DEVELOPING INFORMATION MANAGEMENT CAPABILITIES
in the

WATER DEVELOPMENT DEPARTMENT

of the
MINISTRY OF WATER AND MINERAL DEVELOPMENT
of the
GOVERNMENT OF UGANDA

A report prepared by IRC International Water and
Sanitation Centre at the request of the Water
Development Department as part of IRC's programme
to support the development of national information
management capabilities

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5.1 A study prepared by the Commissioner for Water Development in October 1988 described the shortcomings of the existing arrangements for handling information in the Department. There has been little change since then.

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6.8 There is no Records Officer in charge of the Central Registry and no staff with proper qualifications and training in registry work. Officers are unable to locate documents or files due to the lack of indexing and retrieval facilities, and the system appears to be almost completely ineffective.

6.9   There appear to be no special arrangements for protecting and controlling personnel records and other confidential records or for preserving their confidentiality.

6.10   The Department's library at Entebbe is kept locked and does not appear to be used. There is a post for a librarian on the establishment, but it is vacant.

6.11   The Department appears to function almost entirely without access to information about activities and developments in the sector in other parts of the world.

6.12   The lack of any facilities for producing and distributing publications or technical reports on the Department's activities is a serious limitation on its capacity to participate fully in any technical information exchange programme.

6.13   There are no adequate alternative sources of technical information on the water sector elsewhere in Uganda to which users in the WDD can turn.

7. GENERAL FINDINGS AND CONCLUSIONS

7.1   The existing arrangements for the management of all kinds of data and information in the Water Development Department are completely ineffective.

7.2   A number of actions to improve this situation have been proposed under a variety of existing water supply and sanitation projects, and are referred to at the appropriate points in the report.

7.3   With minor exceptions, none of these actions has yet been implemented and all are at present no more than the subjects of generally rather tentative proposals, almost all of which are concerned exclusively with information needed to manage the resource, and not with information needed to manage the institution or with technical information exchange.

7.4   If the Water Development Department is to play its proper role in promoting, planning, coordinating and managing the development of water supplies and sanitation facilities in Uganda, it must, as a matter of urgency, take steps to organize effective systems for the collection, processing, storage, retrieval and dissemination of both management information and technical information.

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8.1 The aim of the proposals for the development of information management in the Water Development Department is to make good the existing deficiencies in information provision through a phased development programme.

8.2 The programme comprises a number of separate but interrelated projects for the development of these activities in three successive phases.

8.3 The immediate objective is to establish efficient and effective systems for the collection, processing, storage, analysis, retrieval and dissemination of technical information, management information and project and sector information within the Water Development Department.

8.4 The strategy for attaining this objective is to combine any necessary further studies with practical steps to carry out actions already seen to be necessary, based on a combination of foreign technical assistance and local support.

8.5 The programme may be implemented as a whole or as a series of individual projects. The general aim is not postpone implementation until all the information needed for the design of an ideal system has been collected and analyzed, but to take immediate steps to improve the situation in basic but essential ways and to collect any further information which may be required once this has been done.

8.6 Draft project proposals for the projects included in Phase 1 are provided at Appendix A. Actions in respect of projects dealing with management information systems are already being undertaken, or are envisaged, under existing or proposed water and sanitation projects or as part of the general rehabilitation of the public service in Uganda. These projects are therefore presented in Appendix A only in outline.

8.7 The following projects are included in Phase 1:

1.A. Establishment of an Information Management Unit

1.B. Establishment of a Uganda Water Information and Documentation Centre (UWIDOC)

1.C. Feasibility study for the establishment of a document production unit

1.D. Establishment of a Management Information System for Water Resources (MISWAR)

1.E.   Establishment of a Management Information System
       for Water Supply (MISWAS)

1.F.   Establishment of a Management Information System
       for Administration (MISAD)

8.8   The following projects are included in Phase 2:

2.A.   Establishment of a Uganda Water Information and
       Documentation System (UWIDOS)

2.B.   Establishment of a document production unit

2.C.   Extension of MISWAR to district level

2.D.   Extension of MISWAS to district level

2.E.   Extension of MISAD to district level

2.F.   Feasibility study for the establishment of a Water
       Project and Sector Information System (WAPSIS)

8.9   The following projects are included in Phase 3:

3.A.   Establishment of a Uganda Water Information and
       Documentation Network (UWIDON)

3.B.   Establishment of a Water Project and Sector
       Information System (WAPSIS)

0. INTRODUCTION

0.1 This report on the development of information management in the Water Development Department of the Ministry of Water and Mineral Development of the Government of Uganda has been prepared by the IRC International Water and Sanitation Centre, at the invitation of the Commissioner for Water Development, as a contribution to the rehabilitation and development of the water supply and sanitation sector in Uganda.

0.2 At the request of the Commissioner, the report concentrates on the internal information management problems of the Water Development Department, and only touches in passing upon the dissemination of information on water supply and sanitation to the general public or to the intended beneficiaries of specific water supply and sanitation projects. The main responsibility for this latter activity rests at present with the Health Education Division of the Ministry of Health. At the invitation of the Chief Health Education Officer, IRC has also prepared terms of reference for the preparation of a plan for the development of one aspect of information management, namely, library and documentation services, in the Ministry of Health.

0.3 This report may be said to have its origins in the Regional Tutors' Seminar organized by the African Medical and Research Foundation (AMREF) in Nairobi in December 1989. During the course of the seminar, IRC indicated its willingness to assist the countries represented there in formulating project proposals relating to information management. It was as a result of this that the invitation to undertake the present assignment was issued.

0.4 The AMREF Environmental Health Unit, which hosted the Nairobi seminar, also has responsibilities with regard to information development in the water supply and sanitation sector in East Africa, particularly in the area of technical information. AMREF's _Plan of Operation 1990 to 1991_ provides for it to assist member countries in establishing focal points for the dissemination of technical information on water supply and sanitation, and notes that in countries where responsibility for these activities falls under two separate ministries, as in Uganda, separate focal points will need to be established in each ministry.

0.5 In view of AMREF's established role in relation to this aspect of information management, IRC indicated at the Nairobi meeting that any assistance which it might offer in this field would, wherever possible, be provided in close cooperation with AMREF. It had thus been intended that, at least in so far as it concerned technical information, the present assignment should be conducted

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jointly by information specialists from both IRC and AMREF. Unfortunately, it was not possible to arrange this. The assignment was therefore carried out exclusively by IRC, but the draft report was submitted to AMREF for comments, and these comments have been taken into account in producing the final text. Any errors and omissions in the report, however, must be considered the responsibility of IRC.

0.6   In submitting this report, IRC would like to express its thanks to the Commissioner for Water Development, Eng. B.K. Kabanda, and his staff, for the opportunity to carry out this assignment and for the help and support they provided. Thanks are also due to staff of the WDD/DANIDA East Uganda Project and of I. Krüger A.S. for making available copies of their various reports. These provided a great deal of useful background data, some of which, where appropriate, have been incorporated in the present report.

0.7   It is hoped that this report and, in particular, the Development Programme for Information Management in the Water Development Department outlined in section 8, will help to provide a basis for such development and be a useful contribution to the rehabilitation of the water supply and sanitation sector in Uganda.

1. WATER SUPPLY AND SANITATION IN UGANDA: THE SET UP

1.1 The rehabilitation of water supplies is one of several key areas identified by the Government of Uganda in its national recovery programme, and some 6 percent (US$ 203 million) of the US$ 3,576 million needed to implement its Reconstruction and Development Plan, 1988/89-1991/92, has been allocated to the water and sanitation sector for that period. Major projects which will continue after 1991/92 are either already in process or under active consideration by donors.

1.2 Uganda subscribes to the general objective of the International Drinking Water Supply and Sanitation Decade of providing safe and adequate drinking water and appropriated sanitation to all by 1990, but, recognizing the impossibility of attaining these targets due to the many problems experienced by the country in recent years, has adopted as its target the provision of safe drinking water within a reasonable walking distance of 1.5 kilometres and the provision of adequate sanitation facilities to all by the year 2000. The emphasis is on simple low-cost systems and community participation at all stages.

1.3 Responsibility for the water supply and sanitation sector in Uganda is divided among a number of government ministries and departments, one para-statal organization and several local authorities. A large number of international and foreign aid organizations are also active in the sector.

1.4 The main government ministries and departments involved in the sector are:

- Ministry of Water and Mineral Development (MWMD)

  - Water Development Department (WDD)

- National Water and Sewerage Corporation (NWSC)

  - Ministry of Health (MOH)

- Health Education Division (HED)

  - Ministry of Local Government

- Community Development Department (CDD).

The Ministry of Education and the Ministry of Women in Development also have some responsibilities in relation to the sector. The Ministry of Planning and Economic Development has an important role to play in approving

and coordinating projects and in organizing donor
support in this sector, as in others.

