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**IRRIGATION MANAGEMENT SYSTEMS PROJECT
REVIEW AND PLANNING WORKSHOP**

**APRIL 1-4, 1993
PORT SAID, EGYPT**

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ISPAN

IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST
Sponsored by the U.S. Agency for International Development



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**APRIL 1-4, 1993
PORT SAID, EGYPT**

**By
Kathy Alison and Taya Levine**

ISPAN

**Irrigation Support Project for Asia and the Near East
Contract No. ANE-0289-C-00-7044-00, Project No. 398-0289
serving the Asia Bureau and the Near East Bureau
U.S. Agency for International Development
Washington, D.C. 20523**

SUMMARY

The Irrigation Management Systems (IMS) Project is at a critical transition point. In anticipation of the scheduled completion date of 1995, the ten component activities must increase their level of coordination and cooperation in order to ensure that the units can be successfully assimilated into the Ministry of Public Works and Water Resources (MPWWR) and become productive, sustained parts of the Ministry.

Underlying these broad issues of cooperation, coordination, and sustainability are a series of unresolved issues that must be dealt with to ensure that expected project outcomes are achieved. The availability of adequate local operating budgets; the provision of sufficient staffing, salaries, incentives, and training for staff; and the decisions on cost recovery (cost sharing) are all pending issues that must be addressed to achieve the overall project purpose of strengthening the Ministry's capabilities for planning and design, and operation and maintenance of the Nile River system.

These issues were the topics of discussion and deliberation at the IMS Workshop held at Port Said, Egypt, April 1-4, 1993. The workshop brought together all key personnel affiliated with the IMS: project directors, team leaders, USAID project officers, MPWWR senior management, and USAID senior management.

Facilitators Kathy Alison and Taya Levine, from the Irrigation Support Project for Asia and the Near East (ISPAN), designed and conducted the workshop. Prior to the workshop, the facilitators interviewed 29 of the 32 participants to identify the key issues to be discussed at the workshop. The agenda for the workshop revolved around the following areas:

■ Current Project Status and Future Agenda

While the project should ideally function as a set of interlocking and complementary endeavors, its components have, to the contrary, proceeded in pursuit of their objectives in a largely independent fashion. To ensure that everyone had a common base of knowledge about the status and progress of the various components, each project director made a presentation on his or her component activities, reviewing the expected project outcomes, progress to date, and the work that lies ahead to achieve project objectives.

■ Implementation and Sustainability

Issues facing the components include introduction of new technologies to directorates, strengthening of senior and mid-level management of project functions, availability of GOE-funded local operating budgets to support adequate numbers of trained staff, additional training needs, travel and per diem costs, equipment operations and maintenance costs, and petrol and benzene costs.

- **Cooperation and Coordination**

A major objective of the IMS is the institutional strengthening of the Ministry's capability to plan and design, and operate and maintain the system. To accomplish these goals and objectives, the project components need to develop strategies for increased cooperation and coordination of their activities and resources.

- **Expectations**

The components have been in operation for some time, yet the people in the various roles associated with the projects (e.g., project directors, and team leaders) have changed at various points. Given the anticipated increase in cooperation and coordination that will be needed to effectively complete the IMS, it was also evident that some discussion was necessary about overall work practices needed to support these endeavors.

- **Commitment to Follow Through**

Some concern has been raised over the marginal level of follow through from past workshops. The numerous agreements and plans that typically emerge from workshops require a great deal of monitoring and commitment to implement. Ensuring a greater probability of follow through was a critical issue for this workshop.

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- A. List of Participants**
- B. Implementation and Sustainability of IMS**
- C. Cooperation and Coordination**
- D. Prioritized Action Plans**
- E. Workshop Evaluation Results**

ACRONYMS

AID/W	U.S. Agency for International Development in Washington D.C.
AUC	American University/Cairo
CM	Channel Maintenance
CSU	Colorado State University
COAM	Central Organization for Administration Management
DSU	Decision Support Unit
ESA	Egyptian Survey Authority
EMAS	Egyptian Modified Agricultural System
GIS	Geographical Information System
GOE	Government of Egypt
GPS	Global Positioning System
HCC	High Coordinating Committee
IAS	Irrigation Advisory Service
ICAM	Irrigation Command Area Model
IFB	Invitation for Bidders
IIP	Irrigation Improvement Project
ILD	Irrigation and Land Development Office, USAID
IMS	Irrigation Management Systems (Project)
ISPAN	Irrigation Support Project for Asia & the Near East
MFS	Monitoring, Forecasting and Simulation
MIC	Ministry of International Cooperation
MIS	Management Information System
MKE	Morrison-Knudsen Engineers, Inc.
MPWWR	Ministry of Public Works and Water Resources
MSM	Main Systems Management
NARP	National Agricultural Research Project
NITI	National Irrigation Training Institute
O&M	Operation and Maintenance
PACD	Project Activity Completion Date
PBDAC	Principal Bank for Development and Agricultural Credit
PD	Project Directors
PDP	Professional Development Project
PDM	Planning Distribution Model
PM	Preventive Maintenance
PO	Project Officer (USAID)
PPD	Project Preparation Department
PSM	Planning Studies and Models
RFTP	Request for Technical Proposals
SM	Survey and Mapping Authority
SOW	Scope of Work
SR	Structural Replacement
SRI	Survey Research Institute
TA	Technical Assistance
TDY	Temporary Duty
TL	Team Leader
TOT	Training of Trainers
TP	Technical Proposals
USAID	U.S. Agency for International Development
WRC	Water Research Center
WUA	Water User Association

CHAPTER 1

INTRODUCTION

1.1 Background

The Irrigation and Land Development (ILD) Office of the USAID Mission in Cairo requested the Irrigation Support Project for Asia and the Near East (ISPAN) to conduct a workshop for the Irrigation Management Systems (IMS) project, a US \$340 million umbrella project with nine major components plus a miscellaneous fund for monitoring such things as workshops. The IMS workshop was intended to determine the current status of the components of the IMS and to explore steps needed for continued implementation and sustainability as the project moves toward closure in 1995.

The workshop was also designed to provide all key component personnel with the opportunity to learn about the progress of activities within each of the components and begin to identify the areas of potential coordination and cooperation to facilitate the ultimate integration of the components within the Ministry of Public Works and Water Resources (MPWWR). The final outcome of the workshop was an Action Plan based on a set of strategies and agreements reached during the workshop sessions.

Thirty-three individuals attended the IMS Workshop held in Port Said, Egypt, on April 1-4, 1993. See Appendix A for a list of participants. Opening remarks were given by Eng. Gamil Mahmoud, Chairman of the IMS High Coordinating Committee, and Doug Clark, Associate Director for Agriculture in USAID/Cairo. Both Eng. Gamil and Mr. Clark expressed their desire for increased cooperation and coordination among the IMS components and for a "team" approach to face challenges during the continued implementation and sustainability efforts of IMS activities.

Kathy Alison, ISPAN Human Resource Development Program Manager, and Taya Levine, ISPAN consultant, facilitated the workshop.

Previous workshops with the individual IMS components as well as the project directors of all components have identified the need and strategies for increased cooperation and coordination of the IMS components. While some components have moved forward on a limited scale to implement these strategies, much more needs to be done to eliminate duplication of effort, to maximize the use of available (and in some instances, under-utilized) resources, and finally, to facilitate the smooth and successful transition from component projects and activities to fully integrated, viable, and well-managed MPWWR functions.

1.2 Terms of Reference

ISPAN was requested to provide two senior facilitators with skills in workshop design, implementation, and consultation. They were to:

- Review literature and interview MPWWR, ILD, and contractor staff to define constraints to achieving the objectives of the nine components. The facilitators would consider Government of Egypt (GOE) contributions; staffing and staff training; operations and maintenance; integration and coordination of IMS components; sharing data within IMS components and within the Ministry; cost recovery; accountability; and other issues identified during the interviews.
- Analyze the interview results and develop a series of issue statements that could be discussed at the workshop to agree on what USAID and the Ministry expect to achieve when the IMS project is completed. These statements would include the current status of the IMS project. The facilitators were to discuss these issue statements with representatives of MPWWR and ILD staff prior to the start of the workshop.
- Design the IMS workshop, including overall objectives, design, and agenda, and develop handouts and flipcharts.
- Conduct the IMS workshop with the goal of getting agreement and developing a plan of action.
- Draft an Action Plan that would address problems and constraints with an emphasis on issues of coordination of activities and data sharing among components.

1.3 Interviews

The facilitators conducted 29 interviews to identify the key issues for development of the workshop agenda. The interviewees included 13 staff members of the MPWWR, 8 technical assistance team advisors, and 8 USAID personnel. The interviewees were asked what they saw as the key issues regarding continued implementation and sustainability of the component with which they were affiliated and what opportunities they saw for enhanced cooperation and coordination among components. In addition, ISPAN facilitators probed the interviewees for obstacles they could foresee in regard to these key issues. Finally, the interviewers asked what, for each interviewee, was the most important item the workshop participants wished to resolve at the workshop.

The interviews generated clear and consistent themes that were used to construct the workshop agenda and discussion questions. The ISPAN consultants analyzed the data and developed issue statements to provide a catalyst for discussion and deliberation of the key issues.

1.4 Interview Findings and Major Issues Identified

Generally, those interviewed agreed that the workshop would be useful at this time in the life of the IMS project. The various component staff have had little opportunity to convene as a full group and explore issues of mutual concern and hence, clearly identify shared, if not duplicate, effort and commitment of resources. At the same time, a healthy level of skepticism existed about prospects for implementing workshop outcomes. Past experience has shown that it is difficult to sustain the level of commitment and attention necessary to follow through on the agreements generated out of IMS workshops, given already overwhelming project demands.

Two key issues emerged from the interviews conducted with project directors, contract technical advisors, USAID project officers and managers, and MPWWR senior officials. Interviewees were universally concerned with issues of continued implementation and sustainability of their components as well as the coordination and cooperation between and among components.

1.4.1 Implementation and Sustainability

The IMS project has 2 1/2 years left before USAID support completely ends. Between now and 1995, the various components are to be integrated into the Ministry and increasingly supported by the GOE/Ministry budget. By 1995, the results of the project should improve the Ministry's operating efficiency of the water distribution system for agricultural irrigation and other uses at the directorate level.

Component and Ministry level planning must begin now for the overall integration, management, and support of the various components within Ministry directorates, departments, sectors, and authorities.

Issues facing the components as they move from being USAID projects to fully integrated Ministry functions and services include introduction of new technologies to directorates; strengthening of senior and mid-level management of project functions; and GOE-funded local operating budgets to support such needs as adequate numbers of trained staff, additional training needs, travel and per diem costs, equipment operations and maintenance costs, petrol and benzene costs. Specific issues include the following:

- Management and organization of components and integration into the Ministry
- Ensuring the most efficient utilization of project outputs by the end users
- Budget
- Staffing
- Procurement and accountability for commodities

1.4.2 Cooperation and Coordination

One of the major goals of the IMS is the improved operating efficiency of the water distribution system for agricultural irrigation and other uses. A major objective of the IMS is the institutional strengthening of the Ministry's capability to plan and design, and operate and maintain the system. To accomplish these goals and objectives, the project components need to develop strategies for increased cooperation and coordination of their activities and resources.

During the interviews, most project directors recognized the need for and benefits of increased coordination and cooperation between and among components. However, specific strategies are not yet in place for achieving this increased cooperation and coordination.

Unresolved issues include the following:

- Which components should be working more closely together? What specific areas (e.g., equipment and maintenance sharing, research results, and training development and delivery) should they be collaborating on?
- What specific steps are needed by project directors, MPWWR senior staff and coordinating committee members, USAID staff, and team leaders to ensure that these suggestions are implemented?

These two issues (implementation and sustainability, and cooperation and coordination) were used in the design to focus the discussions during the workshop.

CHAPTER 2

THE IMS WORKSHOP DESIGN

2.1 Overview of the Workshop

The workshop was designed to provide an opportunity for senior Ministry officials, IMS Project Components, and USAID staff to review the status of IMS Project activities and discuss the challenges facing the IMS during the time remaining before the project's end and absorption into MPWWR.

The workshop design provided opportunities for presentations on the status of various components by each project director. Various group configurations, including component teams as well as functional groups allowed all project directors, technical advisors, USAID project officers, and MPWWR and USAID managers to discuss issues from their perspectives.

While the IMS project should ideally function as a set of interlocking and complementary endeavors, the components have, to the contrary, each proceeded in pursuit of its specific objectives in a largely independent fashion. The workshop created an opportunity to focus not only on component issues, but also on a holistic look at the overall goal and operation of the IMS project.

There was a healthy level of skepticism about prospects for follow through on workshop agreements. Past workshops have generated a number of agreements and plans that have been marginally implemented. The facilitators designed the workshop process to ensure an increased commitment to and capability for follow through on the part of all parties concerned. The desire for agreement on concrete actions that could be adopted after the workshop resulted in a mid-course change in the workshop agenda. One objective and activity had been designed to provide an opportunity to look at the "future—beyond IMS." The facilitators decided that such a discussion might further fractionalize the group rather than move it toward a shared, mutually supported agenda. Consequently, the final working session on Sunday morning was modified to provide time for more detailed component Action Plan development, in lieu of the futuring exercise.

The agenda for the workshop was quite ambitious given the time available. All participants were exceedingly focused and demonstrated a willingness and commitment to openly discuss and work on the complex issues facing the IMS. Cooperation prevailed as participants were asked to work in various sub-groupings to develop strategies and make commitments about the issues on the agenda.

The IMS Monitoring Office provided an excellent staff of support personnel, which made it possible to distribute transcribed copies of all products generated from group work, as well as copies of the presentations made by project directors, to all participants before the end of the workshop.

The ISPAN consultants facilitated the workshop process, guiding the full-group discussions, encouraging participation of all group members, monitoring and providing assistance to small group work and discussions, pressing for clarity and understanding of all content generated by participants, and generally keeping things on schedule.

2.2 Workshop Objectives

The workshop objectives were presented as follows:

- Review progress and status of IMS components.
- Explore issues facing each component related to continued implementation and sustainability.
- Develop strategies for increased cooperation and coordination between and among IMS components.
- Identify the expectations project directors, team leaders, USAID, and the Ministry have of each other.
- Create a vision for the future of the Ministry beyond IMS.
- Agree on a set of prioritized actions to enhance the integration of project activities into the Ministry.

2.3 Workshop Guidelines for Working Together

To create a workshop climate for participation, full exploration of issues, and mutual problem solving, the group agreed to follow these general guidelines for working together.

- Start on time.
- Listen for understanding.
- Make sure only one person speaks at a time.
- Don't dominate discussions.
- Encourage the participation of others.
- Speak loudly and clearly.

- Don't smoke in the workshop room.
- Ask for an interpretation or additional clarity if language creates a problem for understanding.
- Wear casual, comfortable clothes.

2.4 Workshop Schedule

The 2 1/2-day workshop began with an opening session at 6:00 p.m. on Thursday, April 1, 1993, and adjourned at 11:00 a.m. on Sunday, April 4, 1993.

THURSDAY, April 1

6:00 p.m. Opening

6:15 Introductions/Getting Acquainted

7:00 Objectives
 Agenda
 Guidelines for Working Together
 Presentation Reminder

7:30 Welcoming Remarks
 Eng. Gamil Mahmoud, IMS Chair
 Mr. Douglas Clark, Associate Director for Agriculture, USAID

8:00 Reception/Dinner

FRIDAY, April 2

8:00 a.m. Overview of the Day

8:15 Project Directors' Presentations

8:20 Irrigation Improvement Project: Eng. Hassan Shouman
 8:40 Project Preparation Department: Eng. Zeinab El Gharably
 9:00 Main Systems Management: Eng. Soliman Abou Zied
 9:20 Planning Studies and Models: Dr. Bayoumi Attia
 9:40 Preventive Maintenance: Eng. Adel Abdel Khalek

10:00 BREAK

10:20 Water Research Center: Dr. Mahmoud Abu-Zied

10:40 Professional Development: Eng. Abdel Atty Allam

11:00 Survey and Mapping: Dr. Mona El Kady

11:15 Overview of IMS Project Goal, Sub-goal, and Purpose:
Mr. Clem Weber, Office Director, ILD

11:30 LUNCH

2:00 p.m. Implementation and Sustainability Issues
Introduction of Interview Themes and Discussion Task

2:15 Project Team Discussion on Implementation and Sustainability Issues

3:30 BREAK

3:45 Gallery Walk
Discussion/Questions

5:15 CLOSE

SATURDAY, April 3

8:30 a.m. Overview of the Day

8:45 Cooperation and Coordination Issues
Introduction of Interview Themes and Discussion Task

9:00 Functional Group Discussion about Increasing Coordination and Cooperation between
Components

10:00 BREAK

10:15 Group Report Outs
Discussion and Agreements

12:00 LUNCH

1:30 p.m. Expectations for Working Together
Individual Task
Functional Group Discussion

- 3:15 **BREAK**
- 3:30 Review Expectations
- 4:15 Report Outs and Agreements
- 5:00 **CLOSE**

SUNDAY, April 4

- 8:00 a.m. Overview of the Day
- 8:15 Prioritized Action Plan Development
- 9:30 **BREAK**
- 9:45 Review of Component/Management Plans
- 10:30 Final Remarks by Eng. Gamil and Mr. Clark
- 10:45 Workshop Evaluation/Closure
- 11:00 **CLOSE**

2.5 Session Descriptions

In this section, each session is briefly described. The results of the issues discussions and Action Plan development will be explained in the next chapter.

