendance	6057	3361	3628	2403	15449
Sites tech. investigated	44	29	44	11	128
WATER COMMITTEES					
Formed	107	115	44	49	315
Activated	448	325	77	304	1154
Registered with MOCSS	106	154	350	103	713
CREATION OF AWARENESS					
No. of meetings held	2206	953	128	941	4,228
Attendance: women	63599	19328	812	27570	11,1309
men	76586	30906	24665	19526	15,1683
Total attendance	140185	31209	34210	36749	24,2353
HEALTH AND SANITATION ASPECTS					
Duty rosters made	338	433	206	238	1215
No. of water points fenced	382	294	321	265	1262
LAND EASEMENTS					
Registered Easements	137	94	106	85	422
OPERATION & MAINTENANCE FUNDS					
Collected in	124051	45668	103,549	4,7746	321014
Accounts opened	127	59	70	72	328
RECRUITMENT OF TRAINEES					
Nominated Pump Attendants	65	61	37	19	182
Nominated Spring Attendants	43	27	6	7	83
Nominated Pump repairmen	7	4	4	2	17
HANDING OVER					
Priliminary Handing Over (W/P	156	106	72	99	433
Final handing over (W/points)	199	0	63	83	345

APPENDIX 6.5

HANDING OVER OF WATER POINTS

DISTRICT	LOCATION	TOTAL NUMBER OF W/POINTS	WATER POINTS HANDED OVER	REMARKS
Kakamega	C. Mumias	62	54	All the water points not handed over either had technical problems, therefore, unoperational or had some community management weaknesses. The target is to hand them over all by August 1992.
	E. Wanga	133	42	
	E. Isukha	66	31	
	S. Kabras	149	74	
	W. Wanga	105	42	
		515	243	
Siaya	E. Ugenya	50	32	
	N. Ugenya	39	19	
	W. Ugenya	64	29	
		153	80	
Busia	E. Marachi	92	62	

Summary:-

Total number of locations = 9 locations
Number of water points = 760
Number handed over = 385 water points
Number of waterpoints not handed over = 375 waterpoints

APPENDIX 6.6

SOCIO-ECONOMIC STUDIES

District	Feasibility Study	Supply Area	No. of Consumers	Dates
Kakamega	Navakholo	25km^2	12,000	August 1991
	Kambiri	30km^2	13,000	Sept. 1991
Bungoma	Chepkube	24km^2	34,000	Feb. 1991
	Kabuchai	3km^2	4,113	Aug. 1991
	Mateka	20km^2	36,600	Aug. 1991
Busia	Amagoro	0.4km^2	500	May 1990
Siaya	Ugunja	12km^2	6,000	Sept. 1990
	Sigomre	13.8km^2	8,586	Oct. 1991

APPENDIX 6.7

INCOME GENERATING ACTIVITIES

District	Type of Activity				
	Vegetable Gardening	Block Making	Sand Selling	Tree Nurseries	Fish Ponds
Kakamega	134	18	-	10	7
Bungoma	61	6	-	9	4
Busia	89	3	1 KES128810	7	3
Siaya	161	1	-	14	16
Totals	445	28	1 KES128810	40	30

APPENDIX 7.1

STAFFING PROGRAMME, 1991

01 ADMINISTRATION DEPARTMENT

		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	3	3	3	3	3	3	3	3	3	3	3	3
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		2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	MoWD	5	5	5	5	5	5	5	5	5	5	5	5
ACTUAL		5	5	5	5	4	4	4	4	4	4	4	4
PLANNED	KFWWSP	18	18	18	18	18	18	18	18	18	18	18	18
ACTUAL		16	16	16	14	14	14	14	14	14	14	14	14
PLANNED	TOTAL	25	25	25	25	25	25	25	25	25	25	25	25
ACTUAL	TOTAL	23	23	23	21	20	20	20	20	20	20	20	20