1.5   In the Ministry of Water and Mineral Development, the
        Water Development Department accounts for more than 70
        percent of the human and financial resources of the
        Ministry. The Department is responsible for the
        planning, design, construction, operation and
        maintenance of both urban and rural water supply and
        sanitation schemes throughout Uganda, with the exception
        of self-sustainable urban schemes in the larger towns
        (at present seven in number), which are managed by the
        National Water and Sewerage Corporation (NWSC). The WDD
        is also responsible for collecting and analyzing data on
        water resources and for giving technical approval to all
        proposals for water supply and sanitation projects put
        forward by other organizations. The Department and its
        information needs and problems form the main subject of
        this report, and are described in more detail in
        subsequent sections.

1.6   The Water Supply and Sanitation Sector Development
        Strategy and Action Plan, prepared by the Ministry of
        Water and Mineral Development with the assistance of the
        UNDP/World Bank Regional Water and Sanitation Group in
        Nairobi, includes a proposal for the establishment of a
        Water Supply and Sanitation Unit within the Ministry to
        be responsible for preparing sector policy, planning
        investment programmes and allocating water resources.
        However, the proposal has been found to be impractical,
        and instead a design and planning unit with similar
        responsibilities is to be established at the WDD
        Headquarters in Luzira. Assistance is being sought from
        DANIDA from the implementation of this proposal. There
        is a general planning unit at Ministry headquarters, one
        member of which is specifically concerned with water
        supply and sanitation matters.

1.7   In the Ministry of Health, the Health Education Division
        is responsible for the development, production and
        dissemination of health education materials in all
        districts. The Division is currently training a number
        of District Health Educators and Health Education
        Assistants to improve the effectiveness of its efforts.
        A new building to house the Division is under
        construction at Entebbe with donor support.

1.8   The Project Support Communication team from the
        WDD/DANIDA East Uganda project (see para 1.10 below)
        will be located in this building when it is completed,
        and educational materials and equipment will be supplied
        under the project. The AMREF Plan of Operation 1990 to
        1991 states that DANIDA proposes to assist in the
        establishment, within the Water Development Department,
        of a Communication Unit to be responsible for the
        development and production of communication materials,

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including job manuals, booklets, posters, flyers and films both for village level training and for technical staff. It would appear that this refers to the Project Support Communication team for the East Uganda Project, which as indicated above, will in fact eventually be located at the Health Education Division in Entebbe. In the Ministry of Local Government, the Community Development Department is responsible for community mobilization in various fields, including water supply and sanitation.

1.9 Many international and foreign aid agencies and non-governmental organizations are active in the sector. The leading agency in the field is UNICEF, which is currently responsible for two major water supply and sanitation projects, the South West Integrated Project, covering five districts, and the Umbrella Project, covering six, as well as being involved in a number of other projects in collaboration with other agencies. The major UNICEF projects each have an on-site management team which includes a representative of the Water Development Department.

1.10 A major new project based at WDD Headquarters is the WDD/DANIDA (Danish International Development Agency) East Uganda Project, which will cover seven districts in the south east of the country, in which 25 percent of the population of Uganda live. The "project proposal phase" of this project, which incorporated pilot schemes in two districts, is now coming to an end, and plans for the implementation of the main project, which will run for ten years, at a cost to the donor of around US$ 50 million, are now under consideration by DANIDA. The project proposal phase has been carried out, and the implementation plan prepared, by the Danish contractor Carl Bro International.

1.11 A National Rural Water Supply Programme is being prepared by the Danish consultants, I.Krüger A.S., in accordance with a recommendation of the <u>Water Supply and Sanitation Sector Development Strategy and Action Plan</u>. The five-year programme will aim to provide a framework for rural water supply sector development and investment planning.

1.12 The Uganda Infrastructure Project is a major project of the Ministry of Planning and Economic Development and the World Bank. It is designed to rehabilitate the physical infrastructure, mainly in the seven major towns. However, it also includes a rural water supply component, part of which is concerned with the institutional strengthening of the Water Development Department, including the construction of a new headquarters building.

1.13 The African Development Bank is currently supporting three sewerage and four water supply projects in five towns. It is not concerned with rural water supplies.

1.14 Many other international and bilateral aid agencies and non-governmental organizations are involved in water supply and sanitation projects in different parts of Uganda. Overall responsibility for approving and coordinating these activities rests with the Water Development Department.

2.   **THE WATER DEVELOPMENT DEPARTMENT:**
     DESCRIPTION OF PRESENT STRUCTURE

2.1 The role and functions of the Water Development
     Department have been outlined above (para 1.5). The
     Department has a staff establishment of some 670 posts,
     of which about 250 (37 percent) are currently vacant.
     This overall percentage, however, conceals substantial
     variations in the percentages of vacant posts in
     different categories. At the professional and technical
     level (engineers, chemists, hydrotechnologists), 41
     percent of posts are vacant; at the professional and
     administrative level, 57 percent. At the technician and
     supervisor level, 47 percent of posts are vacant as
     compared with only 13 percent at the clerical and
     secretarial levels. The Department also employs about
     3,000 "group employees", who are skilled, semi-skilled
     or unskilled workers not occupying established posts.

2.2 The WDD headquarters at Luzira and Entebbe has an
     establishment of 165 posts at all levels, comprising 25
     percent of the total establishment of the Department.
     About 90 of these posts (55 percent) are currently
     vacant, making the overall staffing position of the
     headquarters significantly worse than that of the
     Department as a whole. There are marked differences
     between the various divisions and among various
     categories of staff. While vacant posts in the Operation
     and Maintenance Division account for only 17 percent of
     the total establishment of the Division, and in the
     Construction and Development Division for only 23
     percent, in the Planning, Design and Documentation
     Division they account for 70 percent of the total and in
     the Water Resources Division for 76 percent. The worst
     situation is to be found in the Data Analysis Section of
     the Water Resources Division, where only one post out of
     an establishment of 21 is currently filled - a vacancy
     rate of 95 percent. In terms of different categories of
     staff, 38 percent of professional and technical posts
     are vacant, 70 percent of technician level posts (mainly
     in the Data Analysis Section) and 85 percent of clerical
     and secretarial posts.

2.3 The Department is organized in five main divisions,
     dealing respectively with: Water Resources; Planning,
     Design and Documentation; Drilling; Construction and
     Development; and Operation and Maintenance. There are in
     addition a number of administrative sections dealing
     with Accounts, Establishments, Office Equipment,
     Secretarial Staff, Stores and Training, which are not
     subordinated to any of the Divisions.

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There are ten regional offices, each headed by a
Regional Water Engineer, and two project coordination
units at headquarters to facilitate the implementation
of projects financed by the African Development Bank and
the World Bank. in addition, a number of staff are
outposted to other organizations and projects.

2.4   The headquarters of the Department is located at Luzira,
        six miles from Kampala on the shores of Lake Victoria.
        The Water Resources Division, the laboratory and the
        library remain on the Department's original site at
        Entebbe, twenty miles on the other side of Kampala.

2.5   The headquarters offices are housed in extremely cramped
        and unsuitable accommodation in a former car showroom
        with little scope for expansion and improvement. The
        Water Resources Division, laboratory and library are
        housed in buildings which are basically better suited to
        their purpose, but which are in great need of
        rehabilitation.

2.6   As noted above, (para 1.12) the Uganda Infrastructure
        Project makes some provision for institutional
        strengthening of the WDD, including the construction of
        a new headquarters, for which a site has already been
        acquired across the road from the present headquarters.
        These proposals are to be the subject of a World Bank
        Appraisal Mission in May 1990. It is expected that work
        on the building will start some time during 1991.

3. **CATEGORIES OF INFORMATION IN THE WATER SUPPLY AND SANITATION SECTOR: GENERAL**

3.1   The importance of information as a key element in the success of activities in the water supply and sanitation sector has been recognized at the international level by the Steering Committee for Cooperative Action for the International Drinking Water Supply and Sanitation Decade, which has identified four major areas of information activity in the sector namely:

- Project and Sector Information

- Management Information Systems

- Technical Information Exchange

- Public Information and Promotion.

3.2   Project and Sector Information (PSI) embraces information and statistical data on the water supply and sanitation sector in the country as a whole, and information on completed, ongoing and proposed projects in the sector, at all levels. It is used primarily by planners and policy makers, both in the country and in external support agencies, international organizations and research institutions.

3.3   Management Information Systems (MIS) deal mainly with internally-generated information and data relating to the planning, administration, day-to-day operation, management, performance and evaluation of specific institutions, organizations, programmes and projects in the sector. They are concerned with:

(a)   information needed to manage the resource (e.g. water, health)

(b)   information needed to manage the institution.