Thursday Evening: Opening Session of the Workshop

The workshop began with introduction of the facilitators, followed by an activity to allow participants to get to know each other a little better. The participants were seated to ensure as much of a mix as possible among component, Ministry, and USAID staff.

The task given to every table group was for each person to introduce himself or herself stating name, component or office affiliation, and position. In addition, participants were asked to share a piece of information about themselves that no one at the table knew or could tell about them simply by looking at them. This activity generated a lot of energy and some humor upon learning the “unknown” thing about each table member! A quick sample was taken of interesting and unusual information disclosed by participants, followed by individual introductions.

The facilitators reviewed the workshop objectives, agenda, and guidelines for working together. In addition, project directors were reminded of the parameters for their presentations the next morning. They were given the following information to guide the preparation (and in some instances the revision) of their presentations:

Your 15-minute presentation should include and be limited to approximately 5 minutes on each of the following items:

- *Expected project outcomes*
- *What has been accomplished so far*
- *What still needs to be done*

The facilitators will monitor the time and ask you to stop at the end of 15 minutes.

If you do not have a handout of your presentation, please provide the facilitators with a summary by the end of Friday for inclusion in the workshop report.

Eng. Gamii and Mr. Clark made brief opening remarks, each noting that now is a time of transition for IMS from being USAID projects to MPWWR functions. Both also highlighted the importance of increased cooperation and coordination between and among components, which Eng. Gamil refers to as a "marriage."

Following these remarks, everyone joined in a reception and dinner.

Friday Morning: Presentations by Project Directors

To ensure that everyone had a common understanding of the status and progress of the IMS components, the first morning was spent on presentations from each component.

Project directors were given 15 minutes to present their component activities, following the guidelines, which included reviewing the expected project outcomes, progress to date, and the work that lies ahead to achieve project objectives. A summary of each project director's presentation is provided in a separate document called, "Component Status Reports Presented at the IMS Workshop," which is available on request.

While project directors were making their presentations, the other participants were given the following task:

While listening to the project directors' presentations, please make note of:

- *Areas of duplication with the activities of your project*
- *Ways in which your component's activities could provide continued or additional support to the project being presented*
- *Ways in which your component's activities could benefit from the work of the project component being presented*

You will use your notes in the Cooperation and Coordination session tomorrow.

Friday Afternoon: Implementation and Sustainability

The facilitators presented an issue statement that reflected the themes of their interviews with individuals prior to the workshop. This statement formed the basis for discussions held in the following groupings:

Project Component Groups

- Project Director
- Team Leader (CTA)
- USAID Project Officer

Senior Management Group

- MPWWR Management
- USAID Management

The groups were tasked as follows:

PROJECT COMPONENT GROUP TASK

In your project component group (MPWWR project director, team leader, and USAID project officer), discuss the following questions in the context of continued implementation of your activity through 1995 and the sustainability of your activity's functions after 1995.

- 1. MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY: As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy, and practice are required to ensure the sustainability of your component's functions?*
- 2. ENSURING THE MOST EFFICIENT UTILIZATION OF PROJECT OUTPUTS BY END USERS: What steps are needed to ensure that project outputs are understood and used by directorates and other end users?*
- 3. BUDGET: What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?*
- 4. STAFFING: With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?*
- 5. PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES: What steps are needed to move forward on the procurement of component equipment and supplies? What steps are needed to increase utilization of and accountability for project resources, equipment, and supplies.*

SENIOR MANAGEMENT GROUP TASK

Discussion questions for senior Ministry staff and USAID management staff (Coordinating Committee, Ministry chairs, and USAID senior staff):

- 1. What steps will you take to ensure adequate GOE budget support for IMS components?*
- 2. What steps will you take to ensure the integration of the IMS components into the Ministry?*
- 3. What steps will you take to work together in support of the sustainability of IMS activities and integration of these activities into MPWWR?*

All Groups: Summarize and put your key commitments for implementation and sustainability of IMS on one or two flipchart pages.

Flipchart responses were posted around the room, gallery style, and participants were asked to circulate and read the various groups' products, noting any questions on a blank sheet of paper adjacent to the component group posting. Once all had reviewed and indicated questions, the facilitators led a process of moving about the room and getting answers to the posted questions. Questions relating to cooperation and coordination were highlighted and set aside for use in the session on Cooperation and Coordination to be held the next morning.

All group reports and generated questions, along with the responses to them, were transcribed and appear in Appendix B.

Saturday Morning: Cooperation and Coordination

The session on Cooperation and Coordination involved four functional group discussions. The groups used their notes from the previous morning's presentations as well as specific questions relating to cooperation and coordination generated in the Sustainability session to develop recommendations on how the components could work more closely together.

The four functional groups were project directors, team leaders (CTA), USAID (project officers and management), and MPWWR management. Their task involved the following two questions:

Using the notes you made during yesterday's presentations by project directors, discuss the following questions:

- 1. Which components should be working more closely together? What specific areas (e.g., equipment and maintenance sharing, research results, and training development and delivery) should they be collaborating on?*
- 2. What specific steps are needed by project directors, MPWWR senior staff and coordinating committee members, USAID staff, and team leaders to ensure that these suggestions are implemented?*

Each group was given a flipchart with a grid, similar to the one below, for identifying:

Components?	Coop/Coord on What?	Who? First Step?

Each group's work was posted, reviewed, and additional next steps that emerged from the discussion were as noted. All products appear in Appendix C.

Saturday Afternoon: Expectations

After component implementation and sustainability actions were identified, and specific opportunities for increased coordination and cooperation were agreed to, the workshop focused on the specific expectations each group had of the others for their continued work together.

Initially, the participants were each asked to reflect on and make notes regarding their individual expectations of the members of the three other groups regarding:

- Information sharing
- Notification of changes in policy (USAID/MPWWR)
- Meetings (types, purpose, and frequency)
- Decision making

When individual work was completed, participants reconvened in the same functional groups used for the cooperation and coordination exercise in the morning. The groups were tasked with reaching consensus on their expectations of the other groups and posting them on a flipchart.

Each group was then given the lists of expectations that others have of them and were asked to indicate the expectations they accepted and therefore agreed to meet. They were asked to modify those expectations they could not accept as drafted and create a revised version they would be willing to act on. Once each group had accepted or modified the expectations, they were reported out to the large group. The results of this exercise appear in full in Chapter 3, Section 3.2.3 of this report.

Sunday Morning: Prioritized Action Plan Development

As mentioned earlier, all involved the workshop hoped that workshop commitments would be implemented. This session was developed to enhance that probability. Experience has shown that it is difficult to make progress on workshop agreements when there are so many to put into practice.

Prioritization of actions to be taken tends to increase the achievability of agreements and sets in place a number of “first steps” that are actionable and realistic.

Participants met in their project component groups, USAID management, and MPWWR management groups and were given the following task:

- 1. Review your Implementation and Sustainability session commitments.*
- 2. Prioritize them and develop an Action Plan that includes steps you will take and by when.*
- 3. Identify cooperation and coordination actions that require your involvement and determine by when you will act.*

Mid-way through the time allotted for this activity, the USAID and MPWWR management groups merged for discussion of their agendas and of how they could work together to carry them out.

At the end of the session, each component was asked to share its first priority action for implementation and sustainability and for cooperation and coordination. This provided the group with an overview of the types of actions being planned by each component. Complete prioritized Action Plans are transcribed and appear in Appendix D.

Workshop Evaluation and Closure

Eng. Gamil and Mr. Clark each made very appreciative and supportive comments regarding the hard work done by participants during the workshop. Both are optimistic about the future and look forward to successful implementation of workshop outcomes.

Participants then completed an evaluation of the workshop. Results appear in Appendix E.

CHAPTER 3

OUTCOMES AND AGREEMENTS

3.1 Overview of Outcomes

On the basis of the evaluation results and discussions with participants following the sessions, reactions to the workshop were positive. The principal benefits of the workshop mentioned in the workshop evaluations included the following comments:

- “Bringing together all of the key persons of IMS-MPWWR, USAID, and TA. The beginning of a perception (not a vision) of the totality of the task ahead to effectively complete IMS.”
- “The workshop laid the foundation of cooperation and coordination between components.”
- “Different groups (USAID, MPWWR, team leaders, project directors) talk to each other.”
- “Team building, sharing problems, and a better understanding of tasks before us and ideas on approaches to solutions.”
- “Identification of a few (this is important) priority actions to be taken.”
- “Getting to share information on the entire IMS project. Gaining appreciation for the similarities of problems.”
- “Opportunity to get global project view with each component’s contribution.”

Appendix E contains complete evaluation results.

3.2 Specific Agreements and Recommendations

Each session generated specific agreements and recommendations pertaining to the issue discussed. This section provides highlights of the agreements made, and who will follow up.

3.2.1 Issue 1: Implementation and Sustainability

During this session, senior managers from the Ministry and USAID met in one group while project directors, team leaders, and project officers met in their individual component teams.

The agreements and recommendations from each group are summarized below. Appendix B contains complete results of the session's activity.

3.2.1.1 Senior Managers' Recommendations and Agreements

Question 1: What steps will you take to ensure adequate GOE budget support for IMS components?

- Each component's project director, team leader, and project officer should submit a "realistic budget" that will be required to sustain their component for the remaining project period and beyond 1995.
- These budget proposals will be discussed and agreed upon in the 1993/1994 planning workshops now being planned for each component.
- The final budgets should then be forwarded to the Higher Coordinating Committee (HCC) for consideration and inclusion in the government budget.

The High Coordinating Committee, through Engineer Gamil, will take the lead in implementing this agreement.

Question 2: What steps will you take to ensure integration of the IMS components into the Ministry?

- Component budgets will be placed in each component's "mother" authority to further institutionalize component activities and budgeting process. (Steps to do this have begun.)
- All components, except Main System Management (MSM), are now permanent parts of the MPWWR organizational structure. The next step is to complete the process for incorporating MSM as a permanent entity into MPWWR.

Question 3: What steps will you take to work together in support of the sustainability of IMS activities and integration of these activities into MPWWR?

- The HCC will seek every opportunity to promote and participate in activities to bring about needed structural reforms.
- In the absence of needed structural reforms, the HCC will explore alternatives to alleviate constraints to component sustainability, such as improved incentives.

3.2.1.2 IMS Project Component Recommendations and Agreements

Question 1: MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY. As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy, and practice are required to ensure the sustainability of your component's functions?

IIP: IIP must be made an authority; the IAS must be given a permanent home; and cost recovery must be implemented and water user associations need to be legalized.

PPD: The unit plans to charge a fee to provide services and data to groups outside of the Ministry.

An incentive proposal will be developed by the unit to request that a percentage of the fees from feasibility studies be used to cover future costs.

MSM: Move the water distribution headquarters group to Delta Barrage (Eng. Gamil).

Assign directorate telemetry engineers to the water distribution office (Dr. Soud).

Implement the proposed maintenance organization (Eng. Gamil and as requested by other project directors).

PM/CM: The central Cairo office organization should stay as it is and act as a monitoring and coordination group.

The Governorate maintenance organization will remain in its present form and be responsible to the under secretary/general director.

A policy directive is needed to transfer administration and budget to the general director.

Practices within the maintenance organization should be improved through the re-definition of standards of work performed, including:

- deficiency levels
- maintenance cycles
- planning procedures

PSM/MFS: PSM, MFS, and the Irrigation Management Information System (IMIS) are well established within the Ministry's planning sector so there is no need for structural changes.

PSM, MFS, and the IMIS constitute the basic components of the planned Decision Support Unit (DSU).

A policy change is necessary to ensure DSU is involved in all aspects of planning and can take the lead in planning committees.

S&M: Change salary and incentive policies.

The project will develop a strategic plan for integration of S&M into the Egyptian Survey Authority (ESA).

The Ministry then needs to provide aggressive implementation of the strategic plan for ESA.

WRC: No organizational change is needed for integration into the Ministry.

There is a need to consider how environmental issues will be integrated into WRC.

Sustainability can be improved by using local universities and other sponsors for academic training.

PD: The component is already part of the Ministry structure.

These organizational issues need follow-up:

- A Policy Paper has been acted upon and now needs to be issued.
- The project director working with the Higher Training committee and HCC needs to try to raise the staff organization level one step above the current Central Organization for Administration Management (COAM)-approved level to ensure recognition, support, and financial remuneration for staff.

PD plans to manage NITI facilities (e.g., dining and hostel) through a contract.

Question 2: *ENSURING THE MOST EFFICIENT UTILIZATION OF PROJECT OUTPUTS BY END USERS. What steps are needed to ensure that project outputs are understood and used by directorates and other end users?*

IIP: Ensure continued involvement of the Irrigation Department in planning and implementation through joint meetings and other activities.

Develop a plan for turnover of the main system improvements to the Irrigation Department.

PPD: Monitor and follow up on the use of studies prepared by PPD to determine appropriateness and identify how to make the studies more useful.

MSM: Provide top down instruction to directorates to reduce water use while maintaining good distribution and minimum complaints. (This will be proposed by the project director for action by Eng. Gamil.)

Through annual seminars and meetings, maintain close coordination and cooperation with directorate management (project director).

Emphasize training of directorate staff (project training officer).

PM/CM: Utilization plans were included in a proposal for a one-year extension program that will provide intensive field assistance to utilize project inputs to achieve project objectives.

PSM/MFS: The Decision Support Unit (DSU) will work closely with the Irrigation Department and Sharkia Governorate to ensure an understanding and acceptance of procedures and models developed by DSU. Data collection and field measurements are now in process and will continue with directorate participation. The DSU will demonstrate the success of applying its models in terms of improving water use efficiency.

S&M: ESA will prepare and distribute map brochures to MPWWR; prepare and distribute map indices to MPWWR; and conduct annual customer surveys to determine map requirements.

The Training Center will prepare and deliver map use classes to MPWWR personnel.

WRC: Establish dissemination of research findings to end users. Develop mechanisms for networking, and continue and second specialists to other ministries and departments.

PD: Ensure existing follow-up mechanisms are used and increase utilization of the training center.

Provide more IMS course cooperation and expand our clientele to include participants from other countries.

Question 3: *BUDGET. What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?*

IIP/PPD: MPWWR needs to find a way to fund:

- Local consultants
- TDY short-term consultant
- Per diem
- Local staff (contract staff)
- Staff training
- Operations and maintenance
- Vehicles

MSM: The project director and team leader will develop realistic budgets with back up.

They will also prepare a justification for post-1995 USAID funding (foreign exchange only) for spare parts, training, and specialized technical assistance.

PM: The component must have a comprehensive cost-sharing plan to supplement maintenance and cost of operations and incentives. This could be done by using funds collected from utilization of project equipment removing illegal works or through continued support and funding to improve the maintenance program in the remaining 13 Governorates.

PSM/MFS: DSU will work closely with the MPWWR financial department to ensure an adequate budget for annual work plans involving cost-sharing aspects of planning efforts. Using DSU-improved planning tools will enhance revenues. In turn, a portion of revenues should be allocated to DSU.

S&M: ESA will prepare an accurate forecast, taking into account user requirements.

MPWWR/ESA will include the Survey and Mapping project's Operation and Maintenance budget in the overall ESA budget; GOE/MPWWR will increase expenditure thresholds for ESA personnel so that high-level authority is not needed for small operation and maintenance expenditures.

WRC: WRC will request support from the IMS committee to receive additional funds for operation and maintenance, and staff.

PD: A five-year budget has been requested and approved. Future USAID support is contingent on GOE support. The above budget process requires high-level support within MPWWR. A special account (from income generated by the

training of Arab and African trainees) or another account system needs to be established to support the center.

Question 4: STAFFING. With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

IIP/PPD: Stabilize (promote and keep trained staff within the agency) key staff and management personnel.

Provide continued training and professional and incentive pay.

MSM: Provide housing in directorates. USAID should participate (Eng. Soliman).

Concentrate technical assistance on training to ensure trained staff by 1995 (team leader).

FM: A one-year extension provided for the transfer of in-country training activities and training funds to the USAID-funded MPWWR local operating budget.

MPWWR must continue to provide funds for training courses for employee attrition and new appointments.

PSM/MFS: Incentives are needed, such as professional networking, training, and possible increased incentives.

S&M: The NITI Training Center should prepare and deliver middle management training and basic computer training for ESA.

MPWWR/ESA should strengthen ESA's finance and administration activities through training.

WRC: The component will request support from the IMS high coordinating committee to get additional funds for operations, maintenance, and staff.

PD: PD is still fighting for higher level staff and staff development. The Minister has provided the staff required so far, but we need to look beyond 1995.

Question 5: *PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES. What steps are needed to move forward on the procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment, and supplies?*

IIP: Account for and verify the location of vehicles and equipment.

Provide status report on operation and maintenance of equipment and vehicles. If there is under-utilization or no use of equipment, either train personnel to use the equipment or transfer the equipment to other components if it is not needed by IIP.

PPD: No problems.

MSM: MPWWR(IMS) should evaluate all property management systems currently in place, select one, and implement across all components.

PM: Procurement will be completed during the one-year project extension. Computer management tools are being implemented for utilization and accountability of project resources, equipment, and supplies.

PSM/MFS: Equipment is fully utilized.

S&M: USAID should simplify their procurement procedures to reduce the time it takes for procurement.

MPWWR should consolidate vehicle maintenance and let PM maintain all vehicles.

ESA should approve multiple shifting on equipment as soon as possible.

MPWWR/ESA should centralize survey equipment maintenance for all Ministry equipment.