02 PLANNING & DESIGN DEPARTMENT

		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						
HEAD OF FIELD. INV SEC.	MoWD							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	2	2	2	2	2	2	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
ASS. SYSTEM. ANAL.	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
LABORATORY TECHNOLOGIST	MoWD	5	5	5	5	5	5	5	5	5	5	5	5
CARTOGRAPHER	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
TECHNICIANS	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
DRAUGHTSMAN	MoWD	2	2	2	2	2	2	2	2	2	2	2	2
"	KFWWSP	3	3	3	3	3	3	3	3	3	3	3	3
GEOPHYSICAL INV. FOREMAN	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
TEST PUMPING FOREMAN	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
SURVEY CO-ORDINATOR	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
SURVEY FOREMAN	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	KFWWSP	35	35	35	35	35	35	35	35	35	35	35	35
STAFF	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
PLANNED	CONSULTANT	3	3	2	2	2	3	2	2	2	2	2	2
ACTUAL		3	3	2	2	2	3	2	2	2	2	2	2
PLANNED	MoWD	19	19	19	19	19	19	19	19	19	19	19	19
ACTUAL		14	14	14	15	15	15	14	14	14	14	14	14
PLANNED	KFWWSP	43	43	43	43	43	43	43	43	43	43	43	43
ACTUAL		39	39	39	39	39	39	39	39	39	39	39	39
PLANNED	TOTAL	65	65	64	64	64	64	64	64	64	64	64	64
ACTUAL	TOTAL	56	56	55	56	56	57	55	55	55	55	55	55

APPENDIX 7.1 (Cont.)

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 SEC.	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							
ASS. HEAD OF MECH. SEC.	KFWWSP	1	1	1	1	1	1	1	1	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	4	4	4	4	4	3	3	3	3	3	3	3
ACTUAL		4	4	4	4	4	3	3	3	3	4	4	4
PLANNED	MoWD	4	4	4	4	4	4	4	4	4	4	4	4
ACTUAL		6	6	6	5	5	5	7	7	7	7	7	7
PLANNED	KFWWSP	157	157	157	157	157	157	157	157	157	157	157	157
ACTUAL		153	151	151	159	159	158	154	154	154	156	156	156
PLANNED	TOTAL	165	165	165	165	165	164	164	164	164	164	164	164
ACTUAL	TOTAL	163	161	161	168	168	167	164	164	164	167	167	167

03-20...51 CONSTRUCTION IN DISTRICT BASES

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HEAD OF DISTRICT BASE	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	MoWD	3	3	3	3	3	3	3	3	3	3	3	3
ACTUAL	MoWD	8	8	8	10	10	10	9	9	9	7	7	7
PLANNED	KFWWSP	37	43	50	50	50	50	50	50	50	50	50	50
ACTUAL	KFWWSP	52	51	51	51	51	51	49	49	49	51	51	51
PLANNED	TOTAL	40	46	53	53	53	53	53	53	53	53	53	53
ACTUAL	TOTAL	60	59	59	61	61	61	58	58	58	58	58	58

04 OPERATION & MAINTENANCE 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 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	1	1	1
ASS. EL.ENGINEER	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
ELECTR. TECHNICIAN	MoWD	1	1	1	1	1	1	1	1	1	1	1	1
CENTRAL WORKSHOP MANAGER	MoWD				1	1	1	1	1	1	1	1	1
ESTATE FOREMAN	KFWWSP	1	1	1	1	1	1	1	1	1	1	1	1
ESTATE STAFF	KFWWSP	22	22	22	22	22	22	22	22	22	23	22	22
STAFF	KFWWSP	14	14	14	20	20	20	20	20	20	24	24	24
PLANNED	CONSULTANT	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL		2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	MoWD	5	5	5	6	6	6	6	6	6	6	6	6
ACTUAL		3	3	3	3	3	3	3	3	3	4	4	4
PLANNED	KFWWSP	38	38	38	44	44	44	44	44	44	46	46	46
ACTUAL		36	36	36	36	36	36	44	44	44	46	46	46
PLANNED	TOTAL	45	45	45	52	52	52	52	52	52	52	52	52
ACTUAL	TOTAL	41	41	41	41	41	41	52	52	52	52	52	52

APPENDIX 7.1 (Cont.)

05 - 21 COMMUNITY AND TRAINING DEPARTMENT (HQ KAKAMEGA)