Every institution, organization, programme or project in the sector requires its own MIS designed to meet its own specific needs, though in some cases one MIS - for example, that for a specific project - may in practice be a sub-system of one or more large ones - for example, that of the institution managing the project, or that of the contractor responsible for implementing it.

3.4   Technical Information Exchange (TIE) involves the transfer between individuals and institutions of information capable of being applied - if necessary, after adaptation to local needs - in more than one situation. It thus deals with information relating to problems and solutions, methods and techniques, the results of research and field studies, sources of equipment, expertise and materials, and so on. Technical

Information Exchange may be characterized by its _aims_, which are to _transfer_ information, data, knowledge and experience from one location to another in which they may be applied according to local needs. Virtually every institution in the sector _needs_ technical information to enable it to benefit from the experiences of others, and also _generates_ technical information which would be of benefit to others.

3.5   _Public Information and Promotion (PIP)_ is in a different category from the others outlined above, in that it is directed at the general public rather than other sector professionals, and aims to develop awareness, improve motivation and change behaviour in relation to water supply and sanitation rather than provide information for use as a tool in carrying out technical or managerial activities in the sector.

3.6   These four categories of information activity in the water supply and sanitation sector are not mutually exclusive. Thus, for example, data included in a PSI system may be derived, at least in part, from the processed outputs of several MIS in the sector; and national indicators and growth forecasts generated by a PSI system may be used as inputs to a MIS for planning purposes. Similarly, data derived from MIS may, after suitable repackaging (for example, in the form of a report or periodical article), be made available to others through TIE facilities, and information distributed in this way may be further repackaged (for example, as a radio broadcast or brochure) for use in PIP.

4. WATER SUPPLY AND SANITATION INFORMATION IN UGANDA: PRESENT

4.1 Relating the above analysis of the main categories of information activity in the water supply and sanitation sector in general to the existing situation in Uganda makes it possible to outline the main features of a strategy for sectoral information provision in the country which in turn provides a basis for the formulation of specific project proposals.

4.2 In principle, responsibility for Project and Sector Information should rest with the Water Development Department, particularly in view of the decision (see para 1.6 above) to locate the proposed design and planning unit in the Department and not in the Ministry itself. The general planning unit of the Ministry, and the Ministry of Planning and Economic Development also have some responsibilities in this regard, while the Ministry of Health has a responsibility in respect of the health component of water supply and sanitation projects. None of these agencies has been formally assigned responsibility for Project and Sector Information at present.

4.3 Project and Sector Information is concerned mainly with data relating to the sector as a whole, and thus provides, for example, aggregations at the national level of data derived from specific management information systems at the sub-sectoral, institutional and project levels. A prerequisite for the development of an effective PSI system is therefore the existence of effective systems for processing, storing and retrieving data and information at these lower levels. Such systems do not exist in Uganda at present, and the essential basis for an effective PSI system is therefore lacking. When effective management information systems have been established within the sector, the creation of a PSI system can be considered. At that time, the possibility of adapting the CESI (Country External Support Information) methodology for PSI, developed by the World Health Organization (WHO), to the Ugandan situation, should be investigated.

4.4 Adequate documentary backup to a PSI system is essential if users of the aggregated data produced by the system are to be able, if they wish, to investigate specific topics in more detail. Such backup could be provided, in the case of Uganda, by the library and documentation centre which this report proposes (section 8 below) should be established in the Water Development Department.

4.5   Every institution, organization, programme and project
       in the sector needs its own <u>Management Information
       System</u>, designed to meet its own needs. Each such system
       will therefore need to be the subject of a separate
       project proposal. This document presents proposals for
       the development of MIS in the Water Development
       Department.

4.6   All agencies in the sector need to participate in
       <u>Technical Information Exchange</u> activities, which should
       be coordinated at the national level if they are to be
       effective. National responsibilities for TIE in the
       water supply and sanitation sector may be divided
       broadly as follows:

       (a)   scientific, engineering and operational aspects:
              Water Development Department

       (b)   health and community mobilization aspects:

              Health Education Division.

       This document presents a proposal for the development of
       library and documentation services in the Water
       Development Department which might also serve as a model
       for the formulation of similar proposals by other
       agencies.

4.7   <u>Public Information and Promotion</u> is now, and should
       continue to be, the responsibility mainly of the Health
       Education Division, with inputs from other agencies in
       the sector as required. Steps are already being taken to
       strengthen the Division, and further actions in this
       regard are planned under the WDD/DANIDA East Uganda
       project.

5. **INFORMATION REQUIREMENTS IN THE WATER DEVELOPMENT DEPARTMENT: GENERAL**

5.1   A study on Improvement of Storage and Flow of Information in the Water Development Department in Uganda, prepared by the Commissioner for Water Development in October 1988, emphasized the importance of information for the effective functioning of the Department, identified the main categories of information and data handled by the Department, and described the shortcomings of the existing arrangements for handling this information. There has been little change in the situation since this study was produced. In terms of the analysis of information activities in the water supply and sanitation sector outlined in section 2 above, the study dealt mainly with management information and, to a lesser extent, with technical information exchange.

5.2   Information handled by the Department and dealing with, or needed for, the management of the resource relates to:

(a)   water resources

including: hydrogeological, meteorological and hydrological data, information on the protection and development of water resources, etc.

(b)   water demand and water use

including: population data, coverage data, service applications, records of consumption, cost recovery data, health impact data, etc.

(c)   water supply

including: borehole records, well records design and construction records, operation and maintenance data, water quality data.

5.3   Information handled by the Department and dealing with management of the institution relates to:

(a)   personnel

personnel records

(b)   physical facilities

equipment records, stores records, records of upkeep of buildings, etc.

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(c) <u>finance</u>

      accounting records, financial plans, budget estimates, etc.

5.4 Some categories of information, for example, records of meetings, development plans, etc. may deal with both aspects of management information.

5.5 The <u>formats</u> in which these various types of information are presented include:

    (a)   forms of various kinds

    (b)   graphs, charts and diagrams

    (c)   maps, plans, engineering drawings

    (d)   specifications and standards

    (e)   contracts

    (f)   letters, telexes, memoranda

    (g)   minutes of meetings

    (h)   technical reports, etc.

5.6 At present, all the Department's own records of these kinds are in hard copy (paper) format. Borehole drilling records and some other records created under the WDD/DANIDA East Uganda project are computerized, and there is likely to be an increasing need, and demand, for computerization of many types of records in the near future. Some of these records could also be made available in microform (microfiche or microfilm).

5.7 A substantial proportion of the data or information relating to the management of the <u>resource</u> is not generated within the Department itself, but by externally-funded projects managed by aid agencies, consultants or contractors or by other central or local government bodies. Other externally-generated information relating to the management of the resource includes, for example, regulations relating to public health, environmental pollution and water quality.

5.8 A somewhat smaller proportion of the information needed for the management of the <u>institution</u> is also generated outside the Department. This includes government legislation and regulations relating to personnel, accounting, registry and stores procedures, use of vehicles, and so on.

5.9   <u>Technical information</u>, reporting on experiences
      elsewhere which may be relevant to the needs of the
      department, may deal with any of the topics above, but
      from a different standpoint. The most common formats in
      which such information is presented are:

      (a)   reports

      (b)   books and pamphlets

      (c)   periodical articles

      (d)   conference papers

      (e)   audio-visual materials.

      Most such information is generated externally, apart
      from technical reports on the Department's own
      activities.

6. PRESENT STATUS OF INFORMATION MANAGEMENT IN THE WATER DEVELOPMENT DEPARTMENT

6.1 Introduction

6.1.1 Responsibility for information and records management in the Department is divided between the Planning, Design and Documentation Division, which is responsible, in principle, for all technical data, records and documentation, and the Central Registry, which is mainly responsible for records produced by the various administrative sections referred to above and for general correspondence. Some records dealing with accounts, personnel, stores and training are handled separately by the appropriate sections themselves.

6.1.2 The existing mechanisms for managing the various kinds of information identified in section 5 above are outlined below.

6.1.3 The WDD is concerned mainly with data on water resources and water supply. Demand for water is difficult to measure at present owing to the lack of properly organized water supply systems in many areas, while obtaining data on water use presents the Operation and Maintenance Division with some of its worst problems, especially in the smaller urban areas. Although billing systems exist in these areas, the supply is heavily subsidized by government and in many cases neither the identities of consumers nor their total numbers are known. As far as information for the management of the resource is concerned, therefore, this section concentrates on water resources information and water supply information.

6.2. Water Resources Information

6.2.1 Hydrogeological, hydrological and meteorological records are kept in conventional manual files at the Water Resources Division in Entebbe. Many of these records were destroyed or lost during the disturbances, and the reliability of many of those which remain is extremely doubtful due to the breakdown of the systems for recording raw data in the field and transmitting it to the Division.