WRC: Review the procurement plan to consider water quality and strategic research.

Ensure accountability and utilization of project resources by placing that responsibility within the new organization of the main office.

PD: Completion of procurement is under a time constraint and the project needs approvals as soon as possible. There are no problems with accountability.

3.2.2 Issue 2: Cooperation and Coordination

Cooperation and coordination between and among the IMS components is a key to successful achievement of the overall IMS project goals as well as to the sustainability of the activities following completion of the project. In the workshop session on Cooperation and Coordination, project directors, MPWWR senior staff and coordinating committee members, USAID staff, and team leaders were asked to identify which components should be working more closely together and what specific areas (e.g., equipment and maintenance sharing, research results, and training development and delivery) they should be collaborating on. They were also asked to identify specific steps that need to be taken by each of the four groups to ensure that these suggestions are implemented. A summary of the results of those discussions follows. (See Appendix C for the full set of recommendations.)

3.2.2.1 Senior Management of MPWWR

The senior management group of the Ministry identified a number of possible areas of cooperation. The majority of the recommendations were for closer collaboration between the Irrigation Improvement Project component and the other components. Suggestions for collaboration between IIP and the other components included:

- PPD on sustainability studies
- S&M on supplying new maps
- MSM on automation of the irrigation systems
- PSM on operation modeling
- PD on training
- PM on future maintenance needs
- WRC on dissemination of research results and information on new technologies

Senior management also expects Professional Development to work more closely with the other components to avoid duplication in training programs and courses. Survey and Mapping and Planning Studies and Models need to collaborate on crop pattern information for use in the models.

Senior management discussed a mechanism for approving these cooperation and collaboration efforts that included asking each project director to identify specific areas of cooperation and coordination and present those recommendations to the component steering committees and then to the HCC for decisions and actions.

3.2.2.2 MPWWR Project Directors

Project directors had a different approach to encouraging better collaboration between component. Their approach that included more bilateral discussions and decision making at the

project director level to identify specific tasks and follow-up needed, rather than going through the steering committees and HCC for every decision. They suggested going to the HCC only when there were issues that could not be resolved between the component directors. The project directors would provide periodic updates of progress being made to the HCC.

MPWWR senior management agreed to take these recommendations under consideration.

The project directors intended to go through each component's needs for collaboration with other components, but time constraints did not allow detailed discussion of each component's potential for cooperation with the other components. They were able to identify specific areas of cooperation for Main Systems Management, Irrigation Improvement Project, Project Preparation Department, and Planning Studies and Models.

Specific areas of cooperation and coordination suggested by the project directors for Main Systems Management included closer cooperation with IIP, PSM, and WRC on the automation and evaluation of the Serry Canal and with PM on maintenance of flow measurement equipment and the EMAS program.

IIP and PPD need to collaborate on future feasibility studies, and IIP and PM need to discuss maintenance of improved structures and inventory programs for spare parts.

PSM and S&M need to work together on Sharkia Governorate aerial photos, maps, and the GIS system, including digital maps.

The project directors agreed to continue discussions between project directors on specific areas of cooperation and coordination.

3.2.2.3 Team Leaders (Contract Technical Assistance)

Team leaders also identified a need for more bilateral discussion and decision making between component directors in order to speed up the process of collaboration and cooperation.

Needs identified were similar to those mentioned by the project directors, with more specific suggestions around the types of maps needed from Survey and Mapping, and specific courses that the PD could provide, including courses for component training coordinators and ARC/INFO courses.

GIS duplication and overlap was addressed with a suggestion that the Egyptian Survey Authority take the lead in coordinating GIS activities for the Ministry and that this suggestion be integrated into the ESA strategic plan being developed by Survey and Mapping.

3.2.2.4 USAID

USAID saw a need for a broader dissemination of component outputs so that all are aware of opportunities and needs for collaboration and suggested a series of briefings by various components for other components and for directorates and field offices.

USAID also saw a need for an outside consultant to review the needs and opportunities for and constraints to coordination. They plan to work with the HCC to develop a scope of work for such a study.

3.2.3 Expectations Session Results

The Expectations exercise allowed each functional group (project directors, senior Ministry officials, team leaders, and USAID staff) to articulate expectations regarding four key issues in the management of IMS: sharing information, notification of policy changes, meetings, and decision making. In some instances, current practice was wholly acceptable and effective for some of the groups. This activity provided an opportunity to express the need for change in practice in some of these critical managerial functions. Each work group produced sets of expectations for each of the other three functional groupings. The following are the final agreements, including suggested modifications that resulted from the Expectations session.

3.2.3.1 Expectations for Project Directors

MPWWR Expectations for Project Directors

Sharing Information

Sharing information regarding work progress and accomplishment should be enhanced between project directors and the Ministry headquarters. The information required to complete the inventories on procurement and other requested items should be carefully considered by project directors. Quarterly reports should be submitted not later than the seventh day of the following month.

Notification of Policy Changes

When a proposed policy change is under consideration by the ministry, MPWWR wants to know the effect the policy changes may have on project performance.

Meetings (types/purpose/frequency)

More frequent bilateral and multilateral meetings are encouraged.

Decision Making

Project directors are encouraged to solve their own problems and not refer questions to higher authorities in all details. Project directors should use their delegated authority (they are like department heads) for making decisions needed to improve the work performance of their staffs.

Team Leader Expectations for Project Directors

Sharing Information

Team leaders expect open and timely sharing of information by project directors and want the minutes of the Steering Committee shared with team leaders, who expect reasonably free access to other MPWWR staff outside the individual components.

Notification of Policy Changes

Team leaders expect timely notification of any policy changes with clear explanations.

Meetings (types / purpose / frequency)

Team leaders expect regular meetings as required. Otherwise an open door policy is adequate. Team leaders expect to participate in steering committee meetings, recognizing that the meetings are usually conducted in Arabic. It was noted, however, that the meetings tend to take place in English if an American is present.

Decision Making

Team leaders expect project directors to involve them in decisions regarding the component. Team leaders expect project directors to exercise the full authority vested in them by Ministry decree to make the decisions they are empowered to make and to follow up on decisions pending by higher authorities.

USAID Expectations for Project Directors

Sharing Information

USAID expects early and full definition of problems, a free flow of information, and when information is requested, that project directors are specific about what they need.

Notification of Policy Changes

USAID expects project directors to implement and accept policy changes (if they cannot agree with policy change and direction, don't ignore it—work to change it).

Meetings (types/purpose/frequency)

USAID expects bi-weekly implementation meetings between the component project officer, project directors, and team leaders to review progress.

Decision Making

USAID expects project directors to make prompt, clear decisions when needed within their authority.

3.2.3.2 Expectations for Team Leaders

USAID Expectations for Team Leaders

Sharing Information

USAID expects early and full definition (with the project director) of problems and wants free flow of information between the components and USAID.

Notification of Policy Changes

USAID expects team leaders to implement and accept policy changes (if team leaders cannot agree with policy change and direction, don't ignore it—work to change it).

Meetings (types/purpose/frequency)

USAID expects bi-weekly implementation meetings to review progress involving the project officer, team leader, and project director.

Decision Making

USAID expects the team leaders to support the project director in decision making to the extent allowable under the contract and the law.

Project Directors' Expectations for Team Leaders

Sharing Information

Useful information for components should be shared in a timely way with project directors. (For example, technical advisors should submit and discuss their mission reports with the project director before leaving.)

Notification of Policy Changes

No action required

Meetings (types/purpose/frequency)

Current procedures for meetings are working satisfactorily (daily communications are taking place). Technical advisors should initiate meetings with project directors and staff.

Decision Making

Project directors expect to consult with team leaders on any proposed project decisions.

MPWWR Expectations for Team Leaders

None were noted. MPWWR believes these issues are between the team leaders and their project directors.

3.2.3.3 Expectations for USAID

MPWWR Expectations for USAID

Sharing Information

The current status is working satisfactorily at different levels.

Modification of Policy Changes

USAID should notify MPWWR of policy changes affecting IMS performance as soon as possible and give suitable time before the policy becomes effective, when it is within the Mission's control to do so. *The Mission staff agreed to communicate to AID/W the hardship placed upon GOE when policy changes emanating from AID/W are implemented with little or no advance notification.*

Meetings (types/purpose/frequency)

OK as currently going on at different levels.

Decision Making

MPWWR would like decisions to be made more quickly. *USAID Mission Order 5-4 (effective March 31, 1993), which governs the USAID project officer's role, has been modified and should help expedite decision making.*

Project Directors' Expectations for USAID

Sharing Information

Project directors would like USAID to share technical information about other projects in-country and abroad, any future plans USAID has for IMS, technical information about consulting firms, and evaluation reports.

Notification of Policy Changes

Project directors would like any changes to be discussed with them first, and any approved policies should be given time for implementation when policy changes originate with the Mission.

Meetings (types/purpose/frequency)

Project directors would like periodic meetings with project officers (every 15 days).

Decision Making

Decision making takes too much time; quick response is needed. *USAID Mission Order 5-4 governing the project officer's role has been modified to help expedite decision making (effective March 31, 1993).*

Team Leader Expectations for USAID

Sharing Information

Team leaders would like a quarterly report of "lessons learned," which can be accomplished by sharing such things as Q-reports and audits of other projects, and through regular meetings or workshops on IMS. Team leaders would also like information on issues requiring attention, achievements, and in general want timely, applicable, and complete information.

Notification of Policy Changes

Team leaders want timely notification of all applicable changes.

Meetings (types/purpose/frequency)

Team leaders want an annual IMS workshop with mid-year one-day follow-up meetings, and expect meetings with project officers as appropriate for each component.

Decision Making

We expect timely decisions.

3.2.3.4 EXPECTATIONS FOR MPWWR

USAID Expectations for MPWWR

Sharing Information

USAID expects early and full definition of problems and clear, more complete host country contributions in terms of budgets.

Notification of Policy Changes

USAID expects progress reports on policy changes in process (e.g., WUA, cost recovery at mesqa level). GOE Policy changes that affect project implementation should be quickly communicated (e.g., elimination of special accounts).

Meetings (types/purpose/frequency)

HCC should serve more as direction setter than a clearinghouse. *Eng. Gamil will talk with Clem Weber to agree on a compromise role for HCC.*

Decision Making

USAID expects MPWWR to provide prompt support to project directors.

Project Directors' Expectations for MPWWR

Sharing Information

Project directors expect MPWWR to circulate all information concerning the component in a timely fashion (e.g., decrees and reports).

Notification of Policy Changes

Any changes concerning the component should be shared first with the project directors. Policies regarding integration and sustainability should be discussed as early as possible after this conference.

Meetings (types/purpose/frequency)

MPWWR should give enough lead time for meetings and encourage meetings of directors with Ministry departments and authorities.

Decision Making

MPWWR decisions should be made before it is too late.

Team Leaders' Expectations for MPWWR

Sharing Information

Team leaders expect to receive IMS/HCC meeting minutes on time, and in general, expect timely, applicable and complete information through the project directors.

Notification of Policy Changes

Team leaders expect timely notification through project directors.

Meetings (types/purpose/frequency)

Team leaders expect an annual IMS workshop with mid-year one-day follow-up meetings, and meetings with project officers as appropriate for each component.

Decision Making

We expect MPWWR to make policy decisions only, as is the current status, and expect operational decisions to remain with project directors.

3.3 Specific Plans of Action

Each component and the management groups have developed detailed Action Plans to ensure follow through on workshop agreements related to implementation and sustainability, and cooperation and coordination. The Action Plans are highlighted here, with the full plans appearing in Appendix D.

Irrigation Improvement Project

The organizational future, and hence, cost recovery are the primary areas of effort for IIP as it looks to continued implementation and sustainability. Increased work at the mesqa level is part of the strategy to move forward in this regard. IIP will meet with WRC to discuss collaborating on research as a step toward improved cooperation and collaboration.

Project Preparation Department

To improve the potential sustainability of PPD within MPWWR, the project director will write a letter to the Head, General Director for Planning (Eng. Gamil), requesting a listing of feasibility studies required and then subsequently request their assignment to PPD. Once assignment has been made, a mechanism for funding of services for PPD will promote the ability to coordinate and cooperate with other IMS component activities.

Main Systems Management

The MSM component will be taking a number of steps to move forward on such actions as assigning Directorate Telemetry Engineers to the Water Distribution Office, and having a workshop with the Director General and Director of the Water Distribution Office for coordination and input into the training plan for directorate engineers. MSM's primary coordination action will be to request that Survey and Mapping add MSM physical data to their ARC/INFO Database and prepare thematic maps for MSM.

Preventive Maintenance

Preventive Maintenance is involved in ongoing maintenance of Structural Replacement structures in six Governorates. Their plan for increased cooperation and coordination centers around the feasibility of becoming the primary maintenance provider for all IMS activity vehicles. They will begin determining their capacity and the related staffing needs to become such a resource by surveying the number of vehicles affiliated with IMS and their location.

Planning Studies and Models

The implementation by DSU of the Planning Distribution Model and ICM Model within the Sharkia Directorate is the priority implementation action of PSM. To enhance coordination and cooperation, the project director will meet with the project director of Survey and Mapping

during the week of April 5 to begin the process of securing the necessary maps to continue PSM's work.

Survey and Mapping

The priority action for S&M will be to research the Ministry Decree that has placed limitations on the publication and distribution of maps to date, and to recommend an alternative approach to ensure broader use of S&M-produced maps by the other components. In addition to this effort, S&M will be developing a strategic plan that furthers its connection with ESA.

Water Research Center

The two priority items for the continued implementation of the WRC are to integrate environmental issues into its activities and to pursue the sustainability of its academic training. To move forward on cooperation and coordination, WRC will be working closely with IIP and MSM to develop research requirements.

Professional Development

Professional Development's priority is moving forward on procurement and the release of the funds necessary to complete work on the training center at 6 October City. In the interests of becoming a greater resource to the IMS components to assist with their training needs, Professional Development will discuss with the other components their needs, and develop courses accordingly.

USAID Senior Management

USAID's focus in the near future will be on pressing for legalization of the Water User Associations, furthering the development of cost recovery mechanisms, and working with the GOE to secure the necessary resources to ensure a viable local operating budget. In the interests of enhanced cooperation and coordination, USAID intends to commission a study by a consultant to determine the full scope of opportunities for shared and integrated use of resources within IMS, and the constraints to achieving the same.

MPWWR Senior Management

MPWWR senior management will be supporting the components in their use of planning workshops for the development of budget estimates necessary for continued and sustained implementation of project activities. They will likewise facilitate the convening of bilateral and multilateral meetings between component directors to identify areas of potential cooperation and coordination.

CHAPTER 4

RECOMMENDATIONS AND CONCLUSIONS

Two of the major objectives of this workshop were to explore issues facing each of the IMS components related to continued implementation and sustainability and to develop strategies for increased cooperation and coordination between and among the components. The final objective was to agree on a set of prioritized actions to enhance the integration of project activities into the Ministry. The workshop provided a forum for discussion of these issues and for the development of specific agreements and action steps needed for follow up to achieve these goals. Now the more difficult work begins, with each individual taking responsibility to follow up on the actions that were committed to during the workshop.

The facilitators recommend the following actions:

- Rather than regarding this report as a static document, use it and the Action Plans contained within as a living document, one that serves to guide actions in the coming months. Revisit the agreements and expectations as a regular part of bi-weekly progress meetings, during discussions between Mission management and MPWWR management, and in project director and team leader meetings.
- An issue that presents an opportunity for improved internal management of the IIP component involves that of the transition in project directors. Because a new project director will begin work the week after this workshop, and given the significant level of contracting that must take place in the coming months, we believe some attention to this transition is warranted.

To avoid any potential lag in level of effort and outputs on the part of IIP, it will be critical for the new project director, project officer, and team leader to discuss the work ahead and agree on a plan that will allow the smooth and continued work of IIP. The new project director should anticipate the high volume of activity and be prepared to move quickly to avoid any unnecessary delays in implementation. IIP staff morale also needs to be taken into account, and perhaps a briefing by the new project director on the transition would help the staff get acquainted with the new director. The project officer should take an active role in making this happen.

- This is a critical time for the leadership of the IMS as it looks to the future of the activities and their integration into MPWWR. The High Coordinating Committee must begin to take a more proactive leadership role in supporting the efforts of the components as they work toward sustainability and increased cooperation and coordination. The following list includes examples of actions that should be taken by the HCC to assume a more effective and appropriate leadership function:
 - **Consistent articulation of the future of the Ministry with fully integrated component activities.** The HCC must be clear about its vision of the future and

communicate its expectations of the component staff and how they fit into that vision. The project directors need to know what the future holds for their activities within the Ministry after IMS in order to be able to work to support the Ministry's agenda for IMS activities.

- **Advocacy for budgetary resources to support the long-term sustainability of the IMS project activities.** The HCC should begin now to influence the Ministry to support the irrigation related projects and facilitate smooth integration into the Ministry. A proactive approach to resolving the issues of local operating budgets, adequate staffing, and incentives will pave the way for the future success of the activities as they are assimilated into the Ministry.
- **Facilitation of the coordination and cooperation between and among component activities.** Providing the necessary support and, in some instances the removal of obstacles, for the increased sharing of resources and services between and among components will greatly enhance the probability that these collaborative efforts will take place. In the long term, determination to eliminate the duplication of effort and expenditure of resources will ensure the overall economic efficacy of not only the projects, but ultimately MPWWR management of the activities upon absorption into the Ministry. Cooperation and Coordination issues should be a regular agenda item at HCC meetings.
- The project officers within USAID should meet regularly to discuss substantive issues related to cooperation and coordination. They should identify among the components the impediments to increased sharing of resources and services and should continue to create strategies to overcome these obstacles or constraints. Mission management should raise these issues in discussions with MPWWR management and work to support mutual solutions as well.
- A one-day session should be held at the project level in six months to review progress on workshop agreements and plans. In one year, the same group attending this workshop should be reconvened to revisit similar issues, monitor progress, and report on the significant progress made since this workshop! One year from now would also be a better time to discuss the future of the Ministry beyond IMS.