		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 SEC.	CONSULTANT	1	1	1	1	1	1	1	1	1	1	1	1
HEAD OF COMM. DEV. SEC.	MOCSS	1	1	1	1	1	1	1	1	1	1	1	1
HEAD OF SOCIO-ECONOMIC	KFWWSP	-	-	-	-	-	1	1	1	1	1	1	1
STAFF	KFWWSP	43	43	43	43	23	23	23	23	23	23	23	23
STAFF	MOWD	2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	CONSULTANT	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL		2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	KFWWSP	43	43	43	43	23	23	23	23	23	23	23	23
ACTUAL		39	39	39	39	39	39	39	39	39	38	38	37
PLANNED	MOWD	2	2	2	2	2	2	2	2	2	2	2	2
ACTUAL		2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	MOCSS	1	1	1	1	1	1	1	1	1	1	1	1
ACTUAL		1	1	1	1	1	1	1	1	1	1	1	1
PLANNED	TOTAL	48	48	48	48	28	28	28	28	28	28	28	28
ACTUAL	TOTAL	44	44	44	44	44	44	44	44	44	43	43	43

05-21 COMMUNITY AND TRAINING IN DISTRICT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
COMMUNITY CO-ORDINATOR	KFWWSP	3	3	3	3	3	3	3	3	3	3	3	3
COMMUNITY SURVEYOR	MOWD	1	1	1	1	1	1	1	1	1	1	1	1
STAFF	KFWWSP	39	39	39	39	52	52	51	51	51	51	51	51
OTHER STAFF	MOCSS	11	11	11	11	22	29	31	31	33	34	35	35
STAFF	MoWD	2	2	2	2	4	4	4	4	4	4	4	4
PLANNED	KFWWSP	42	42	42	42	55	55	54	54	54	54	54	54
ACTUAL		42	42	42	46	46	46	46	46	46	45	45	45
PLANNED	MOCSS	11	11	11	11	22	29	31	31	33	34	35	35
ACTUAL		3	3	3	30	30	30	34	34	34	34	34	34
PLANNED	MOWD	3	3	3	3	5	5	5	5	5	5	5	5
ACTUAL		2	2	2	2	2	2	2	2	2	2	2	2
PLANNED	TOTAL	56	56	56	56	82	89	90	90	92	93	94	94
ACTUAL		53	53	53	78	78	78	82	82	82	81	81	80

KFWWSP — 1990 COST REPORT, IN FIM

			JAN-JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN-DEC	% USED TO DATE	TOTAL LEFT
		FIM rate:		0.1653	0.1607	0.1625	0.1562	0.1562	0.1520			
01	ADMINISTRATION	budget	424,200	68,200	73,200	68,200	73,200	68,200	73,200	848,400		
	B: 848,400	actual	370,954	33,085	86,090	122,881	24,237	55,954	76,066	769,267	90.7 %	79,133
02	PLANNING & DESIGN	budget	540,200	106,700	66,700	66,700	66,700	86,700	66,700	1,000,400		
	B: 1,000,400	actual	612,290	73,782	89,647	69,880	63,523	111,775	47,951	1,068,846	106.8 %	-68,446
03	CONSTRUCTION	budget	7,561,800	1,344,800	834,800	871,800	836,800	932,800	784,900	13,167,700		
	B: 13,167,700	actual	7,156,080	616,719	1,721,428	992,481	727,297	897,405	1,193,686	13,305,098	101.0 %	-137,398
04	OPERATION & MAINTENANCE	budget	1,033,000	157,500	185,500	153,500	174,500	157,500	185,500	2,047,000		
	B: 2,047,000	actual	1,106,043	325,690	303,434	224,806	188,139	160,899	167,846	2,476,858	121.0 %	-429,858
05	COMMUNITY PARTICIPATION	budget	888,000	164,000	144,000	147,000	143,000	164,000	149,000	1,799,000		
	B: 1,799,000	actual	560,944	142,203	113,369	90,436	99,853	181,643	213,679	1,402,126	77.9 %	396,874
06	INVESTMENTS	budget	170,000	0	0	0	0	0	0	170,000		
	B: 170,000	actual	156,446	3,160	11,813	2,570	5,770	17,237	129	197,124	116.0 %	-27,124
07	INDIRECT COSTS	budget	436,000	36,000	36,000	36,000	51,000	36,000	46,000	677,000		
	B: 677,000	actual	447,005	13,471	52,821	25,060	35,061	39,622	25,182	638,222	94.3 %	38,778
08	TECHNICAL ASSISTANCE	budget	3,738,000	467,000	475,500	565,500	565,500	565,500	565,500	6,942,500		
	B: 6,942,500	actual	3,886,205	644,465	550,632	585,478	583,178	573,237	577,805	7,401,000	106.6 %	-458,500
09	EQUIPMENT & VEHICLES	budget	1,120,000	0	0	100,000	350,000	0	0	1,570,000		
	B: 1,570,000	actual	599,979	18,702	134,151	2,320	207,194	0	190,945	1,153,291	73.5 %	416,709
10	MONITORING & EVALUATION	budget	300,000	0	0	0	0	50,000	0	350,000		
	B: 350,000	actual	8,040	0	100	0	0	0	0	8,141	2.3 %	341,859
11	PURCHASES SPECIFIED LATER	budget	460,000	141,000	216,000	206,000	160,000	195,000	50,000	1,428,000		
	B: 1,428,000	actual	102,659	28,534	44,221	14,916	25,491	60,371	15,467	291,659	20.4 %	1,136,341
	30,000,000	budget	16,671,200	2,485,200	2,031,700	2,214,700	2,420,700	2,255,700	1,920,800	30,000,000		
		actual	15,006,645	1,899,812	3,107,706	2,130,827	1,959,743	2,098,143	2,508,755	28,711,631	95.7 %	1,288,369