6.2.2 In many case, local people were appointed to read gauges and meters, to record the readings and transmit the results to the Division by post, in return for a modest remuneration. The fall in the real value of this remuneration in recent years, and long delays (sometimes up to five years) in receiving payment have led many of these people either to give up recording data altogether, or to refuse to hand it over until they have been paid. The deterioration in the postal

system which has also occurred in recent years has meant that, even if records are posted to the Division, they often never arrive, and the alternative of having the records collected by field staff of the Division is hampered by lack of transport. There is also some doubt as to the validity of the records which do reach the Division, as the readings recorded appear, in many cases, to be based not on observation but on the imagination of the reader.

6.2.3   In an attempt to avoid these problems, automatic meters and gauges have been introduced in some areas, but these are often damaged or stolen.

6.2.4   The records now held in the Water Resources Division are thus unreliable and incomplete, and many are in poor physical condition. Processing of the data they contain is confined to the sporadic calculation of five- or ten-day means, which are recorded on the backs of the daily log sheets. Engineers wishing to access the data are simply given the files and invited to perform their own calculations.

6.2.5   The Water Supply and Sanitation Sector Development Strategy and Action Plan refers to the need to rehabilitate and strengthen the hydrometeorological and hydrological network with the establishment of a computerized data processing, analysis, storage and retrieval system for surface and groundwater. The Project Proposal on the East Uganda Project, and the report on the associated Organization and Management Study of the Water Development Department, also contain occasional references to the establishment or data processing facilities for water resources data, but no detailed proposals appear to have been prepared up to now. The World Meteorological Organization has been approached by the Department for assistance in the processing of hydrometeorological data, but no response has yet been received.

6.2.6   The former headquarters of the Nile Basin Hydrometeorological Project (HYDROMET) is located on the same site as the Water Resources Department at Entebbe. The project, which was started in 1967, aims to collect and process hydrometeorological data from eight countries of the Nile Basin. Data from Uganda, derived from the national records described above, formed a major element of the system until the disturbances began in the early 1980s. During the disturbances, meteorological stations, the laboratory and the library were looted and instruments and records damaged or stolen. The computerized data processing unit, formerly housed in a purpose-designed building on the Entebbe site, was moved to Nairobi. The project has recently received some limited support, in the form of a workshop and some

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US$ 1,500 for books, from the International Hydrological Programme of Unesco.

6.2.7 Responsibility for the collection and processing of data on water quality rests with the Senior Analyst, who is based at Luzira, but due to lack of resources in the regular budget, such work can usually only be done within the framework of an externally-funded project.

6.2.8 As noted above (para 4.2) the Water Resources Division as a whole has the highest proportion (76 percent) of vacant posts in the Water Development Department, while in the Data Analysis Section only one post out of a total of 21 is currently filled. The proposals for the reorganization of the WDD put forward in the Organization and Management Study include provision for the appointment to the "Data Analysis and Filing" section of one senior data analyst, two "computer assistants" and three "punch assistants", presumably to be employed in connection with the proposed computerized data processing system referred to above (para 6.2.5).

6.3 Water Supply Information

6.3.1 Borehole drilling records are kept by the Drilling Division in a conventional manual filing system at the WDD headquarters. These records are incomplete and unreliable, partly due to loss and damage during the disturbances and partly to the lack of the necessary stationery for drillers to record initial drilling data. There is no proper control over the use of these records, and no proper system for retrieval. Filing of records is haphazard, and many records are incomplete. Many recent boreholes have not been mapped due to lack of staff and of funds to buy the maps from the Ministry of Lands and Surveys. An attempt is being made at present to reorganize these records, initially to provide data for the National Rural Water Supply Programme.

6.3.2 The terms of reference for the preparation of this programme require that it should address, inter alia, the following areas:

(a) organization and management structures and operational systems and procedures;

(b) establishment of a sector bibliography of all documents relevant for the future of the sector;

(c) establishment of a management information system.

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The scope of the proposed management information system is not defined in the terms of reference, but it is understood that the consultants have so far been concentrating on information required for the management of the resource, including both water resources data and water supply information, and have not been concerned with information for the management of the institution.

6.3.3 Borehole drilling records created under specific projects not carried out by the WDD are supposed to be produced in the same format as the Department's own records and forwarded to the Department to be incorporated in its own system. However, UNICEF, for example, is said to forward records only at six-monthly intervals, while the East Uganda Project has created its own computerized system for recording details of boreholes in the project area, using its own input format but drawing data on existing boreholes from the WDD files. This system would be capable of being expanded to accommodate all the Department's borehole drilling records, but no action has yet been taken in this regard.

6.3.4 Records of borehole operation and maintenance are kept by the Operation and Maintenance Division, as are records relating to the operation and maintenance of other water supply systems. These records are incomplete and unreliable due to problems of communication with field operators, lack of standardized systems and forms for recording data, and inadequately-trained operators. Responsibility for acting on the information supplied is divided between district, regional and headquarters offices, and there is a need for selection criteria to be developed and applied to ensure that only data relevant to the needs at each level are transmitted to that level.

6.3.5 Engineering drawings associated with the planning, design, construction, operation and maintenance of water supply and sanitation systems (including mechanical and electrical drawings) are stored in plan cabinets in a corner of the WDD headquarters building. The storage conditions, and facilities for consulting the drawings, are extremely unsatisfactory, and since the only equipment for printing copies of original drawings is an old machine located in the former headquarters at Entebbe, users often remove originals from the files for use in their offices or in the field, and sometimes fail to return them. Original drawings are often kept by the individual who prepared them and may be taken away if the person leaves the Department.

6.3.6   Other records associated with water supply, including manuals, specifications, correspondence, etc., are stored in the Central Registry (described in section 6.4. below) or in the various divisional offices. There are no proper records of these materials.

6.4   <u>Management Information: Managing the Institution</u>

6.4.1   As noted above (para 6.1.1) the Central Registry is responsible for most of the records relating to the management of the institution. There is no Records Officer in charge of the Registry and no staff with proper qualifications and training in registry work. The system for circulating files is ineffective and because there is no money to purchase new file folders, many files are extremely bulky. There is often no money for printing fresh stocks of forms and other stationery. There is a general lack of storage equipment, typewriters and other office equipment as well as accommodation. The former system for weeding of files and transferring them to the Government Archives at Entebbe is no longer functioning. Officers are unable to locate documents or even complete files which they need due to the lack of indexing and retrieval facilities, and the system generally appears to be almost completely ineffective.

6.4.2   Personnel records and other confidential records are kept in the Confidential Registry, comprising a number of conventional vertical file cabinets housed in the anteroom to the Commissioner's office. Although the room is normally always occupied during working hours, so that the records are under more or less constant supervision, there appear to be no other special arrangements for protecting and controlling these records or for preserving their confidentiality.

6.4.3   Records relating to physical facilities - accommodation, upkeep of buildings, furniture, equipment, supplies and vehicles - are kept in the Central Registry and the Stores. The Stores Section uses a card system originally developed for the Ministry of Works to record and control stocks. There is no link between this system and the purchasing records maintained by the Accounts Section. Cards are easily lost, mislaid or altered, and the Head of the Section suggests that a ledger system would be more secure.

6.4.4   Accounting and other financial records are the responsibility of the Accounts Section.

6.4.5   The proposals for the reorganization of the WDD put
         forward in the Organization and Management Study
         provide for the creation of a new Administration
         Division with sections for Accounts, Establishments,
         Offices and Buildings Maintenance, EDP (Electronic
         Data Processing) Support, Secretarial, Training and
         Stores. The Division is to be headed by a Chief
         Administrative Officer whose job description includes
         "budgets, accounting and other management information
         systems" and providing advice "to all divisions on
         introducing and operating computers". No specific
         provision is made for records management under these
         proposals.

6.5   Technical Information Exchange

6.5.1   Responsibility for the Department's library rests with
         the Planning, Design and Documentation Division. The
         library is housed in one small room at the Entebbe
         site. It is kept locked, and does not appear to be
         used at all. There is a post for a librarian on the
         establishment of the Division, but it is vacant.

6.5.2   One or two senior members of staff obtain access to
         technical information published abroad through
         personal membership of foreign professional
         organizations, but most cannot afford this. Some staff
         members are able to obtain such information from time
         to time through participation in conferences held
         abroad. Otherwise, the Department appears to function
         almost entirely without access to information about
         activities and developments in the sector in other
         parts of the world.

6.5.3   Although the existing and proposed activities of the
         Department could well be a source of valuable
         technical information for other institutions and
         individuals working in the sector in Uganda and
         elsewhere, the Department itself has no facilities for
         producing and distributing publications or technical
         reports based on these activities, nor does the
         Organization and Management Study make any proposals
         in this regard. Such publications may be produced from
         time to time by the various projects under which the
         activities take place, but the lack of any facilities
         for the Department to publish its own reports on these
         and other activities for which it is responsible is a
         serious limitation on its capacity to participate
         fully in any technical information exchange programme.