APPENDIX A

LIST OF PARTICIPANTS

MPWWR

1. ENG. GAMIL MAHMOUD, Chairman, IMS High Coordinating Committee
2. PROF. DR. MAHMOUD ABU-ZIED, Chairman, Water Research Center
3. ENG. EL SAYED HASSAN, Head, Expansion and Projects Sector, Irrigation Department
4. PROF. DR. SOUD AL KHAFEEF, Head, Irrigation Sector, Irrigation Department
5. ENG. ALY ABOUL SEOUD, Head of Technical Central Directorate, Minister's Office
6. ENG. SOLIMAN ABOU ZIED, Project Director, Main System Management Component
7. ENG. ADEL ABDEL KHALEK, Project Director, Preventive Maintenance Component
8. PROF. DR. MONA EL KADY, Project Director, Survey and Mapping Component
9. ENG. HASSAN SHOUMAN, Project Director, Irrigation Improvement Project
10. ENG. YEHIA ABDEL AZIZ, Project Director, Irrigation Improvement Project
11. DR. BAYOUMI ATTIA, Project Director, Planning Studies and Models Component
12. ENG. ABDEL ATTY ALLAM, Project Director, Professional Development Component
13. ENG. ZEINAB EL GHARABLY, Project Director, Project Preparation Department
14. ENG. SARWAT FAHMY, Chief, Monitoring Office, IMS Project
15. ENG. MAHMOUD ABBAS, Deputy Chief, Monitoring Office, IMS Project

USAID

16. MR. DOUGLAS J. CLARK, Associate Director for Agriculture
17. MR. CLEMENCE WEBER, Office Director, Irrigation and Land Development Office (ILD)
18. MR. DAVID SMITH, Project Officer, ILD
19. MR. JOHN ANANIA, Project Officer, ILD
20. MR. FLYNN FULLER, Project Director, ILD
21. MR. RUSSEL BACKUS, Project Advisor, ILD
22. MR. CHARLES HOUSTON, Project Advisor, ILD
23. MR. CARL DERRICK, Program Officer, Project Support Office
24. MS. HANAA KHEDR, Secretary, ILD

CONSULTANTS

25. MR. CARROLL HACKBART, Team Leader, MKE/LBII, Irrigation Improvement Project
26. MR. ROBERT DIXON, Team Leader, MKE, Preventive Maintenance Component
27. MR. LEO BUSCH, Team Leader, USBR, Planning Studies and Models Component
28. MR. ANDREW TCZAP, Team Leader, Harza, Main System Management Project
29. DR. FRANK HANIGAN, Team Leader, Geonex, Survey and Mapping Component
30. DR. ROBERT SMAIL, Team Leader, Scheladia, Professional Development Component
31. MR. JAMES HEDRICK, Consultant, CID, Water Research Center
32. MR. MIHEIL ANGELIC, Chief Technical Advisor, MFS, Planning Studies and Models Component

FACILITATORS

33. MS. KATHY ALISON, ISPAN Human Resources Development Program Manager
34. MS. TAYA LEVINE, ISPAN

SUPPORT PERSONNEL

35. MR. HASSAN ABOU ELMAGD, Accountant
36. ENG. ALI KAMAL OMAR, Computer Specialist
37. MS. DOAA AMIN, Secretary
38. MS. HEBA GADALLA, Secretary

APPENDIX B IMPLEMENTATION AND SUSTAINABILITY OF IMS
Issue Statement, Questions and Responses By Component

The IMS project has 2 1/2 years left before USAID support completely ends. Between now and 1995, the various components are to be integrated into the Ministry and supported by the GOE/ Ministry budget. By 1995, the results of the project should improve the Ministry's operating efficiency of the water distribution system for agricultural irrigation and other uses at the directorate level.

Component and Ministry level planning must begin now for the overall integration, management and support of the various components within Ministry directorates, departments, sectors and authorities. Issues facing the components as they move from being USAID projects to fully integrated Ministry functions and services include introduction of new technologies to directorates, strengthening of senior and mid-level management of project functions, GOE funded local operating budgets to support adequate numbers of trained staff, additional training needs, travel and per diem costs, equipment operations and maintenance costs, petrol/benzene costs, etc.

COMPONENT RESPONSES

IRRIGATION IMPROVEMENT PROJECT AND PROJECT PREPARATION DEPARTMENT

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

IIP: - IIP must be made an Authority
- IAS home - Irrigation Sector? or IIP Authority?
- Cost recovery must be implemented
- Water User Associations need to be legalized

PPD: - MPWWR management support (All sectors, authorities, department)
- Incentive proposal (allocation of a percentage of project investments to cover future services)
- Providing services, data for a fee

2. **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

IIP: - Continued involvement of Irrigation Department in the planning and implementation through joint meetings, etc.
- Develop a plan for turnover of main system improvements to the Irrigation Department.

PPD: - Monitor/follow up with the use of studies.

3. **BUDGET:** What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

IIP/PPD: - MPWWR needs to find a way to fund:
- Local consultants - TDY short term consultant
- Perdiem - Local staff (contract staff)
- Staff training - O&M - Vehicles

4. **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

IIP/PPD: - Stabilize key staff and management personnel by promoting and keeping trained staff within the agency through continued training and professional and incentive pay

5. **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

IIP: - Verification of location of vehicles and equipment to provide the status of operation and maintenance of equipment and vehicles
- If there is under-utilization or no use of equipment, train personnel to utilize or transfer to other components if not needed.

PPD: - No problem

Questions/Responses for IIP/PPD

- Is reimbursement for feasibility studies possible? *No - PPD will charge a fee percentage*
- How do you insure the linkages between IIP authority and IAS, and Water User Associations? *Through continuous working relationship*
- How does IAS-WUA-IIP work with the Ministry of Agriculture concerning water management at four level? *IIP works with cooperatives, has agriculturalists on staff*
- If IIP becomes an authority, why not keep main system improvements? *IIP is for improvements, not operations*
- How can PD assist your training? *(held for discussion next day)*
- Given 50 operational WUAs after 10 years, how do you address optimization on a cost/benefit basis? *A monitoring and evaluation program is in place*
- How many motorcycles can you really use effectively? *(held for discussion next day)*
- What sort of systems are already in place to account for and track commodity use? *None now, will implement PM inventory system*

MAIN SYSTEMS MANAGEMENT

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- Move water distribution headquarters group to Delta Barrage (Eng. Gamil)
- Assign directorate telemetry engineers to water distribution office (Dr. Soud)
- Implement MSM proposed maintenance organization (Eng. Gamil)
- Project director to make formal requests for above proposals

2. **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- Top down instruction to directorates to reduce water use while maintaining good distribution and minimum complaints - incentive for achievement.
- Project director proposes Eng. Gamil to follow up
- Close coordination/cooperation with directorate management (annual seminars, meetings, etc.) (project director)
- Emphasize training of directorate staff (project training officer)

3. **BUDGET:** What steps need to be taken by project directors, Senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- Develop realistic budgets with back-up (project director/team leader)
- Prepare justification for post 1995 USAID funding (foreign exchange only) for spare parts, training and specialized TA (project director/team leader)

4. **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

- Provide housing in Directorates. AID should participate (Eng. Soliman)
- TA team to concentrate on training to ensure trained staff by 1995 (team leader)

5. **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- MPWWR (IMS) to evaluate all property management systems in place, select one and unify (project director)

Questions/Responses for MSM:

- How do we get directorates to use real time data? *Directive from the top to the directorate, tied to an incentive.*
- Do you expect this component to be a data base for the ministry? *It is a resource data base - compatible with MIS. MSM is one node.*
- How do we assist Directorates in budget matters since they are end users and responsible for O&M in the directorate? *The irrigation sector and MSM will assist*

PREVENTIVE MAINTENANCE/CHANNEL MAINTENANCE

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- Central Cairo office organization would stay as is and act as a monitoring & coordination group
- Government maintenance organization will remain in its present form and be responsible to the undersecretary/general director.

- Policy will transfer administration and budget to the general director.

- Practices with re-definition of standards of work performed which include:

- * deficiency levels
- * maintenance cycles
- * planning procedures

2. **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- Included in one year extension program where intensive field systems will be provided in utilization of project inputs to achieve project objectives.

3. **BUDGET:** What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- Must have comprehensive cost sharing to supplement maintenance cost of operations and incentives. Example: Funds collected from utilization of project equipment removing illegal works.
- Continue support with suitable funds to improve maintenance program in the remaining 13 governorate.

4. **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

As of the one year extension, training (on-shore) activities and training funds are being transferred to the USAID funded MPWWR local operating budget. MPWWR must continue to provide funds for training courses for employee attrition and new appointments.

5. **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- Procurement will be completed during one year extension of project. Computer management tools are being implemented for utilization and accountability of project resources, equipment and supplies.

Questions/Responses for PM

- How can PD cooperate with PM on training? *(held for issue 2 discussion)*
- Several suggestions above will require major legislative modifications. Have you looked into that issue? *No, will be pursued.*
- Can PM maintain other component vehicles? *(held for issue 2 discussion)*

PLANNING STUDIES AND MODELS AND MONITORING FORECASTING AND SIMULATION

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- PSM/MFS are well established within the planning sector including the ministry information center.
- The three elements constitute the basic components of the DSU
- No need for structural changes
- A policy change is necessary to ensure DSU is involved in all aspects of planning
- DSU should take the lead in planning committees

2. **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- DSU will work closely with ID and Sharkia Governorate to ensure:
 - a. understanding and acceptance of procedures and models developed by DSU
 - b. data collection and field measurements are now in process and will continue with directorate participation.
 - c. demonstrate success of applying DSU models in terms of water use efficiency.

3. **BUDGET:** What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- DSU will work closely with MPWWR financial Department to ensure budget for:
 - a. annual work plans involving cost sharing aspects of planning efforts.
 - b. this will enhance revenues due to use of improved planning tools by use of DSU.
 - c. In turn, a portion of revenues should be allocated to DSU

4. **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

- Incentives are needed
- Professional Networking
- Training

5. **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- Equipment is fully utilized.

Questions/Responses for PSM:

- How will policy change be implemented? When? *DSU will initiate*
- What are planning committees? *water resources, training, etc.*
- How can PD cooperate in your training? *(held for issue 2 discussion)*
- How can we get use of the computer (MODELS) in design of canal simulation and improvement activity? *(held for issue 2 discussion)*
- If these components are planning and policy, why do you want to get into field level operations? *We need to be involved at the directorate level to do planning We are a tool for Planning and Policy*
- Has the DSU been established? Is it functional? *YES/YES*

SURVEY & MAPPING

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- Change salary/incentive policies
- Strategic plan for Egyptian Survey Authority (SP/ESA) conducted by S&M project
- Aggressive implementation of SP/ESA by MPWWR

2. **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- ESA - Prepare and distribute map brochures to MPWWR
- ESA - Prepare and distribute map indices to MPWWR
- ESA - Conduct annual customer surveys to determine map requirements
- Training center - Prepare and deliver map use classes to MPWWR personnel

3. **BUDGET:** What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- ESA - Prepare accurate forecast taking into account user requirement
- MPWWR/ESA - Include S&M project O&M costs in ESA Budget
- GOE/MPWWR - Increase expenditure thresholds for ESA personnel so that high level authority is not needed for small O&M expenditures.

4. **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

- Training Center - Prepare and deliver middle management training for ESA
- Prepare and deliver basic computer training
- MPWWR/ESA - Strengthen ESA'S finance & administration activities through training

5. **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- USAID - Simplify procurement procedure/reduce time -- because time is money
- MPWWR - Vehicle maintenance consolidation - let PM maintain all vehicles
- ESA - Multiple shifting on equipment as soon as possible
- MPWWR/ESA - Centralize survey equipment maintenance for entire ministry equipment

Questions/responses for S&M

- Can training center support product use? Also, can the Professional Development training center assist in management training? *The training center (PD) should provide basin computer training for all personnel both engineers and administrative personnel.*
- Will PSM receive assistance with GIS on Sharkia for the Planning Distribution Model (PDM)? *(PSM should request its needs be given priority by S&M project.)*
- What do you mean by change salary? *GOE salary needs to be revised*
- Without review of procurement document, legal & payment issues could delay process even more! *Review is certainly needed, three or four reviews are not. AID is looking at it, but it won't happen in life of IMS.*
- What about cooperation with PD in training? *See response given to number 1*
- Can you live without salary supplements and additional incentives? *NO*

WATER RESEARCH CENTER

1. MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY: As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- No organizational change needed for integration into the ministry
- Need to consider how the environmental issues will be integrated
- Ensure sustainability by utilizing local universities and other sponsors for academic training

2. ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS: What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- Establish dissemination of research findings to end users
- Develop mechanisms for networking
- Continue and second specialists to other Ministry Departments

3. BUDGET: What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- Request support from IMS committee to get allocation for additional funds (operation, maintenance, staff)

4. STAFFING: With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

- The component will request support from the IMS committee to get additional funds for operations, maintenance and staff.

5. PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES: What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- Review procurement plan to consider water quality and strategic research
- Ensure accountability and utilization of project resources by considering that within the new organization of the main office.

Questions/Responses for WRC:

- How will you ensure retention of returned participants to maintain improved capacity? *Special incentives and salaries*
- Who sets research agenda? Funds? *Each institute sets program, CMTE/BO&D of directors review. also on request, with funds attached.*
- Item 4 - MSM has technical ability for remote water quality data collection at low cost. Have you considered cooperative effort? *(held for issue 2 discussion)*
- How can you offer your technology free of charge to ministry's departments? *(held for issue 2 discussion)*
- How can WRC assist the ministry in determining feasibility of canal automation by studying Serry Canal? *(held for issue 2 discussion)*

PROFESSIONAL DEVELOPMENT

1. **MANAGEMENT AND ORGANIZATION OF COMPONENTS AND INTEGRATION INTO THE MINISTRY:** As you anticipate integration of your project activities into MPWWR, what changes in Ministry structure, policy and practice are required to ensure the sustainability of your component's functions?

- Component already a part of Ministry structure
- Organization issues: 1. Policy Paper acted upon and issued. 2. Staff handbook.
- Need to try to raise organization level one step above that approved by the Central Organization for Administration Management (COAM).
- Plan to manage facilities (dining, hostel) through contract.
- Career service personnel in training center needs highest level of recognition/support as well as financial remuneration.

2) **ENSURING OPTIMAL UTILIZATION OF PROJECT OUTPUTS BY END USERS:** What steps are needed to ensure that project outputs are understood and used by directorates and other end users?

- Ensure existing follow-up mechanism utilized?
- Increase utilization of center
 - 1) More IMS course cooperation
 - 2) Expanded clientele (other countries)

3) **BUDGET:** What steps need to be taken by project directors, senior Ministry officials and Coordinating Committee members, and USAID to secure adequate GOE budgets for IMS project activities between now and 1995? After 1995?

- Five year budget requested/approved
- Future AID support contingent on GOE support
- Above budget process requires high-level support within MPWWR
- Special account or other account system needs to be established to support center

4) **STAFFING:** With the end of technical assistance to support contractors and local staff, what policy changes and government actions are needed to keep or add adequately trained staff so that the component can continue to function between now and 1995? After 1995?

- No staffing issues

5) **PROCUREMENT AND ACCOUNTABILITY FOR COMMODITIES:** What steps are needed to move forward on procurement of component equipment and supplies? What steps are needed to increase utilization and accountability of project resources, equipment and supplies.

- Completion of procurement is under a time constraint. Approvals needed as soon as possible
- Accountability - No problems

Questions for PD:

- What is the special account? *Income from training of Arab/African trainees*
- How come the staffing doesn't represent an issue for PD? *Still fighting for higher level for PD staff development. Minister provided staff required so far, but we need to look beyond 1995.*
- Who will initiate action? When? *Project director with higher training committee and assistance of High Coordinating Committee.*
- Have you considered making training videos? *Yes, PD writes and develops specialized videos on course modules.*

SENIOR MANAGEMENT

1. What steps will you take to ensure adequate GOE budget support for IMS components?
 - The project director, team leader, the project officer for each component should submit a "realistic budget" required for the sustainability of their component for the remaining project period and after 1995 to be discussed and agreed upon in their planning workshops for 93/94 and be forwarded to Higher Coordinating Committee (HCC) for consideration and inclusion in the government budget .
2. What steps will you take to ensure integration of the IMS components into the Ministry?
 - a. Component budgets will be placed in each components' "mother" authority to further institutionalize component activities and budgeting process. (steps to do this have begun)
 - b. All components except Main System Management (MSM) are now permanent parts of the MPWWR organizational structure. Next step is to complete the process for incorporating MSM as a permanent entity in MPWWR.
3. What steps will you take to work together in support of the sustainability of IMS activities and integration of these activities into MPWWR?
 - a. Seek every opportunity to promote and participate in activities to bring about needed structural reforms.
 - b. In the absence of needed structural reforms, explore alternatives to alleviate constraints to component sustainability such as improved incentives, etc.