KFWWSP — 1991 COST REPORT, IN FIM

		FIM rate:	JAN-JUN	JUL 0.1491	AUG 0.1472	SEP 0.1472	OCT 0.1441	NOV 0.1468	DEC 0.1517	JAN-DEC	% USED TO DATE	TOTAL LEFT
01	ADMINISTRATION	budget	546,000	86,500	45,500	86,500	50,500	86,500	45,500	947,000		
	B: 947,000	actual	349,183	79,112	63,614	47,862	82,505	80,372	39,327	741,976	78.4 %	205,024
02	PLANNING & DESIGN	budget	598,400	100,100	115,100	75,100	94,100	85,100	99,100	1,167,000		
	B: 1,167,000	actual	503,185	76,591	101,568	64,769	81,250	71,918	119,011	1,018,292	87.3 %	148,708
03	CONSTRUCTION	budget	6,877,000	1,085,000	1,105,000	1,230,000	977,000	1,127,000	987,000	13,388,000		
	B: 13,388,000	actual	6,008,461	882,163	1,002,408	1,820,728	982,382	2,236,597	1,468,883	14,401,623	107.6 %	-1,013,623
04	OPERATION & MAINTENANCE	budget	1,743,200	225,300	174,300	179,300	189,300	371,800	139,800	3,023,000		
	B: 3,023,000	actual	1,232,740	246,897	62,358	224,240	188,932	309,355	731,832	2,996,355	99.1 %	26,645
05	COMMUNITY PARTICIPATION	budget	928,000	225,000	197,500	182,500	184,000	190,500	162,500	2,070,000		
	B: 2,070,000	actual	552,813	205,322	66,480	144,756	116,209	107,712	171,492	1,364,784	65.9 %	705,216
07	INDIRECT COSTS	budget	399,000	29,000	144,000	29,000	29,000	29,000	29,000	688,000		
	B: 688,000	actual	195,990	7,986	35,196	38,267	63,007	83,779	184,957	609,183	88.5 %	78,817
08	TECHNICAL ASSISTANCE	budget	3,533,000	604,000	531,000	600,000	641,000	585,000	479,000	6,973,000		
	B: 6,973,000	actual	3,502,667	549,396	502,474	632,358	626,320	579,260	649,814	7,042,290	101.0 %	-69,290
09	EQUIPMENT & VEHICLES	budget	585,000	200,000	0	0	0	0	0	785,000		
	B: 785,000	actual	323,550	2,087	27,172	58,801	24,458	102,120	183,534	721,721	91.9 %	63,279
10	MONITORING & EVALUATION	budget	420,000	0	0	30,000	0	0	20,000	470,000		
	B: 470,000	actual	16,117	0	0	6,187	427	0	1,593	24,324	5.2 %	445,676
11	PURCHASES SPECIFIED LATER	budget	425,000	0	1,000	2,000	37,000	24,000	0	489,000		
	B: 489,000	actual	684,195	25,548	105,140	12,935	0	0	1,898	829,716	169.7 %	-340,716
	30,000,000	budget	16,054,600	2,554,900	2,313,400	2,414,400	2,201,900	2,498,900	1,961,900	30,000,000		
		actual	13,368,902	2,075,103	1,966,411	3,050,903	2,165,491	3,571,113	3,552,342	29,750,264	99.2 %	249,736
	EQUIVALENT IN KES	actual	90,282,079	13,917,523	13,358,769	20,726,244	15,028,740	24,321,410	23,413,799	201,048,564		