6.5.4   There are no adequate alternative sources of technical
         information elsewhere in Uganda to which users in the
         WDD can turn in the absence of an adequate library and
         documentation centre of its own. There is no library
         at the Ministry of Water and Mineral Development. The
         Ministry of Health Library at Entebbe, which is

administered by the Health Education Division, functions mainly as a meeting room and is virtually inoperative as a library.

6.5.5   The Uganda Infrastructure Project attempted to start a library of its own some time ago, but had to abandon the attempt due to losses and the general difficulty of maintaining control over the collection.

6.5.6   Most of the aid organizations, consultants and contractors involved in water supply and sanitation projects maintain small collections of books, reports and often technical information sources, but, with the possible exception of UNICEF, these are usually not properly organized or controlled and are normally readily available only to staff of the organizations concerned.

7. GENERAL FINDINGS AND CONCLUSIONS

7.1   The existing arrangements for the management of all
        kinds of data and information in the Water Development
        Department are completely ineffective. This is due in
        part to the losses and damage suffered during many
        years of civil disturbance in the country, but also
        to:

        (a)   lack of <u>awareness</u>, particularly among support
              staff, of the importance of information and data
              to the work of the Department;

        (b)   lack of a clearly defined <u>policy</u> for information
              management;

        (c)   lack of clearly defined <u>responsibility</u> for
              information management;

        (d)   lack of well-designed modern <u>systems</u> for managing
              the various kinds of information data;

        (e)   lack of an appropriate <u>organizational structure</u>
              for information management;

        (f)   lack of suitably trained and qualified
              <u>information staff</u>;

        (g)   lack of suitable <u>accommodation, equipment and
              supplies</u>;

        (h)   lack of <u>finance</u>.

7.2   A number of actions to improve this situation have
        been proposed under a variety of water supply and
        sanitation projects, and have been referred to at the
        appropriate points in the above analysis. In summary
        these are:

        (a)   The construction of a new building for the WDD
              headquarters under the institutional
              strengthening element of the World Bank
              Infrastructure Project (para 1.12);

        (b)   the strengthening of the hydrometeorological and
              hydrological network through the establishment of
              computerized data processing, analysis and
              retrieval for surface and groundwater which is
              identified as being necessary under the <u>Water
              Supply and Sanitation Sector Strategy and Action
              Plan</u> (para 6.2.5), which forms an important
              element in the project for the preparation of a
              National Rural Water Supply Programme, and which
              is also referred to in general terms in the East
              Uganda Project Proposal Report and the
              Organization and Management Study;

(c)   the creation of new posts for computer personnel
        in the Water Resources Division, proposed by the
        Organization and Management Study (para 6.2.8);

(d)   the ongoing reorganization of the existing
        borehole construction records for use in
        preparing the National Water Supply and
        Sanitation and Programme (para 6.3.1);

(e)   the development of a computerized database of
        borehole records by the WDD/DANIDA East Uganda
        Project, which could be expanded to become a
        national database (para 6.3.3);

(f)   the creation of a new Administration Division to
        be responsible, _inter alia_, for some kinds of
        management information systems and for EDP
        support, proposed under the Organization and
        Management Study (para 6.4.5).

7.3   With the exception of the ongoing reorganization of
        the existing borehole drilling records and the
        development of a computerized database of such records
        under the East Uganda Project, none of these actions
        has yet been implemented and all are at present no
        more than the subjects of generally rather tentative
        proposals, the exact status of which is far from
        clear. Apart from the proposal for the creation of an
        Administration Division, they are all concerned
        exclusively with information needed to manage the
        resource, and not with information needed to manage
        the institution, and none of them is concerned at all
        with technical information exchange. While the main
        responsibility for public information and promotion
        rests at present with the Health Education Division,
        the Water Development Department is also very
        conscious of the need to become more involved in the
        community participation and community management
        aspects of water supply and sanitation projects, and
        of the importance of providing training in
        communication skills for its engineers and other
        technical staff.

7.5   If the Water Development Department is to play its
        proper role in promoting, planning, coordinating and
        managing the development of water supplies and
        sanitation facilities in Uganda, it must, as a matter
        of urgency, take steps to organize effective systems
        for the collection, processing, storage, retrieval and
        dissemination of both management information and
        technical information. The next section of this report
        outlines a development programme designed to achieve
        this objective.

8.   **PROJECT PROPOSALS**

8.1   Introduction

8.1.1   The aim of these proposals for the development of
         information management in the Water Development
         Department is to make good the existing deficiencies
         in information provision outlined in section 7 above.
         This is to be achieved through the implementation of a
         phased programme for the development of:

         (a)   capacity for the overall management of
               information provision within the Department

         (b)   technical information exchange facilities

         (c)   management information systems

         (d)   a project and sector information system.

8.1.2   The programme comprises a number of separate but
         interrelated projects for the development of these
         activities in three successive phases. Some actions
         in respect of the projects dealing with the
         development of management information systems are
         already being undertaken, or are envisaged, either
         under existing or proposed water and sanitation
         projects or as part of the general rehabilitation of
         the public service in Uganda. The projects for the
         development of overall information management
         capacity, technical information exchange facilities
         and a project and sector information system are
         presented here for the first time.

8.1.3   The overall objectives and strategy of the programme,
         and an outline of its three phases, are presented
         below. Draft project proposals for the projects
         included in Phase 1 are provided at Appendix A.

8.2   Development objective

8.2.1   To strengthen the capacity of the Water Development
         Department to perform its central coordinating role in
         the water supply and sanitation sector in Uganda.

8.3   Immediate objective

8.3.1   To establish efficient and effective systems for the
         collection, processing, storage, analysis, retrieval
         and dissemination of technical information, management
         information and project and sector information within
         the Water Development Department.

8.4   Strategy

8.4.1   To combine any necessary further studies of some
        aspects of information management in the Water
        Development Department with practical steps to carry
        out actions already seen to be necessary, based on a
        combination of foreign technical assistance and local
        support.

8.5   Implementation

8.5.1   The programme may be implemented as a whole or as a
        series of individual projects. These are set out
        below in rough order of priority. While some
        variations in this order may be permissible, it will
        be essential to implement Project 1.A, Establishment
        of an Information Management Unit first in order to
        create a mechanism whereby the implementation of the
        remainder of the programme can be coordinated
        effectively.

8.5.2   The general aim is not postpone implementation until
        all the information needed for the design of an ideal
        system has been collected and analyzed, but to take
        immediate steps to improve the situation in basic but
        essential ways and to collect any further information
        which may be required once this has been done. For
        example, in relation to Project 1.F, Establishment of
        a Management Information System for Administration,
        immediate improvements to the existing situation could
        be brought about by strengthening the staff and
        providing better equipment and adequate supplies,
        while the further studies of document flows, forms
        design and file classification schemes which are
        needed to create a really effective system can be
        undertaken as soon as the staffing situation has
        improved and the basic problems of lack of space,
        storage equipment and stationery have been solved.

8.6   Phase 1

8.6.1   Developing information management capacity

        Project 1.A.   Establishment of an Information
                         Management Unit

        The aim of this project is to establish at WDD
        headquarters a small unit to be responsible for the
        overall planning, coordination and development of all
        kinds of information systems within the Department.
        This is a new project, a detailed project proposal for
        which is presented at Appendix A.1.

8.6.2   Technical information exchange facilities

Project 1.B.   Establishment of a Uganda Water
                Information and Documentation Centre
                (UWIDOC)

The aim of this project is to establish UWIDOC at WDD
headquarters to be responsible for providing technical
information to WDD staff and others and to form the
basis for the subsequent development, in Phases 2 and
3, of a Uganda Water Information and Documentation
System (UWIDOS) and a Uganda Water Information and
Documentation Network (UWIDON) respectively. This is
a new project, a detailed proposal for which is
presented at Appendix A.2.

Project 1.C.   Feasibility study for the
                establishment of a document production
                unit

The aim of this project is to carry out a feasibility
study for the establishment of a document production
unit at WDD headquarters under Phase 2 of the
programme. The study should be carried out by
suitably-qualified consultants and should take account
of the possibilities of using the facilities of the
document production unit at the Health Education
Division as an alternative to the creation of a new
unit for the WDD itself.

8.6.3   Management information systems

Project 1.D.   Establishment of a Management
                Information System for Water Resources
                (MISWAR)

The aim of this project is to establish MISWAR within
the Water Resources Division of the WDD, with
responsibility for collecting, processing, storing and
analyzing data on groundwater, surface water and
rainfall and disseminating the results to users. The
development of such a system is proposed in the
Organization and Management Study of the WDD, and
appropriate actions are being taken under the project
for a National Rural Water Supply Programme. Because
of this, the requirements of the proposed system are
presented only in outline in the project proposal at
Appendix A.3.