QUESTIONS FOR SENIOR MANAGEMENT

- Re: ESA - Project is ESA. Does this imply budget for all of ESA to include activities not touched by project? *No, budget is for Survey and Mapping only.*
- 2.b & 3.a.b. "who" will follow up? *Higher Coordinating Committee through Gamil*
- 3.b What are other alternatives? *Higher Coordinating Committee will try to identify other alternatives*
- What would you do to ensure the supply of different spare parts for sustainability? *Need to ensure adequate government budget and/or seek alternative sources from donors (not just AID)*
- Do you see additional funds for sustainability a must? how are you going to secure this as top officials. *This is related to response to question 3b.*

APPENDIX C

COOPERATION AND COORDINATION Issue, Task and Responses

One of the major goals of the IMS is the improved operating efficiency of the water distribution system for agricultural irrigation and other uses. A major objective of the IMS is the institutional strengthening of the Ministry's capability to plan and design, operate and maintain the system. In order to accomplish these goals and objectives, the project components need to develop strategies for increased cooperation and coordination of their activities and resources.

During the interviews, most project directors recognized the need for and benefits of increased coordination and cooperation between and among components. However, specific strategies are not yet in place for achieving this increased cooperation and coordination.

In your functional groups -- Group 1 - MPWWR Project Directors; Group 2 - MPWWR Senior Management; Group 3 -USAID Project Officers and Managers; Group 4 - Project Team Leaders, and using the notes you made during yesterday's presentations by project directors, discuss the following questions:

1. Which components should be working more closely together? What specific areas (equipment and maintenance sharing, research results, training development and delivery, etc) should they be collaborating on?
2. What specific steps are needed by Project Directors, MPWWR senior staff and coordinating committee members, USAID staff, and team leaders to ensure that these suggestions are implemented?

In addition to these questions, the groups were asked to address specific questions raised in Friday's session on Implementation and Sustainability that have direct relevance to Cooperation and Coordination. Those questions included:

1. How do IAS-WUA-IIP work with MOA concerning water management at the farm level?
2. How can PD assist all the components with training?
3. How do you ensure the linkages between IIP authority and IAS, and the Water User Association?
4. MSM has the technical capability for remote water quality data collection at low cost. Have you considered cooperative effort?
5. How can WRC offer its technology free of charge to other Ministry Departments?
6. How can WRC assist the Ministry in determining feasibility of canal automation by studying Serry Canal?
7. Can PM maintain other component vehicles?
8. How can other components get use of the computer models in the design of canal simulation and improvement activity?
9. Will PSM receive assistance from Survey & Mapping with GIS on Sharkia for the Planning Distribution Model (PDM)?

Group Responses

**COOPERATION AND COORDINATION OF IMS COMPONENTS
SENIOR MANAGEMENT MPWWR**

Components	What	Who/First Step
IIPPPD S&M MSM PS&M PD PM WRC	- Feasibility Studies - Supply new maps - Automation - Operation Modeling - Training - Future maintenance - Research results - New technology	1- Each PD to identify specific fields of cooperation & coordination 2- PDs' committee to identify actions and submit the proposals to steering committee
PD All Component	- Training (to avoid duplication)	3- Joint Steering Committees review
MSM PS&M IIP	- Modeling - Automation	4- HCC to take decision and take action
S&M PS&M IIP	- Crop patterns - Maps	
WRC All Components	- Conducting required research	
PM IIP	- Future maintenance	

**COOPERATION AND COORDINATION OF IMS COMPONENTS
PROJECT DIRECTORS**

COMPONENTS	WHAT	WHO/FIRST STEP
MSM IIP, PSM	* Serry Canal Automation - Special data - Management strategy	Bilateral meetings between directors to identify tasks and to follow up
MIS WRC	* Evaluation of Serry Canal Automation	
PSM	* Serry Canal - Hydraulic Routing - Management * Sharkia - Hydraulic Routing	
PM	* Maintenance of flow measurements. Access to vehicles. Make use of EMAS program.	
IIP PPD	* Feasibility studies (in future areas). PPD is working on major activities	Two directors meet to plan for future activities concerning feasibility studies -hold follow up meetings
PM	* Maintenance of all improved structures * Inventory programs for spare parts * Evaluation of involved areas	
PPD WRC	* Local consultants	Follow up meetings
PSM S&M	* Sharkia Governorate aerial photo, maps. GIS systems including digital maps	Bilateral meeting between project directors and CTAs to identify tasks, responsibilities, follow up. (including delegation of specific task:).

- Project Directors need to develop requests stating specific requirements, time frames, etc for other component directors, have a preliminary meeting and frequent follow-up meetings to see what is happening with the request.

-Components need to be specific about what they can offer and share that information through meetings, publications.

**COOPERATION AND COORDINATION OF IMS COMPONENTS
TEAM LEADERS**

COMPONENTS	WHAT	WHO/FIRST STEP
PM/ALL	<ul style="list-style-type: none"> * Vehicle maintenance in directorates * Share warehouse facilities where practicable 	Eng. Adel and TL discuss with Eng. Gamil (staff needs to be considered)
PD/ALL	<ul style="list-style-type: none"> * Develop course for training component training coordinators 	PD and TL develop and add to course catalog
PD/ALL	<ul style="list-style-type: none"> * Explore administrative mechanism for CSU local campus activities 	Project directors discuss
PD/S&M	<ul style="list-style-type: none"> * Explore feasibility of PD teaching basic ARC/INFO courses 	Project directors discuss
MSM/PSM	<ul style="list-style-type: none"> * Continue cooperation in implementation of hydraulic models 	Eng. Soliman and Eng. Bayoumi discuss
IIP/S&M	<ul style="list-style-type: none"> * Maps <ul style="list-style-type: none"> - Small scale project area - topographic maps - Cadastral maps - Theme maps - Water User Associations, etc. 	Specific request from IIP project director to S&M project director requesting priority assignment
MSM/S&M	<ul style="list-style-type: none"> * Maps <ul style="list-style-type: none"> - Site location map 	Specific request from MSM project director to S&M project director requesting priority assignment
PSM/S&M	<ul style="list-style-type: none"> * Maps/GIS data <ul style="list-style-type: none"> - Sharkia G/S area 	Specific request from MSM project director to S&M project director requesting priority assignment
ALL/S&M	<ul style="list-style-type: none"> * ESA SRI be assigned as lead GIS activity in MPWWR 	Proposal prepared by S&M project director/ESA chairman as part of strategic plan development
IIP/PSM	<ul style="list-style-type: none"> * Canal Management Models (Serry Canal) 	Develop Serry Canal automatic remote control management and monitoring plan

IIP/MSM	* Canal Remote Control pilot project	Develop Serry Canal automatic remote control management and monitoring plan
IIP/WRC	* Canal Remote Control pilot project	IIP project director to request joint crop/water use monitoring/research project
MSM/PSM/WRC	* Cooperation in adding water quality and climatological sensors in Telemetry System	Project directors discuss and develop plan

**COOPERATION AND COORDINATION OF IMS COMPONENTS
USAID**

Components	What	Who/First Step
S&M/PD/PPD	<p><u>Services</u></p> <p>* Each component identify services needed.</p> <p>* MPWWR needs to decide budget process for finance & delivery of services</p>	<p>Chairman of HCC requests Monitoring Office to follow-up</p>
All Components	<p>* Broader dissemination of outputs so all involved are aware of opportunities and needs for collaboration</p>	<p>Project officers, team leaders, project directors, & monitoring office to schedule briefings of various components by other components.</p> <p>Joint field office planning sessions between 2 or more components & field offices</p>
All Components	<p>* Consultant to review needs & opportunities for coordination, define constraints & plan for their resolution.</p>	<p>Chairman HCC & OD/ILD</p> <p><u>1st step:</u> Contract consultant services (Egyptian & expats)</p>

APPENDIX D

PRIORITIZED ACTION PLANS

**PRIORITIZED ACTION PLAN
FOR IRRIGATION IMPROVEMENT PROJECT**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<u>IMPLEMENTATION AND SUSTAINABILITY</u>		
I. Define the organizational future of IIP/IAS	1. To be addressed in the IIP evaluation	June '93
II. Develop statement on Cost Recovery to share with farmers	2. Follow-up on evaluation recommendations	after June
III. Develop equipment accountability plan	1. Provide assistance to MPWWR (as requested) to assist in development of a cost recovery policy	upon request
	2. Complete Pacer study on justification for mesqa level cost recovery	May 15
	1. Inventory status and utilization	May 1
	2. Select computer management program	
	3. Develop utilization training plan	
	4. Develop implementation schedule	

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<p>IV. Collaborate with IIP/Irrigation Departments in the Directorates</p> <p>V. Resolve Mesqa pump issue</p>	<p>1. Schedule joint meetings with a specific agenda</p> <p>2. Develop a plan for turnover for main delivery improvements to Irrigation Dept.</p> <p>3. Develop a proposal for mesqa turnover and sustained operation and maintenance.</p> <p>1. Prepare proposal to USAID - explain why the PBDAC plan is not working and propose alternatives</p>	<p>May 1</p> <p>June 15</p> <p>July 15</p> <p>April 10</p>
<p><u>COOPERATION AND COORDINATION</u></p> <p>I. Determine IIP research needs</p> <p>II. Serry Canal management & monitoring plan</p>	<p>IIP/WRC meeting to discuss collaboration and start defining research activities</p> <p>Develop Serry Canal management & monitoring plan S&M - Maps MSM - Automation equipment PS&M- Management model WRC- Monitoring</p>	<p>April 21</p> <p>May 10</p>

**PRIORITIZED ACTION PLAN
FOR PROJECT PREPARATION DEPARTMENT**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<p><u>IMPLEMENTATION AND SUSTAINABILITY</u></p> <p>I. Assign feasibility studies to PPD</p> <p>II. Mechanism for funding of services to sustain PPD</p>	<p>1. Project director to write letter to Head, General Dir. for Planning requesting listing of feasibility studies required from MPWWR five year plan.</p> <p>2. Project director write letter to Head, Planning Sector, requesting assignment of feasibility studies for incorporation into PPD five year and annual work plans.</p> <p>1. Project director will submit proposal for funding (i.e. incentive proposal, fee for services and data) to Project Steering Committee.</p> <p>2. Approved plan by Steering Committee to be submitted to HCC.</p> <p>3. HCC decision and approval of the Ministry</p> <p>4. Minister's decree on funding mechanism</p>	<p>May 1, 1993</p> <p>July 1, 1993</p> <p>April 15, 1993</p> <p>May 15, 1993</p> <p>June 15, 1993</p> <p>Aug 15, 1993</p>
<p><u>COOPERATION AND COORDINATION</u></p> <p>I. Three local consultants for PPD</p>	<p>Follow-up on tasks for developing a strategy and meet with staff after completion</p>	<p>Continuous through January 1994</p>

**PRIORITIZED ACTION PLAN
FOR MAIN SYSTEMS MANAGEMENT**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<u>IMPLEMENTATION AND SUSTAINABILITY</u>	1. Written request to move Water Distribution group to Delta Barrage	June '93
	2. Written request to assign directorate telemetry engineers to Water Distribution Office	1 June '93
	3. Written request for top management to instruct Director Generals to reduce water use, regardless of their annual water budgets	15 May '93
	4. Have workshop with Director General & Director of Water Distribution office for coordination and input into training plan & then develop training plan for Directorate engineers	30 June '93
	5. Develop LOP budget	30 June '93
	6. Prepare request to MPWWR for constructing housing	1 June '93
	7. Prepare action memo for USAID to provide supplemental funding for housing	1 June '93

MSM PRIORITY PLAN - p.2

	<p>8. Request copies of property management software and documentation from PM & S&M</p>	<p>15 June '93</p>
<p><u>COOPERATION AND COORDINATION</u></p>	<p>1. Request S&M to add MSM physical data into their ARC/INFO Database and prepare thematic maps for MSM</p> <p>2. Prepare clear description of the types of sensors that can be accommodated by the Telemetry System and distribute to WRC, PSM, IIP and senior MPWWR Management</p>	<p>1 June '93</p> <p>15 June '93</p>

**PRIORITIZED ACTION PLAN
FOR PLANNING STUDIES AND MODELS**

PRIORITY ACTIONS	SPECIFIC STEPS	WHEN
<p><u>IMPLEMENTATION AND SUSTAINABILITY</u></p> <p>DSU will implement the Planning Distribution and ICM Model within the Sharkia Directorate.</p>	<ol style="list-style-type: none"> 1. Complete data collection within Bahr Masttoul pilot area. 2. Meet with S&M director to finalize arrangements of obtaining aerial photos and maps of Sharkia area 3. Implement action program with S&M and initiate necessary correspondence with details 4. Complete obtaining of coordinate points with Sharkia GPS team 5. Meet with Sharkia directorate personnel to finalize arrangements for completing flow measurements for all Sharkia directorate 6. Initiate building of GIS system for Sharkia 7. Calibrate Planning Distribution Model for Sharkia directorate 8. Train Sharkia irrigation sector engineers 	<p>May 1, 1993</p> <p>April 5-8</p> <p>April 11-15</p> <p>May 1</p> <p>May 5-10</p> <p>July '93</p> <p>August '93</p> <p>October '93</p>

PSM PRIORITY PLAN - p.2

<u>COOPERATION AND COORDINATION</u> I. Meeting with S&M Director II. Meeting with Sharkia Directorate engineers		April 5-8 May 5-10
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**PRIORITIZED ACTION PLAN
FOR PREVENTIVE MAINTENANCE**

PRIORITY ACTIONS	SPECIFIC STEPS	WHEN
<p><u>IMPLEMENTATION AND SUSTAINABILITY</u></p> <p>I. Structural Replacement structures are presently being maintained by individual Irrigation Directorates</p>	<p>PM is participating in maintenance of SR structures in six governorates</p>	<p>On going</p>
<p><u>COOPERATION AND COORDINATION</u></p> <p>I. Survey number of vehicles and location of vehicles, determine additional staff to be appointed and trained in six governorates. Survey of spare parts.</p>	<p>Survey vehicles and spare parts</p>	<p>PM/components- Now</p>

**PRIORITIZED ACTION PLAN
FOR SURVEY & MAPPING**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<p><u>IMPLEMENTATION AND SUSTAINABILITY</u></p> <p>I. Strategic Plan</p> <p>II. Participation in ESA FY 94-95 budget preparation</p> <p>III. Multiple shifting of equipment</p>	<p>Release Request for Technical Proposals (RFTP) @ 15 April Technical Proposal (TP) @ 1 June</p> <p>1. Budgeting workshop for finance personnel</p> <p>2. ESA FY 94-95 work plan workshop</p> <p>3. ESA budget preparation</p>	<p>@ 1 Sep '93</p> <p>30 October</p> <p>30 November</p> <p>30 December</p> <p>As staff is trained</p>

S&M PRIORITY PLAN - p.2

<u>COOPERATION AND COORDINATION</u>		
I. Access to maps by other components	1. Develop map publication & distribution procedures	12 April
	2. Research GOE decrees related to map distribution	12 April
	3. Forward results of 1&2 to MPWWR for review & approval	12 April
II. Develop series of brochures describing map products		30 May
III. Develop map indices for distribution quarterly beginning 1 Oct 93		30 Sept
IV. Develop map user survey questionnaire for ESA for use in fourth quarter '93		30 May
V. Letter to PD/training center suggesting mapping/GIS courses		30 May
VI. Research training center courses, come up with recommendations for Mgmt/PC courses		30 July
VII. Schedule tour for Project Directors		30 May
VIII. Workshop for ESA officers		Fall 1993

**PRIORITIZED ACTION PLAN
FOR WATER RESEARCH CENTER**

PRIORITY ACTIONS	SPECIFIC STEPS	WHEN
<u>IMPLEMENTATION AND SUSTAINABILITY</u>		
I. Environmental issues to be integrated into WRC	Within this month and next, two studies are taking place regarding strategic research and water quality. When finished, the reports will be discussed by the Board of Directors	June '93
II. Sustainability of academic training	Prepare a plan to address the issue where communication with foreign and local universities will take place and a budget to be prepared and discussed	August '93
III. Dissemination of research findings & networking	Establish a joint task group to develop a strategy	December '93
IV. Budget review and staffing	Project director & project officer will review budget for 94/95 and submit to IMS HCC for support to Ministries of Planning and Finance.	September '93
		November '93

WRC PRIORITY PLAN - p.2

<p>V. Procurement and accountability for commodities</p> <p>VI. Special incentives and salaries for returned staff</p>	<p>1. The procurement plan to be discussed between project director and project officer</p> <p>2. Visits by PD & PO to different Institutes to review current status and take corrective measures</p> <p>3. New organization of the main office</p> <p>1. Special salaries and incentive system is in place</p> <p>2. Special research grants (encourage multi-disciplinary) to be reviewed and a funded model to be developed</p> <p>3. Special awards (academy of science) in newsletter.</p>	<p>End of April '93</p> <p>April & May '93</p> <p>End '93</p> <p>Continuous</p> <p>June '93</p> <p>Whenever applicable</p>
<p><u>COOPERATION AND COORDINATION</u></p> <p>I. IIP research requirements</p> <p>II. MSM research requirements (Serry Canal)</p>	<p>A joint one day seminar followed by an agreement on research topics and other details</p> <p>Meet with project director</p>	<p>mid June '93</p> <p>end April</p>

**PRIORITIZED ACTION PLAN
FOR PROFESSIONAL DEVELOPMENT**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<u>IMPLEMENTATION AND SUSTAINABILITY</u>		
I. Completion of Procurement	1. Revision of Invitations for Bids (IFBs) by Smail	April 10
	2. Approval by USAID	May 1
II. Planning Workshop	1. Committee assignments on activity plan, budget preparation	April 10 - May 1
	2. Workshop results:-Draft Action Plan 93-94 (June 1 - July 1, 94) - Budget 93-94 (94-95)	o/a May 11-13
Steering Committee	3. Steering Committee Meeting a. Workshop results b. Guidance on organization changes to COAM	o/a May 19
III. Release of 9.0 million L.E. to complete work on training center	4. Final to USAID	June 1
	1. Sign A/C contract	April 10
	2. Fire protection contract	May 10
	3. Decoration contract	May 10
	4. Preparation of detailed budget (AC, furniture, etc)	

PD PRIORITY PLAN - p.2

<u>COOPERATION AND COORDINATION</u>		
I. Review IMS training plans as requested	<ol style="list-style-type: none">1. Review plan2. Recommend areas of PD assistance	As requested by components
II. Develop Arabic TOT	1. Discuss needs with IMS components	April 15
	2. Develop course against needs	May 1
	3. Offer course	August 1
III. Public relations visits to 6 October City		Ad hoc

**PRIORITIZED ACTION PLAN
FOR MINISTRY OF PUBLIC WORKS AND WATER RESOURCES**

PRIORITY ACTION	SPECIFIC STEPS	WHEN
<u>IMPLEMENTATION AND SUSTAINABILITY</u>	<p>1. Components to conduct their planning workshops through which they achieve realistic budget estimates for both USAID & GOE contribution for coming years and after project termination</p> <p>2. Component budgets to be within their related authorities starting from 93/94 fiscal year.</p>	<p>May & June</p> <p>93/94 Fiscal Year</p>
<u>COOPERATION AND COORDINATION</u> I. Bilateral or multilateral meetings	<p>1. Bilateral or multilateral meetings between component directors to identify fields of coordination and cooperation and submit results to project directors committee, then to HCC for consideration.</p>	<p>15 April</p>

**PRIORITIZED ACTION PLAN
FOR USAID SENIOR MANAGEMENT**

PRIORITY ACTION	SPECIFIC STEPS	V/HEN
<p><u>IMPLEMENTATION AND SUSTAINABILITY</u></p> <p>i. Sustainability <u>Organizational elements</u></p> <p>a. WUA legalization</p> <p>b. MSM incorporation</p> <p>c. Cost Recovery/IIP/Study III</p> <p>II. GOE Resources</p> <p>III. Adequate staff levels</p> <p>IV. Rigorous oversight of project officers carrying out agreements reached at conference on <u>timely</u> basis</p> <p>V. Will keep counterparts informed early on of any obstacles we encounter in completion of actions.</p>	<p>a. Meet with MPWWR to obtain status in process & determine next steps to be taken</p> <p>b. USAID will follow up with Eng. Gamil on next steps</p> <p>c. USAID to review consultants final report on mesqa level cost recovery</p> <p>- subsequently discuss w/ Eng. Gamil. Provide draft SOW to Eng. Gamil & cost recovery committee for phase III</p> <p>1. Budget appropriations for each component as required</p> <p>1. Adequate staff levels for each component. However USAID can facilitate support, TA and resources needed.</p> <p>Continue/ use short list to monitor</p>	<p>April 15, 1993</p> <p>April 15, 1993</p> <p>Within 2 weeks' receipt of draft version.</p> <p>Mid May</p> <p>As required</p> <p>As required</p> <p>Upon return to Office</p> <p>As required</p>

<p>VI. Quarterly meetings between team leaders, project directors, project officers for progress report on this action plan.</p>	<p>Project Officers/USAID to call meetings</p>	<p>July 1993</p>
<p><u>COOPERATION AND COORDINATION</u></p> <p>I. Develop SOW, timing & content for TA to review needs & opportunities for coordination, define constraints, plan for resolution</p>	<p>USAID to draft SOW</p>	<p>End of May 93</p>

APPENDIX F

WORKSHOP EVALUATION RESULTS

Thirty evaluation forms were completed. Following are the results:

The group was asked to evaluate the achievement of workshop objectives on a 1 to 5 scale with 5 being high and 1 being low achievement of objectives.

A. WORKSHOP OBJECTIVES

1. Review Progress and status of IMS Components
AVERAGE: 4.4
2. Explore issues facing each component related to continued implementation and sustainability
AVERAGE: 4.2
3. Develop strategies for increased cooperation and coordination between and among IMS components
AVERAGE: 4.2
4. Identify the expectations Project Directors, Team Leaders, AID, and the Ministry have of each other.
AVERAGE: 4.3
5. Create a vision for the future of the Ministry beyond IMS.
**** The workshop agenda was changed and this objective was not addressed*****
6. Agree on a set of prioritized actions to enhance the integration of project activities into the Ministry.
AVERAGE: 4.1

B. OPINIONS AND FEEDBACK

1. *What do you think has been the primary benefit of this workshop?*
 - * Good understanding of each component and the status and the relations between the components.
 - * Bringing all people responsible for IMS in one boat together to better cooperate.
 - * Alerted MPWWR/USAID/PD of the timely limitations of IMS and the urgency for addressing implementation.
 - * Component level personnel becoming familiar with other component activities & issues.
 - * All parties to work on a team, to face each other, to spread thoughts about others on the same table. This could lead to better problem solving.
 - * Bringing together all of the key persons of IMS-MPWWR, USAID, TA. The beginning of a perception (Not a vision) of the totality of the task ahead to effectively complete IMS.
 - * Explore issues of expectations, ways of cooperation between different parties and set of priorities for actions.
 - * Integration of project activities.
 - * Cooperation between the components.
 - * Coordination and cooperation between the different components.
 - * The workshop put the foundation of cooperation and coordination between components.
 - * To become informed of other IMS components' activities.
 - * Different groups (AID, MPWWR, Team Leaders
- * Review progress and status of IMS components

Review or create a vision for the future strategy of the MPWWR.

- * Team building, sharing problems, better understanding of tasks before us and idea on approaches to solution.
- * We hope more cooperation between the components.
- * Awareness of achievements and of interconnections between components.
- * Identification of a few (this is important) priority actions to be taken.
- * Sets everything in its place.
- * Better understanding among participants of the IMS, MPWWR & AID activities & cooperation.
- * A better understanding of other components.
- * Getting to share information on the entire IMS project.
- Gaining appreciation for the similarities of problems.
- * Opportunity to get global project view with each component's contribution.
- * Cooperation/sharing.
- * A better understanding of all the IMS components.
- * Sharing information/problems/solutions.
- * Know about other project's activities.
- * Personal interaction.
- * Set everything in its place.

2. *What workshop activity could have been done better?*

- * All activities have been equally perfect.
- * First class job by facilitators and participants.
- * More time to address implementation/constraints progress.
- * None (2)
- * All sessions went well. (6)
- * Issues constraining implementation
- * All are excellent (2)
- * The exploration of the issues
- * Workshop activities were excellent!
- * A vision for the future
- * # 4 expectations, not enough openness & frankness, ideals reflected, not actuality.
- * Priorities
- * Expectations portion - Where did it lead- action?
- * All done OK
- * A whole group discussion
- * All very good (2)
- * More time on objectives 2 & 3. Delete objective 4.
- * Some more time for group preparation.
- * Problem & constraints didn't really surface- only a repeat of known ones.

3. *Do you believe there are unresolved issues that should be dealt with in follow-up activities? What are they, and what should be done about them?*

- * Definition of the problems and involvement of the other components in solutions.
- * Future of IMS activities after 1995 (5)
- * Follow-up is needed to ensure actions are indeed carried out (Seminar in 6 months and a like workshop next year)
- * Increase focus on constraints and problem definition related to coordination and integration of components. (Whole workshop may be needed).
- * No/None/No Comment (8)

- * Coordination between components still a big issue. Staffing related to sustainability still big issue.
- * Major issues discussed - covered- now we must get to work!
- * Staff- redundant staff vis-a-vis hiring of new staff.
- * Yes- integration of components within the system. Secure funds for the future. These could be discussed first with the director's committee and then HCC
- * Getting MPWWR to formulate taking over IMS responsibilities.
- * Budget issues
- * Many. More delegation of authority, decision making & acceptance of that authority: putting it to work.
- * Can't tell- because we didn't discuss all.
- * Yes. The mechanism of coordination between IMS projects to be permanent and sustainable.
- * MPWWR providing adequate staff. Accountability and responsibility by MPWWR staff.
- * Yes- but mainly at level of new joint "task force" concepts dealing with individual components.
- * Very Good

4. *What comments do you have about the design and facilitation of the workshop?*

- * Excellent job (9)
- * All good
- * First rate!
- * Good. Well received. Excellent presenters. Controlled discussions well.
- * Excellent job. Don't expect much better.
- * Excellent but would prefer workshop not be held on weekends.
- * Very good (7)
- * Excellent arrangements
- * None
- * Very well done, probably could have used another half day or day
- * Great
- * Very domineering
- * Well organized and run.
- * Well planned. No additional comments
- * OK and good

5. *What comments do you have about the workshop arrangements and accommodations?*

- * Excellent (8)
- * Above average- Excellent
- * Very Good (3)
- * Good (4)
- * A few bugs but that's to be expected.
- * Low restaurant service, rooms dirty. Cold water in showers.
- * 5 star good location-well organized. Gallery walk effective way to focus in the late afternoon. Much more stimulating and lively! Only missing piece was turkish coffee at the hotel!
- * Thank you for all preparation
- * Super
- * Not too bad
- * OK (2)
- * OK. Adequate to need.
- * Well done (2)
- * OK & Good

ANNEX

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
REVIEW AND PLANNING WORKSHOP**

**APRIL 1-4, 1993
PORT SAID, EGYPT**

COMPONENT STATUS REPORTS PRESENTED AT THE IMS WORKSHOP

ISPAN ACTIVITY NO. 734E

ISPAN REPORT NO.54



ISPAN

IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST
sponsored by the U.S. Agency for International Development

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ISPAN

IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST

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International Science and Technology Institute, Inc.

Training Resources Group

The University of Arizona

IRRIGATION IMPROVEMENT PROJECT COMPONENT

***THE IRRIGATION IMPROVEMENT PROJECT,
HOW FAR HAVE WE COME,
WHERE ARE WE GOING?***

by

**ENGINEER HASSAN SHOUMAN
PROJECT DIRECTOR
IRRIGATION IMPROVEMENT PROJECT**

INTRODUCTION: I appreciate the opportunity discuss the Irrigation Improvement Project (IIP) for two major reasons: 1) the need for a wider understanding of the IIP and its activities. 2) the need to discuss the future of IIP and how integrate the other IMS components with IIP.

**THE IIP CONTRIBUTES TO THE IMS SUB-GOAL
"INCREASING IRRIGATION WATER USE EFFICIENCY
AND AGRICULTURAL PRODUCTION" BY:**

- **DEVELOPING FEASIBILITY STUDIES AND IMPLEMENTING IRRIGATION SYSTEM IMPROVEMENTS ON 11 PILOT PROJECT AREAS, ABOUT 400,000 FEDDANS FROM UPPER TO LOWER EGYPT.**
- **RENOVATING AND IMPROVING OF THE MAIN DELIVERY SYSTEMS.**
- **CONVERTING ROTATION CANAL DELIVERY TO CONTINUOUS FLOW.**
- **INTRODUCING DOWNSTREAM CONTROL.**
- **IMPROVING CANAL MANAGEMENT USING AUTOMATIC DOWNSTREAM CONTROL GATES, DISTRIBUTORS, TELEMETRY AND AUTOMATION.**

- CONVERTING LOW LEVEL (MULTIPLE PUMPING) MESQAS TO GRAVITY DELIVERY MESQAS WITH PUMPING AT THE HEAD (SINGLE POINT LIFTING).
- IMPROVING THE PRIVATE MESQAS WITH CONCRETE LINING AND LOW PRESSURE IRRIGATION PIPELINES.
- ORGANIZING THE MESQA WATER USERS INTO WATER USER ASSOCIATIONS TO OPERATE AND MAINTAIN THE PRIVATE MESQAS.
- PROVIDING IRRIGATION WATER MANAGEMENT ASSISTANCE TO THE WATER USERS.

THE IIP OBJECTIVES TO MEET THE IMS SUB-GOAL ARE TO:

- A. STRENGTHEN THE INSTITUTIONAL CAPACITY OF MPWWR SO IT CAN CONTINUE IIP WITH LIMITED EXPATRIATE ASSISTANCE.
- B. DEVELOP A "RATIONAL" INTERDISCIPLINARY APPROACH FOR PLANNING, DESIGNING, AND IMPLEMENTING THE RENOVATION OF THE CANAL COMMANDS IDENTIFIED IN MPWWR'S CURRENT FIVE YEAR PLAN.
- C. DEVELOP AN IRRIGATION ADVISORY SERVICE TO PROVIDE WATER MANAGEMENT TECHNICAL ASSISTANCE TO FARMERS AND WATER USERS GROUPS.
- D. ORGANIZE WATER USERS ASSOCIATIONS IN ALL IIP COMMANDS TO PROVIDE FARMER INPUT DURING THE RENOVATION PROCESS, COMMUNICATE LOCAL CONCERNS TO GOVERNMENT OFFICIALS, COORDINATE WATER SCHEDULING ON MESQAS, PERFORM MAINTENANCE AND RESOLVE DISPUTES.
- E. ESTABLISH POLICIES AND PROCEDURES FOR RECOVERY OF AN APPROPRIATE PORTION OF THE OPERATION AND MAINTENANCE COSTS OF THE IRRIGATION SYSTEM AND 100% OF THE COSTS OF MESQA AND ON-FARM IMPROVEMENTS.

As illustrated in the Figure I, a complete new program like the IIP requires much more time than was planned for full implementation. Most of the main activities and phases must be accomplished in sequence. For example: design must follow feasibility studies, construction follows design, WUAs are organized and activated in phases, WUA phase III is concurrent with mesqa design, WUA phase V cannot begin until the mesqa construction is completed.

We will now discuss the actions needed to meet the IIP Objectives, the progress made and what remains to be done.

PLANNING, DESIGNING AND IMPLEMENTATION OF THE
IIP IS BEING COORDINATED USING AN
INTERDISCIPLINARY APPROACH.

FIVE INTERDISCIPLINARY STAFFS WERE ORGANIZED IN EACH DIRECTORATE AND THE CAIRO HEADQUARTERS. INCLUDING:

- FEASIBILITY STUDY
- MAIN DELIVERY SYSTEM DESIGN
- MESQA DESIGN
- CONSTRUCTION
- IRRIGATION ADVISORY SERVICE

FEASIBILITY STUDY STAFFS

- THE FEASIBILITY STUDY STAFF WAS ESTABLISHED AS A MULTI-DISCIPLINED STAFF, INCLUDING ENGINEERS, AGRONOMISTS, ECONOMISTS, AND SOIL SCIENTISTS.

- These Agricultural Engineers on assignment from the Ministry of Agriculture are reaching their limit of 4 years, an arrangement is needed to extend their assignments.

IRRIGATION IMPROVEMENT PROJECT IMPLEMENTATION SCHEDULE

ITEM	QUARTER/YEAR				QUARTER/YEAR				QUARTER/YEAR				QUARTER/YEAR				QUARTER/YEAR				QUARTER/YEAR						
	1/90	2/90	3/90	4/90	1/90	2/90	3/90	4/90	1/91	2/91	3/91	4/91	1/92	2/92	3/92	4/92	1/93	2/93	3/93	4/93	1/94	2/94	3/94	4/94	1/95	2/95	3/95
FEASIBILITY STUDIES																											
DESIGN																											
CONSTRUCTION																											
WATER MANAGEMENT M&E																											
IRRIGATION WATER MANAGEMEN																											
WUA ORGANIZATION																											
Phase I																											
Phase II																											
Phase III																											
Phase IV																											
Phase V																											
Phase VI																											
Phase VII																											

WUA ORGANIZATION LEGEND

- Phase I, Entry activities
- Phase II, Organizational Activities
- Phase III, Planning Mesqas Improvement
- Phase IV, Installing Mesqas Improvements
- Phase V, Putting mesqas into operation
- Phase VI, WUA Federation Activities
- Phase VII, WUA Monitoring and Evaluation

BAR GRAPH LEGEND

- = IIP Activities
- = After IIP Activities

FIGURE 1

4

As seen in the Table I, Status of Feasibility Studies, 17 Feasibility Studies were planned covering all or portions of the 11 project areas. The last three studies (Serri Canal, Saidiya-3 and Bahig) are scheduled to be completed by July, 1993. These three cover about 189,000 feddans or about 47% of the 400,000 feddan project area. Our goal is to improve about 1/3 of the project areas or about 133,000 feddans.

TABLE I
STATUS OF FEASIBILITY STUDIES

	Command Area	Gross Area feddans	Net Area feddans	Draft Report Approved	Final Report Approved
1	Abbadi	5,885	4,960	X	X
2	Ashruba	4,000	3,665	X	X
3	Bahr El Gharag	59,000	47,043	X	X
4	Bahig	40,622	30,000	X	
5	Bahr El Saidi	30,600	26,668	X	X
6	Balagter	12,000	11,484	X	X
7	Beni Ebied	5,000	4,455	X	X
8	Iqal Shamia	20,245	17,470	X	
9	Khor Sahel	9,960	7,810	X	X
10	Mantout	11,340	10,700	X	X
11	Qahwagi	12,800	11,779	X	X
12	Qiman El Arous	7,160	6,250	X	X
13	Radissia	8,900	8,500		
14	Saidiya-1	8,500	7,160	X	X
15	Saidiya-2	17,180	15,340	X	
16	Saidiya-3	52,100	47,200	X	
17	Serry Canal	95,849	90,435	X	
	Total	400,691	350,919		

Additional studies from the current Five Year Plan will be assigned to keep the Feasibility Study staffs active and to raise their level of competence.