Project 1.E.   Establishment of a Management
                Information System for Water Supply
                (MISWAS)

The aim of this project is to establish MISWAS at WDD
headquarters with responsibility for collecting,
processing, storing and analyzing information on all

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types of water supply facilities in all parts of Uganda, and for disseminating the results to users. The project will be developed within the framework of the existing WDD/DANIDA East Uganda Project. For this reason, the requirements of the proposed system are presented only in outline at Appendix A.4.

Project 1.F.   Establishment of a Management Information System for Administration (MISAD)

The aim of this project is to establish MISAD at WDD headquarters with responsibility for collecting, processing, storing and disseminating the information needed to administer the Department. The project will be developed in the context of current efforts to rehabilitate administrative information systems throughout the public service in Uganda. For this reasons, the requirements of the proposed system are presented only in outline at Appendix A.5.

8.7   Phase 2

8.7.1   Technical information exchange facilities

Project 2.A.   Establishment of a Uganda Water Information and Documentation System (UWIDOS)

The aim of this project is to establish UWIDOS as an integrated service within the WDD, centred on UWIDOC and comprising also other documentation centres in WDD units down to district level.

Project 2.B.   Establishment of a document production unit

The aim of this project is to establish a document production unit at WDD headquarters in accordance with the findings and recommendations of the feasibility study carried out under Project 1.C. in Phase 1 of the programme.

8.7.2   Management information systems

Project 2.C.   Extension of MISWAR to district level

Project 2.D.   Extension of MISWAS to district level

Project 2.E.   Extension of MISAD to district level

The aims of these three projects are to extend the operations of MISWAR, MISWAS and MISAD to units of the WDD down to district level.

8.7.3 <u>Project and sector information system</u>

<u>Project 2.F.</u>   <u>Feasibility study for the</u>
<u>establishment of a Water Project and</u>
<u>Sector Information System (WAPSIS)</u>

The aim of this project is to carry out a feasibility
study for the establishment of WAPSIS at WDD
headquarters under Phase 3 of the programme.

8.8   <u>Phase 3</u>

8.8.1   <u>Technical information exchange facilities</u>

<u>Project 3.A.</u>   <u>Establishment of a Uganda Water</u>
<u>Information and Documentation Network</u>
<u>(UWIDON)</u>

The aim of this project is to establish UWIDON as a
coordinated national information network on water and
sanitation, comprising the constituent units of UWIDOS
and documentation centres in other institutions in
Uganda.

8.8.2   <u>Project and sector information system</u>

<u>Project 3.B.</u>   <u>Establishment of a Water Project and</u>
<u>Sector Information System (WAPSIS)</u>

The aim of this project is to establish WAPSIS at WDD
headquarters in accordance with the findings and
recommendations of the feasibility study carried out
under Project 2.F. in Phase 2 of the programme.

APPENDIX A

PHASE 1 PROJECTS

Appendix		Project
A.1	1.A.	Establishment of an Information Management Unit
A.2	1.B.	Establishment of a Uganda Water Information and Documentation Centre (UWIDOC)
A.3.	1.D.	Establishment of a Management Information System for Water Resources (MISWAR)
A.4.	1.E.	Establishment of a Management Information System for Water Supply (MISWAS)
A.5.	1.F.	Establishment of a Management Information System for Administration (MISAD)

PROJECT 1.A.

ESTABLISHMENT OF AN INFORMATION MANAGEMENT UNIT

1. Introduction

1.1   This project forms part of a development programme for
        information management in the Water Development
        Department which has been prepared on the basis of a
        report compiled by the IRC International Water and
        Sanitation Centre in consultation with the African
        Medical and Research Foundation (AMREF) in March,
        1990. This project is given first priority under the
        programme.

2. Development objective

2.1   To strengthen the capacity of the Water Development
        Department to plan, establish, operate and maintain
        efficient and effective systems and facilities for the
        collection, processing, storage, retrieval and
        dissemination of management information and technical
        information.

3. Immediate objective

3.1   To establish within the Water Development Department
        an Information Management Unit capable of performing
        the following functions efficiently and effectively:

        (a) planning and co-ordinating all information
             systems within the Department;

        (b) assuming direct managerial responsibility for a
             proposed Uganda Water Information and
             Documentation Centre (UWIDOC) (see Project 1.B,
             Appendix A.2);

        (c) initiating the development of a Uganda Water
             Information and Documentation System (UWIDOS)
             comprising UWIDOC and documentation centres in
             units of the WDD down to district level;

        (d) initiating the development of a Uganda Water
             Information and Documentation Network (UWIDON)
             embracing UWIDOS and documentation centres in
             other institutions in Uganda;

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(e) guiding and coordinating the establishment and
     development of management information systems for
     water resources (MISWAR), water supply (MISWAS)
     and administration (MISAD) within the Water
     Development Department;

(f) developing, operating and maintaining a Water
     Project and Sector Information System (WAPSIS);

(g) ensuring the compatibility of these various
     systems with each other and with other national,
     regional and international information systems;

(h) training of information personnel and users;

(j) initiating contacts and exchanges with other
     information systems and organizations concerned
     with information on water supply and sanitation.

4.   Strategy

4.1   To seek foreign technical assistance for the
      establishment of the Information Management Unit in
      the form of:

(a) the supply of an information management
     specialist (see note 7.1) for a minimum period of
     twelve months, to initiate and develop the Unit
     and its activities and train a local counterpart
     and other local staff;

(b) the supply of information handling equipment and
     supplies sufficient to enable the Unit to operate
     effectively for a minimum period of three years;

(c) the supply of a vehicle for use by the
     information management specialist and other staff
     of the Unit and of UWIDOC;

(d) the provision of training opportunities for the
     local staff of the unit, including, where
     appropriate, fellowships for training and study
     tours abroad.

4.2   To complement the foreign technical assistance
      required by:

(a) formally establishing the Unit as an
     administrative entity at an appropriate point in
     the organizational structure of the Department
     (e.g. reporting directly to the Commissioner or
     Deputy Commissioner);

(b) providing suitable and adequate accommodation and
     furniture for the Unit;

(c) recruiting a Director for the Unit as counterpart (see note 7.2) for the information management specialist;

(d) recruiting other local staff as required;

(e) providing an adequate recurrent budget to enable the Unit to perform its functions properly;

(f) providing general administrative and logistical support to the Unit.

5.   Outputs

5.1   The main output of the project will be the supply of technical information, management information, and project and sector information to users within the Water Development Department and elsewhere through a number of separate information systems.

6.   Inputs

6.1   Manpower

        1 x information management specialist
            (technical assistance)

        1 x Director, Information Management Unit as Programme Coordinator and counterpart to information management specialist

        1 x secretary

        1 x driver

6.2   Training

        Training is considered under Project 1.B.

6.3   Accommodation

        1 x office for information management specialist ($10m^2$)

        1 x office for Director ($10m^2$)

        1 x office for secretary ($10m^2$)

        1 x workspace for driver ($5m^2$)

        Traffic and utility space @ 40% of above ($14m^2$)

        TOTAL SPACE REQUIRED: 50m^2

6.4   Equipment

6.4.1   2 x microcomputer workstations, each comprising:

        (a) 1 x   microcomputer, 100 percent IBM-compatible,
                  with minimum 640K RAM, 40 mb hard disk, 12"
                  colour monitor and enhanced keyboard, MS-
                  DOS 3.30 operating system

                  e.g.   IBM PS/2 Model 502-61 with 12" colour
                         display model 8513 and enhanced
                         keyboard, MS-DOS 3.30.

        (b) 1 x 5¼" disk drive and adaptor

        (c) 1 x CD-ROM (Compact Disc -- Read Only Memory)
                  drive

                  e.g. NEC Model CDR 75

        (d) 1 x   Uninterrupted Power Supply (UPS) unit for
                  computer and CD-ROM drive

                  e.g.   Grizzly 500 VA

        (e) 1 x voltage stabilizer/surge protector for UPS

        (e) printer and power cables.

6.4.2   1 x laser printer

        e.g.   Hewlett Packard LaserJet III

6.4.3   1 x voltage stabilizer/surge protector for printer

6.4.3   1 x electronic typewriter

        e.g.   IBM Model 6784

6.4.4   1 x photocopier

        e.g.   Xerox Model 1038 Z/PLT

6.5   Furniture

6.5.1   The following list is intended only to provide an
        indication of the items of furniture likely to be
        required. A final list, with specifications, should
        be prepared as part of the process of planning the
        accommodation for the Unit.