MAIN DELIVERY AND MESQA DESIGN STAFFS

THE IIP MAIN DELIVERY DESIGN STAFF HAS DEVELOPED A HIGH LEVEL OF COMPETENCE TO DESIGN MAIN DELIVERY SYSTEM IMPROVEMENTS INCLUDING THE IMPLEMENTATION OF CONTINUOUS FLOW AND DOWNSTREAM CONTROL.

- This staff needs to keep up with the latest technology such as: prestressed concrete, the Survey and Mapping (S&M) capability, the Main System Management (MSM) Centralized Remote Control System (VDCS), the Planning Studies and Models (SP&M) canal management models, etc.

- THE IIP MESQA DESIGN STAFF HAS DEVELOPED THE EXPERTISE FOR THE NEW MESQA DESIGN TECHNOLOGY INCLUDING SINGLE POINT LIFTING PUMPING PLANTS, CONCRETE J-SECTION LINING AND LOW PRESSURE PIPELINES. THEY ARE ABLE TO WORK CLOSELY WITH IAS AND THE WUAS TO PLAN AND DESIGN CUSTOM FIT MESQAS.

- The Bahr El Gharag command area has always had gravity field delivery and continuous flow, IIP will be developing the new design criteria for improved mesqas fed by gravity (no pumping) from the canals under a downstream control system.

As seen in Figure II, Design Progress, 65 sets of designs and contract documents have been completed of the March 31, 1993 goal of 77. Our goal is 90 sets by July 1993, to allow construction to be completed by the September, 1995.

A major effort is needed to complete the sets of designs and contract documents to meet our goal. After this fall the design staff will continue to prepare sets of design and contract documents for command areas with completed feasibility studies.

DESIGN PROGRESS

DESIGNS AND CONTRACT DOCUMENTS

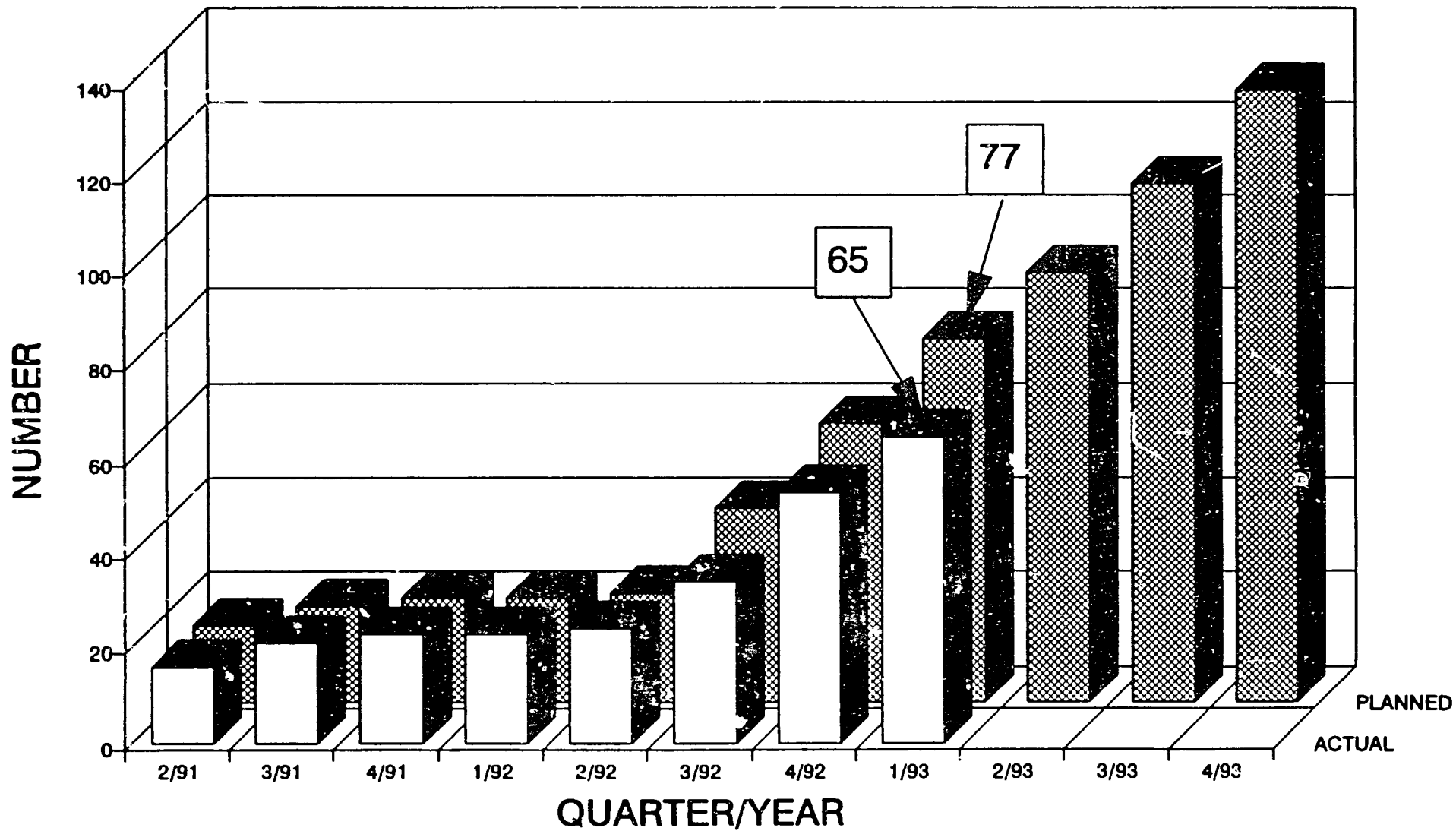


FIGURE II

CONSTRUCTION STAFF

- THE CONSTRUCTION STAFF HAS NOT REACHED A SATISFACTORY LEVEL OF CONSTRUCTION QUALITY CONTROL.

- CONSTRUCTION OF IMPROVED MESQAS IS NEW AND PRESENTS MANY PROBLEMS. THE MESQAS ARE PRIVATE, THEREFORE THE WUAS HAVE A VESTED INTEREST. THE WUAS WILL ALSO BE EXPECTED TO REPAY CONSTRUCTION COSTS. MESQAS DO NOT HAVE LEGAL RIGHT-OF-WAYS, THE CONTRACTOR MUST WORK ON FARMERS LAND AND MAY CAUSE CROP DAMAGE. THE CONTRACTOR MAY HAVE TO PROVIDE ALTERNATE WATER SERVICE DURING CONSTRUCTION. THIS ALL CAN LEAD TO SERIOUS DISPUTES BETWEEN CONTRACTORS AND WATER USERS.

- An intensive training program is need to build the construction quality control capability of the Directorate construction staff.

- A review or study is needed to improve contracting procedures and contract documents, especially for mesqa improvements.

The number of contracts awarded can be seen in Figure III, Contracts Signed. Forty-five of the March 31st goal of 59 contracts were awarded.

These contracts obligated LE 55 million of our 92-93 March 31st. goal of LE 91 million, as seen in Figure IV, Contract Obligations. The LE 55 million obligated is about 39% of the October, 1995 LE 140 million construction expenditure goal.

Figure V, IIP Construction Expenditures, shows that 22.8 million of the March 31st. goal of 24.8 million Egyptian Pounds were expended. This is about 16% of our September, 1995 construction expenditure goal of 140 million Egyptian pounds.

Our construction program needs continuous monitoring and close supervision to keep it on schedule to meet our goals.

CONTRACTS SIGNED

NUMBER OF CONTRACTS

6

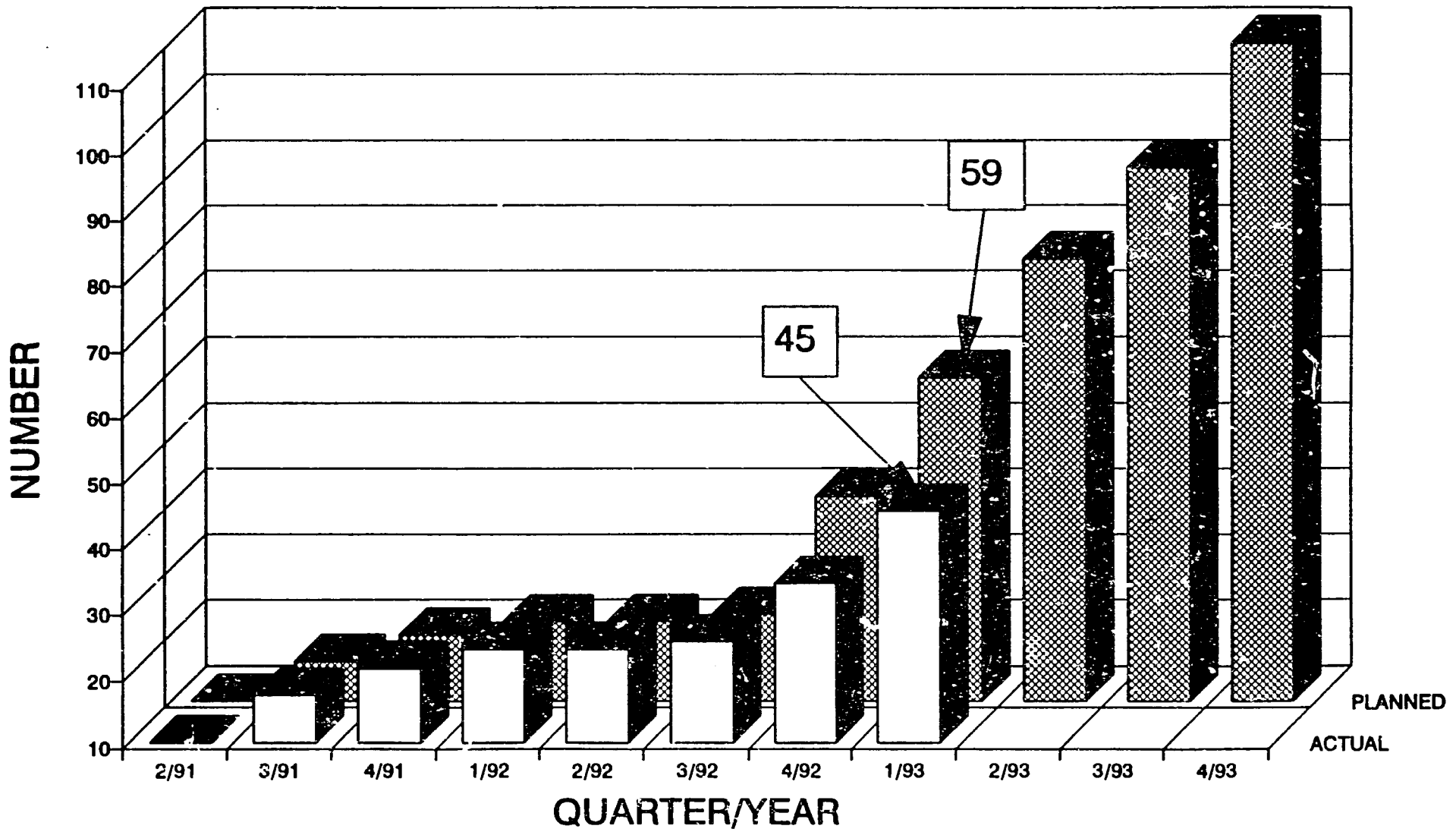


FIGURE III

6/27

CONTRACT OBLIGATIONS

Million LE

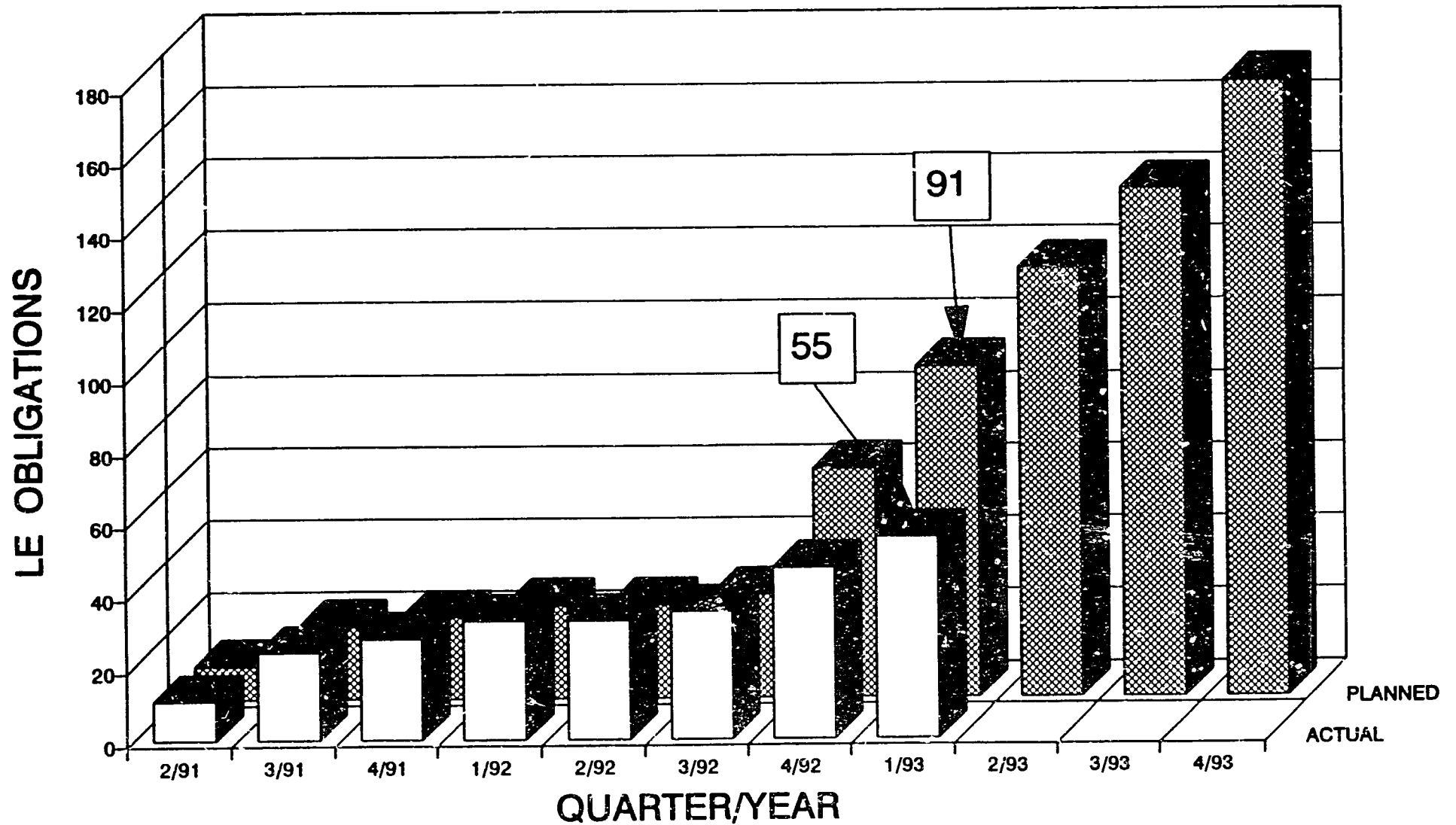


FIGURE IV

10

10

IIP CONSTRUCTION EXPENDITURES

ALL COMMAND AREAS

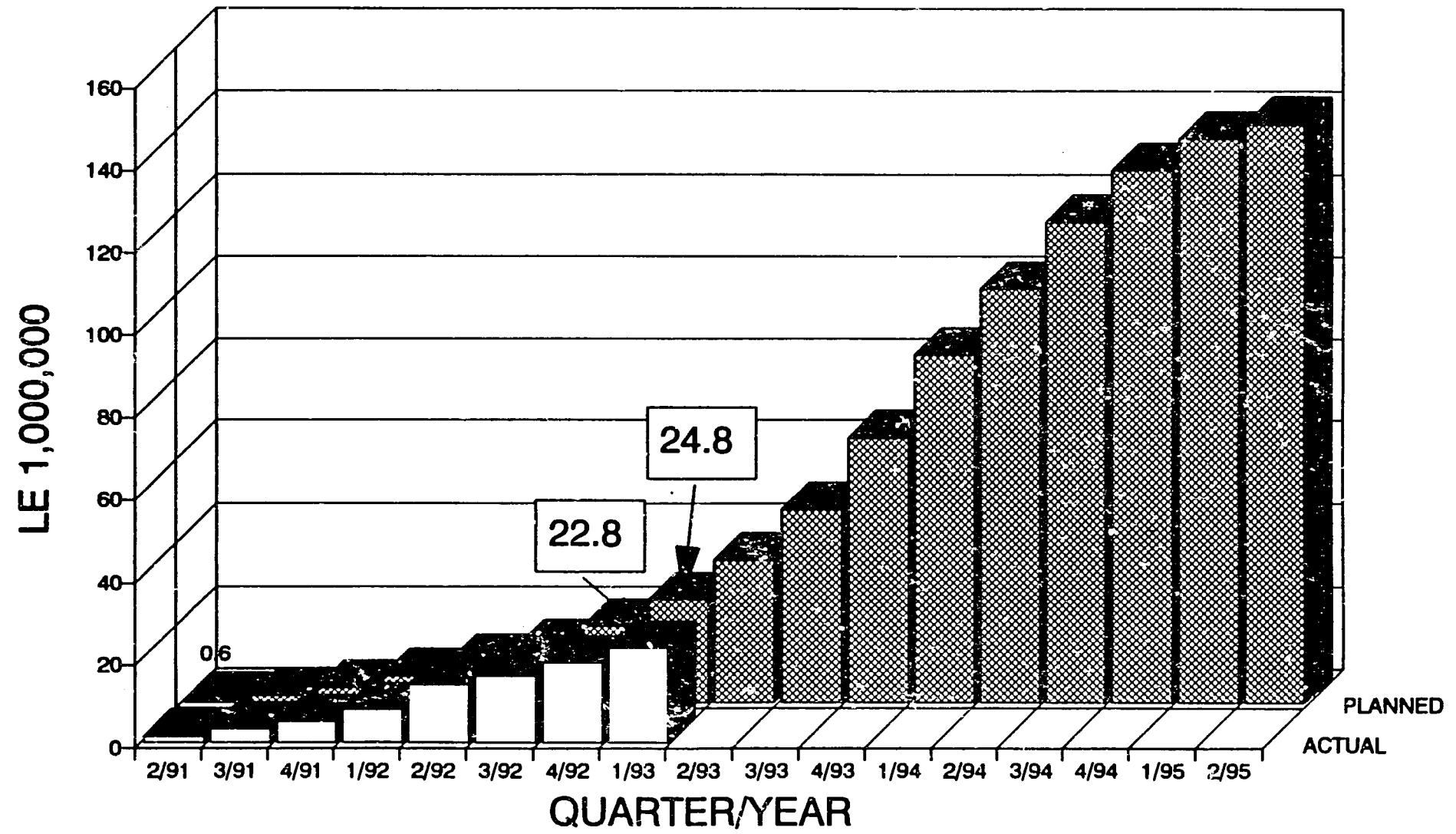


FIGURE V

11

95

IRRIGATION ADVISORY SERVICE STAFF

- THE IAS HAS BEEN ORGANIZED, ACTIVATED AND HAS MADE GOOD PROGRESS. THE MAJOR EFFORT HAS BEEN ORGANIZING AND ACTIVATING WUAs. THEY ARE ORGANIZED IN PHASES AS SEEN EARLIER IN FIGURE I. THE WATER MANAGEMENT MONITORING AND EVALUATION ACTIVITY IS THE INITIAL STAGES. THE IRRIGATION WATER MANAGEMENT ADVISORY SERVICE WILL BEGIN SOON.