        2 x executive desks with return
        1 x secretarial desk with return
        1 x printer table
        3 x office tables
        3 x occasional tables
        2 x executive swivel chairs
        6 x upright chairs
        1 x secretarial swivel chairs
        6 x casual seating units
        3 x 4-drawer vertical filing cabinets
        3 x rows of 2 units single-sided glass - fronted
            bookshelves
        3 x storage cupboards

6.6   Supplies

6.6.1   General office supplies

        -   desk trays, paper punch, file folder and guider,
            paper clips, rubber bands, drawing pins, liquid
            paper and thinner, pencils, pens sharpeners,
            typewriter ribbons and lift-off tapes, typing
            paper, etc.

6.6.2   Computer supplies

        -   floppy disks (5¼" and 3½"), disk storage, cleaning
            kits, security cables, printer ribbons, acoustic
            printer cushion, listing paper, etc.

6.6.3   Photocopying supplies

        -   toner, spares kits, paper

6.7   Vehicle

        Suzuki Samurai 4 x 4 (or similar) and spares

6.8   Finance

6.8.1   It is not possible, at this stage, to determine the
        costs of all the inputs listed above. This will
        require detailed study by the Water Development
        Department and potential donors, supported by
        quotations from local and foreign suppliers.

7.   <u>Explanatory notes</u>

1.   The person selected as information management
     specialist should have:

     (a)   postgraduate qualifications, or the
             equivalent, in information science or
             information management;

     (b)   educational or professional qualifications
             in a relevant scientific or technical
             discipline;

     (c)   substantial practical experience in
             planning, developing and directing
             information systems in developing
             countries, preferably in the water sector.

2.   The Director of the Unit and will act as
     coordinator of the entire information management
     programme, should, if possible be selected from
     among the existing professional staff of WDD.   The
     person selected should have:

     (a)   appropriate educational or professional
             qualifications in a relevant discipline;

     (b)   substantial practical experience in the
             water sector in Uganda;

     (c)   a strong interest in information management
             and a willingness to undergo training in
             this field.

PROJECT 1.B.

ESTABLISHMENT OF A UGANDA WATER INFORMATION AND DOCUMENTATION CENTRE (UWIDOC)

1.   Introduction

1.1   This project forms part of a development programme for information management in the Water Development Department which has been prepared on the basis of a report compiled by the IRC International Water and Sanitation Centre in consultation with the African Medical and Research Foundation (AMREF) in March, 1990.

2.   Development objective

2.1   To strengthen the capacity of the Water Development Department to apply the experience and knowledge of other water supply and sanitation institutions in other countries in the planning, establishment, operation and maintenance of effective and efficient water supply and sanitation facilities in Uganda.

3.   Immediate objective

3.1   To establish within the Water Development Department, under the direct responsibility of the proposed Information Management Unit (see Project 1.A), a Uganda Water Information and Documentation Centre (UWIDOC) capable of performing the following functions efficiently and effectively:

(a)   identifying, locating, selecting, procuring, recording and preparing for use both national and foreign documents of various kinds;

(b)   providing access to these documents, both:

(i)   indirectly, by means of list of new acquisitions, catalogues, indexes, etc; and

(ii)   directly, through various arrangements for access to the centre (opening hours, etc.) and its collections;

(c) providing the following types of services to users, among others:

    (i) answering enquiries, referring enquirers to other sources of information;

    (ii) literature searching services;

    (iii) current awareness services;

    (iv) document delivery services;

(d) creating and maintaining:

    (i) a computerized bibliographic database of national documents, both retrospective and current;

    (ii) a computerized record of its own document collections;

    (iii) a computerized union list of periodical holdings on water supply and sanitation in libraries and documentation centres in Uganda;

    (iv) a computerized union catalogue of national documents on water supply and sanitation held in various libraries and documentation centres in Uganda;

(e) preparing input to other national, regional and international information systems;

(f) developing and controlling a Uganda Water Information and Documentation System (UWIDOS) comprising UWIDOC and other libraries and documentation centres within the Water Development Department and its regional and district offices;

(g) developing and coordinating a Uganda Water Information and Documentation Network (UWIDON) comprising UWIDOS and documentation centres other institutions in Uganda.

4. <u>Strategy</u>

4.1 To seek foreign technical assistance for the establishment of UWIDOC in the form of:

(a) the supply of information materials, including books, periodicals, reports, maps, audio-visual materials, etc., published outside Uganda, for a minimum period of three years;

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(b) the supply of furniture, information processing and storage equipment and supplies sufficient to enable UWIDOC to operate effectively for a minimum period of three years

(c) support for the provision of a national consultant (see note 7.1) to advise on and monitor the planning, establishment and operation of UWIDOC and the eventual development of UWIDOS and UWIDON

(d) the provision of training opportunities for the local staff of the unit, including, where appropriate, fellowships for training and study tours abroad.

4.2 To complement the foreign technical assistance received by:

(a) formally establishing UWIDOC as a unit of the Department under the direct responsibility of the Information Management Unit;

(b) providing suitable and adequate accommodation for UWIDOC;

(c) recruiting a professionally-qualified librarian (see note 7.2) as head of UWIDOC;

(d) recruiting other local staff with appropriate qualifications as required;

(e) providing an adequate recurrent budget to enable UWIDOC to perform its functions properly, including regular provision for the purchase of locally-published information materials and an adequate foreign exchange component for the purchase of materials published abroad;

(f) providing general administrative and logistical support to UWIDOC;

(g) transferring the existing collections of the WDD Library at Entebbe to UWIDOC;

(h) providing support, at an appropriate time, for the development of UWIDOS and UWIDON.

5. Outputs

5.1 The main outputs of the project will be the provision of technical information, original documents or copies of documents containing technical information, or bibliographical details of documents containing technical information, originating from anywhere in

the world, to users in the water and sanitation sector anywhere in Uganda or in other countries.

6.   Inputs

6.1   Manpower

1 x national consultant (9mm/mm in 3 years elapsed time) (technical assistance)

1 x librarian/head of UWIDOC

1 x library assistant (technical services)

1 x library assistant (user services)

1 x library assistant (national collection)

3 x library attendants

1 x typist

1 x messenger

6.2   Training

At this stage, it is possible only to indicate in general terms the kinds of training required. They will include:

(a)   general orientation to information work;

(b)   basic technical training in library and documentation methods;

(c)   specific orientation to water-related information;

(d)   general training in the use of computers in information work;

(e)   specific training in the use of the Mini-micro CDS/ISIS software and of databases on CD-ROM (Compact Disc--Read Only Memory);

(f)   formal training for professional qualifications in information science;

(g)   management training;

(h)   development training (in interpersonal relationships, etc.).

6.3   Accommodation

    (a)   Accommodation for staff

        1 x office for national consultant ($10m^2$)

        1 x office for librarian ($10m^2$)

        3 x workspaces for library assistants
           ($3 \times 10m^2$) = ($30m^2$)

        3 x workspaces for library attendants
           ($3 \times 10m^2$) = ($30m^2$)

        1 x workspace for typist ($10m^2$)

        1 x workspace for messenger ($5m^2$)

        TOTAL for staff: <u>$95m^2$</u>

    (b)   Accommodation for readers

        10 x reading spaces @ $2.3m^2$ = <u>$23m^2$</u>

    (c)   Accommodation for collections

        Space for 10,000 documents @ 200 per m^2 = <u>$50m^2$</u>

    (d)   Traffic and utility space

        Allow 40% of total (a)-(c) ($168m^2$) = <u>$67m^2$</u>

    (e)   TOTAL ACCOMMODATION REQUIRED

        Total of (a)-(d)   = $235m^2$

        + 10% for expansion = $24m_2$

        TOTAL   =   <u>$260m^2$</u>

6.4   Equipment

6.4.1   1 x microcomputer workstation, comprising:

           (a) 1 x   microcomputer, 100 percent IBM-compatible,
                     with minimum 640K RAM, 40 mb hard disk, 12"
                     colour monitor and enhanced keyboard, MS-
                     DOS 3.30 operating system

                     e.g.   IBM PS/2 Model 502-61 with 12" colour
                             display model 8513 and enhanced
                             keyboard, MS-DOS 3.30.

           (b) 1 x 5¼" disk drive and adaptor

           (c) 1 x CD-ROM (Compact Disc -- Read Only Memory)
                    drive

                    e.g. NEC Model CDR 75

           (d) 1 x Uninterrupted Power Supply (UPS) unit for
                    computer and CD-ROM drive

                    e.g.   Grizzly 500 VA

           (e) 1 x voltage stabilizer/surge protector for UPS

           (e) printer and power cables.

6.4.2   1 x laser printer

               e.g.   Hewlett Packard LaserJet III

6.4.3   1 x voltage stabilizer/surge protector for printer

6.4.3   1 x electronic typewriter

               e.g.   IBM Model 6784

6.4.4   1 x photocopier

               e.g.   Xerox Model 1040

6.4.5   1 x microfiche reader

6.5   **Furniture**

6.5.1   The following list is intended only to provide an
        indication of the items of furniture likely to be
        required. A final list, with specifications, should
        be prepared as part of the process of planning the
        accommodation for the documentation centre.

      2 x executive desks with return
      4 x secretarial desks with return
      1 x printer table
      8 x office tables
      3 x occasional tables
      2 x executive swivel chairs
   23 x upright chairs
      7 x secretarial swivel chairs
   10 x casual seating units
      8 x 4-drawer vertical filing cabinets
      6 x rows of 2 units single-sided glass-fronted
         bookshelves
      6 x storage cupboards
      2 x 4-seater reading tables
      2 x single-seater study carrels
   10 x rows of 3 units double-fronted bookshelves, 6
         shelves per unit
      1 x row of 3 units single-sided periodical display
         shelving
      1 x atlas table
      1 x magazine rack
      1 x control desk

6.6   **Supplies**

6.6.1   **General office supplies**

      - desk trays, paper punch, file folder and guider
        paper clips, rubber bands, drawing pins, liquid
        paper and thinner, pencils, pens sharpeners,
        typewriter ribbons and lift-off tapes, typing
        paper, etc.

6.6.2   **Computer supplies**

      - floppy disks (5¼" and 3½"), disk storage,
        cleaning kits, security cables, printer ribbons,
        acoustic printer cushion, listing paper, etc.

6.6.3   **Photocopying supplies**

      - toner, spares kits, paper

6.6.4   Library supplies

  - pamphlet boxes, periodical binders, book
    supports, label holders, book labels, book order
    forms, index cards, book cards, date stamps, date
    slips, book pockets, spine marker, book repair
    materials, etc.

6.7   Finance

It is not possible, at this stage, to determine the
costs of all the inputs listed above. This will
require detailed study by the Water Development
Department and potential donors, supported by
quotations from local and foreign suppliers.

7.   Explanatory notes.

1.   The main task of the national consultant will be
      to assist the head of UWIDOC in collecting data on
      existing document collections in the water sector.
      The person appointed should be a professionally-
      qualified librarian or information scientist with
      substantial practical experience in, and knowledge
      of, the information sector in Uganda. First-hand
      experience in the water sector would also be an
      advantage.

2.   The person appointed as head of UWIDOC should have
      postgraduate qualifications, or the equivalent, in
      librarianship or information science and
      substantial practical experience in managing a
      specialized documentation and information unit.

PROJECT 1.D.

ESTABLISHMENT OF A MANAGEMENT INFORMATION SYSTEM FOR WATER RESOURCES (MISWAR)

1.   Introduction

1.1   This project forms part of a development programme for information management in the Water Development Department which has been prepared on the basis of a report compiled by the IRC International Water and Sanitation Centre in consultation with the African Medical and Research Foundation (AMREF) in March, 1990.

1.2   The establishment of a management information system for water resources is included in the project for the development of a National Rural Water Supply Programme currently being prepared by I. Krüger A.S. The requirements of such a system are therefore presented here only in outline.

2.   Development objective

2.1   To strengthen the capacity of the Water Development Department to manage national water resources effectively and efficiently.

3.   Immediate objective

3.1   To establish within the Water Resources Division of the Water Development Department a Management Information System for Water Resources (MISWAR) capable of performing the following functions:

        (a)   collecting reliable, accurate and up-to-date data on groundwater, surface water and rainfall from all parts of Uganda;

        (b)   processing, storing and analyzing these data on a regular basis;

        (c)   disseminating the results of these analyses on a regular basis or retrieving them, or the original data, in response to specific demands.

4.   Strategy

4.1   To seek foreign technical assistance for the establishment of MISWAR in the form of:

        (a)   the supply of a water resources data specialist on a consultancy basis to plan and initiate the

establishment of the system and monitor its progress over an elapsed time of three years;

(b) the supply of data processing equipment and supplies sufficient to enable the system to operate effectively for a minimum period of three years;

(c) the provision of training opportunities for the local staff of the system, including, where appropriate, fellowships for training and study tours abroad.

4.2 To complement the foreign technical assistance received by:

(a) formally establishing MISWAR as a unit within the Water Resources Division;

(b) providing suitable and adequate accommodation and furniture for the system;

(c) appointing a suitably-qualified person as head of MISWAR;

(d) recruiting other local staff as required;

(e) re-establishing an effective system for the collection of water resources data in the field;

(f) providing an adequate recurrent budget to enable the system to operate effectively;

(g) providing general administrative and logistical support to the system.

5. Outputs

5.1 The main output of the project will be a regular supply of accurate reliable and up-to-date data on the water resources of Uganda.

5.2 The project output will provide input to the HYDROMET Hydrometeorological Survey of the Nile Basin.

6. Inputs

6.1 The required inputs will be determined under the project for a National Rural Water Supply Programme Project.

PROJECT 1.E.

ESTABLISHMENT OF A MANAGEMENT INFORMATION SYSTEM FOR WATER SUPPLY (MISWAS)

1.   Introduction

1.1   This project forms part of a development programme for information management in the Water Development Department which has been prepared on the basis of a report compiled by the IRC International Water and Sanitation Centre in consultation with the African Medical and Research Foundation (AMREF) in March, 1990.

1.2   A computerized management information system for borehole drilling records has already been established under the WDD/DANIDA East Uganda Project. It is proposed that the system be expanded in two ways:

        (a)   to include borehole drilling records for the whole of Uganda;

        (b)   to include data on borehole operation and maintenance and the operation and maintenance of other types of water supplies (springs, shallow wells, etc.) throughout Uganda.

2.   Development objective

2.1   To strengthen the capacity of the Water Development Department to develop, operate and maintain water supplies of all types in all parts of Uganda.

3.   Immediate objective

3.1   To develop the computerized data base of borehole drilling records which has been initiated under the WDD/DANIDA East Uganda Project to include records of the construction, operation and maintenance of all types of water supplies throughout Uganda, thus creating, within the Water Development Department, a Management Information System for Water Supply (MISWAS) capable of performing the following functions:

        (a)   collecting reliable, accurate and up-to-date information on the construction, operation and maintenance of all types of water supplies in all parts of Uganda;

        (b)   processing, storing and analyzing this information on a regular basis;

(c) disseminating the results of these analyses on a regular basis or retrieving them, or the original information, on demand.

4.   Strategy

4.1   To develop MISWAR within the framework of the existing WDD/DANIDA East Uganda Project, using resources already allocated, or to be allocated at a later stage, to this project.

5.   Outputs

5.1   The main output of the project will be a regular supply of accurate, reliable and up-to-date information on the construction operation and maintenance of all types of water supplies in all parts of Uganda.

6.   Inputs

6.1   The required inputs will be determined and provided by the WDD/DANIDA East Uganda Project.

PROJECT. 1.F.

ESTABLISHMENT OF A MANAGEMENT INFORMATION SYSTEM FOR ADMINISTRATION (MISAD)

1.   Introduction

1.1   This project forms part of a development programme for information management in the Water Development Department which has been prepared on the basis of a report compiled by the IRC International Water and Sanitation Centre in consultation with the African Medical and Research Foundation (AMREF) in March, 1990.

2.   Development objective

2.1   To strengthen the capacity of the Water Development Department, to administer its routine operations effectively and efficiently.

3.   Immediate objective

3.1   To establish within the Water Development Department a Management Information System for Administration (MISAD) capable of collecting, processing, storing and disseminating the records needed for the internal administration of the Department.

4.   Strategy

4.1   To seek foreign technical assistance for the establishment of MISAD in the form of:

(a)   the supply of an administrative information and records management specialist on a consultancy basis to plan and initiate the establishment of the system and monitor its progress over an elapsed time of three years;

(b)   the supply of equipment and supplies for processing and storing administrative records sufficient to enable the system to operate effectively for a minimum period of three years;

(c)   the provision of training opportunities for the staff of the system, including, where appropriate, fellowships for training and study tours abroad.

4.2   To complement the foreign technical assistance received by:

     (a)   appointing a suitably-qualified person to the vacant post of Records Officer, to act as head of MISAD;

     (b)   recruiting other local staff as required;

     (c)   providing suitable and adequate accommodation and furniture for the system;

     (d)   providing an adequate recurrent budget to enable the system to operate effectively;

     (e)   providing general administrative and logistical support to the system.

5.   Outputs

5.1   The main output of the project will be the regular supply of accurate, reliable and up-to-date information on the internal administration of the Water Development Department.

6.   Inputs

6.1   The required inputs should be determined in consultation with the Public Services Commission in accordance with the overall programme for the development of records management systems in the public service in Uganda.