- The IAS must be trained for WUA organization phase VI, WUA Federation Activities and Irrigation Water Management.

- THE MOST CRITICAL PERIOD FOR IAS IS JUST BEGINNING, ASSISTING WUAs PUT THEIR IMPROVED MESQAs INTO OPERATION. THE IAS HELPS WITH PUMP PURCHASE, AND TRAINS THEM IN IRRIGATION SCHEDULING, FINANCIAL MANAGEMENT AND MESQA MAINTENANCE.

As of January 1, 1993, 44 mesqas are fully operational as seen in Figure VI, Mesqas Fully Operational. This figure also gives the anticipated schedule to make the goal of about 1800 improved mesqas fully operational.

- THIS IS A MONUMENTAL TASK. THE SUCCESS OR FAILURE OF IIP RESTS WITH THE ACTIVATION OF THE WUAs AND THESE MESQA IMPROVEMENTS.

- A MAJOR CONSTRAINT IS THE PURCHASE OF PUMPS BY THE WUAs. IT HAS BEEN MOST DIFFICULT TO GET AGREEMENT FROM ALL WUA MEMBERS TO MAKE THE PURCHASE. AN EXTRAORDINARY AMOUNT OF TIME IS SPENT WITH THIS PROBLEM, TIME THAT SHOULD BE SPENT ON WATER MANAGEMENT.

We would like to see the pumps included with the mesqa improvement package. Then the pumps will be ready when the mesqas are completed and the IAS can concentrate on helping the WUAs with the operation and maintenance of their mesqas and setting up their finances.

The IAS needs a lot technical assistance and support in their effort to get the improved mesqas fully operational and the WUAs fully trained.

MESQAS FULLY OPERATIONAL ALL COMMAND AREAS

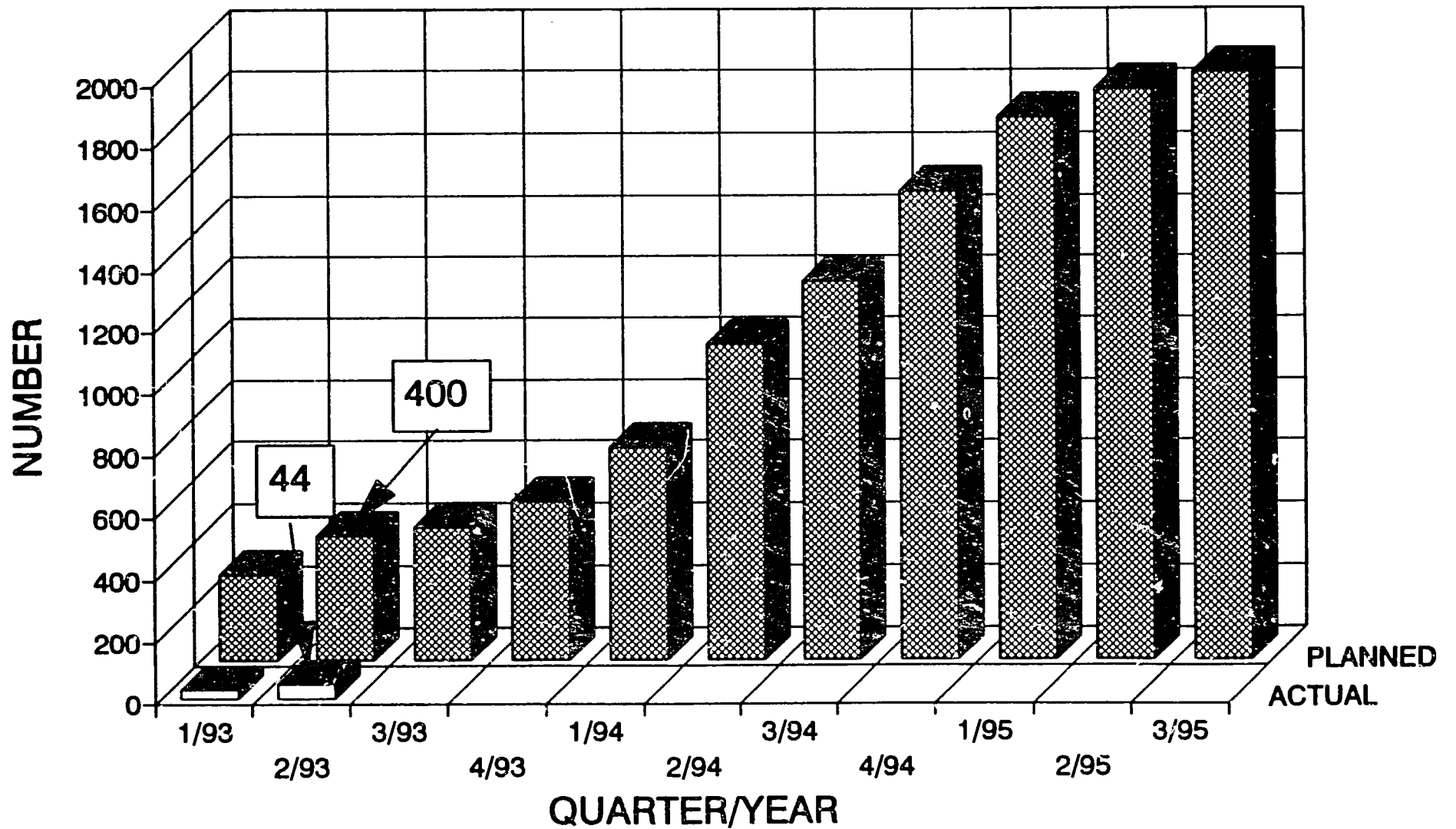


FIGURE VI

13

1/91

The IAS must also implement an Irrigation Water Management technical assistance program for the water users to obtain the expected irrigation efficiencies.

Assistance is needed from the WRC to help provide Irrigation Water Management technical assistance.

WATER USERS ASSOCIATIONS

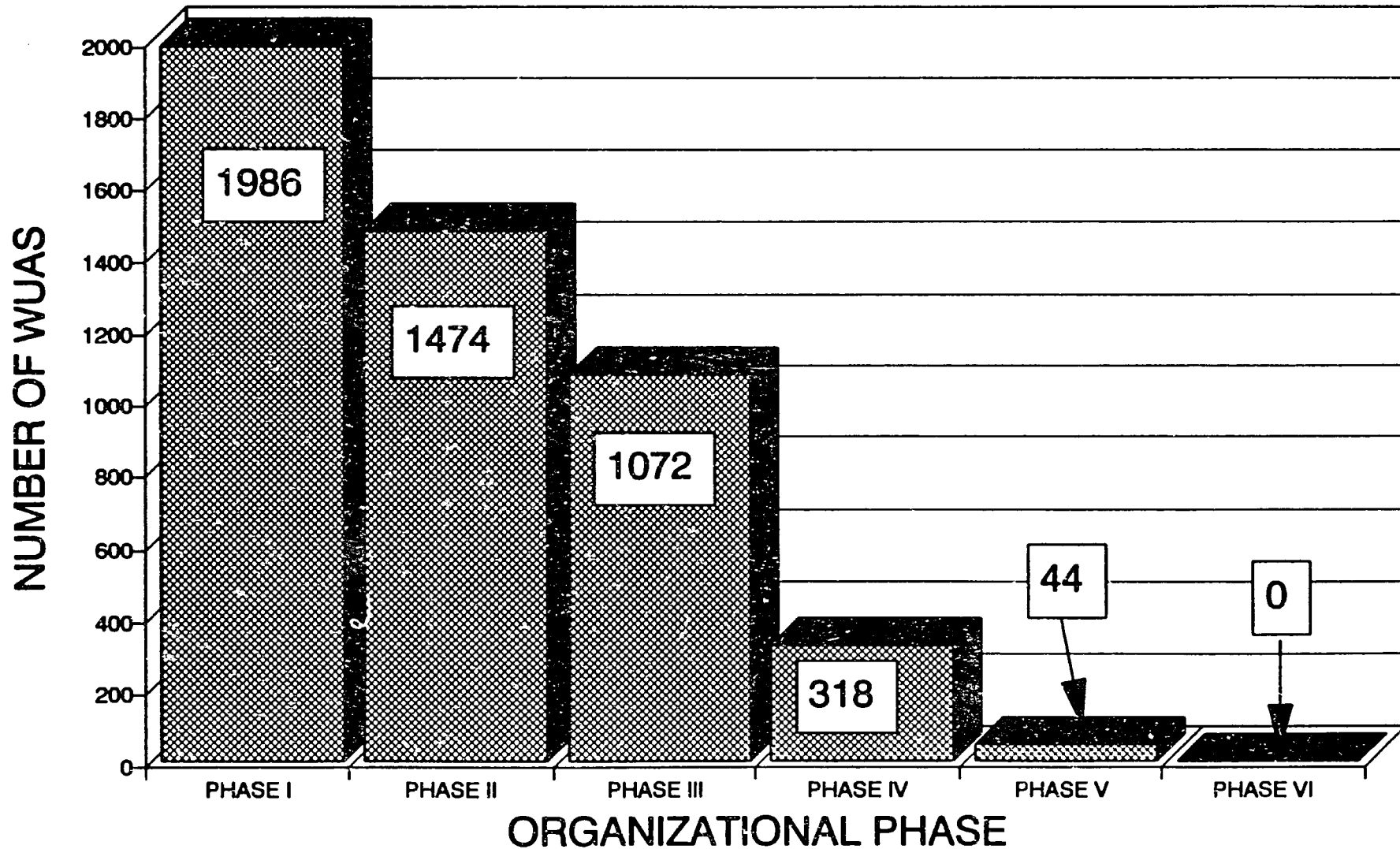
- THE ORGANIZATION OF WUAS HAS BEEN IN PHASE OR AHEAD OF OTHER IMPROVEMENT ACTIVITIES. SEE FIGURE VII, STATUS OF WUA ORGANIZATION.
- COORDINATING MESQA IMPROVEMENT WITH MESQA DESIGN STAFF AND WUAS WAS DIFFICULT BEFORE IMPROVED WERE AVAILABLE TO SHOW TO THE WATER USERS.
- IMPROVED MESQAS ARE NOW COMING ON LINE, BUT IT WILL TAKE TIME FOR THE IIP ENGINEERS AND WATER USERS TO FULLY APPRECIATE THIS NEW TECHNOLOGY. INITIAL WATER USER ACCEPTANCE HAS BEEN GOOD AND THE WUAS HAVE BEEN OPERATING IMPROVED MESQAS EFFECTIVELY.
- THE REAL TEST OF THE WUAS AND MESQA IMPROVEMENT PROGRAM IS STILL AHEAD. THERE ARE MANY HAZARDS ALONG THE ROAD WHICH MUST BE OVERCOME IF IIP IS TO BE SUCCESSFUL.
 - *A major constraint has been lack of a full and stable staffs.*
 - *There is a need for a legal base for private WUAs which will among other things help them obtain credit (loans) from local banks.*

COST RECOVERY

- A COST RECOVERY PLAN TO RECOVER THE CAPITAL COST OF MESQA IMPROVEMENTS HAS BEEN PRESENTED TO MPWWR.

STATUS OF WUA ORGANIZATION

MARCH 31, 1993



- ONE OF THE PROBLEMS THAT THE IAS HAS HAD FROM THE BEGINNING, IS THEY MUST INFORM THE WUAS THE MESQA IMPROVEMENT COSTS WILL BE RECOVERED WITHOUT BEING ABLE TO TELL THEM HOW OR HOW MUCH.

- There is a need for the MPWWR to announce clearly its cost recovery plan to waterusers.

ON SHORE AND OFF SHORE TRAINING

AN EXTENSIVE ONSHORE AND OFFSHORE TRAINING HAS PROVIDED MANY NEW SKILLS. AS THE PROJECT PROGRESSES, TRAINING WILL BE NEEDED FOR NEW ACTIVITIES. MOST OF THE TRAINING IN THE ORIGINAL TRAINING PLAN HAS BEEN HELD. TABLE II GIVES THE NUMBER OF PARTICIPANTS PLANNED AND PROGRESS MADE.

- The training plan needs to be updated. Additional funding will be required.

- The facilities of Professional Development (PD) need to be integrated into the IIP training program.

**TABLE II
IIP TRAINING PROGRAM**

	<u>Planned</u> Number of Participants	<u>Estimated</u> Cost (\$)	<u>Progress</u> Number of Participants	<u>Progress</u> Cost (\$)
IIP OFFSHORE	81	748,000	100	520,000
IIP ONSHORE	2010	704,000	1298	308,000
WUA MEMBERS	6300		2817	
TOTAL	8391	1,452,000	4205	828,000

PROCUREMENT

MOST OF THE EQUIPMENT NEEDED TO PERFORM THE IIP ACTIVITIES HAS BEEN PROCURED, SEE TABLE III, IIP PROCUREMENT. THE PROCUREMENT PLAN WAS RECENTLY REVISED TO INCLUDE THE AUTOMATIC GATES TO BE IMPORTED.

There may be new items that are identified as the project progresses, or additional quantities of items already received.

An equipment management system is needed to manage the equipment and spare parts. The computerized equipment and spare parts management system, developed by the Preventative Maintenance Project (PMP), needs to be adapted to IIP.

TELEMETRY AND CANAL AUTOMATION

THE MAIN SYSTEMS MANAGEMENT (MSM) PROJECT, AN IMS COMPANION PROJECT TO OPERATE AND MONITOR THE MAIN CANAL SYSTEMS BY TELEMETRY HAS SELECTED SERRI CANAL AS A PILOT PROJECT TO MONITOR AND EVALUATE THIS NEW TECHNOLOGY. IIP IS WORKING WITH MSM AND THE IRRIGATION DEPARTMENT TO DEVELOP A PLAN TO EVALUATE TELEMETRY MONITORING, AUTOMATIC CANAL OPERATION, CONTINUOUS FLOW AND DOWNSTREAM CONTROL ON SERRI CANAL.

- Technical Assistance is needed for the proper operation of this equipment and to help initiate this program.*
- Assistance is needed from WRC to help develop a real time irrigation scheduling (water requirement) program.*

**TABLE III
IIP PROCUREMENT**

ITEMS	Cost (\$)	Date
UTILITY VEHICLES	584,338	OCT. 91
PICKUPS	443,520	
VANS	391,457	AUG. 91
MOTORCYCLES	537,038	AUG. 91
ENG. AND SURVEYING EQUIPMENT	318,776	FEB. 92
DRAFTING EQUIPMENT	98,803	FEB. 92
SOIL MOISTURE EQUIPMENT	49,336	SEPT. 91
WATER MEASUREMENT EQUIPMENT	315,334	FEB. 93
SOIL TESTING EQUIPMENT	48,054	JAN. 92
ENGINEERING REFERENCE BOOKS	9,495	JUNE 92
ADMIN AND TRAINING EQUIPMENT	52,872	MAY 93
COMPUTER EQUIPMENT	882,593	JULY 93
AUTOMATIC GATES #1	470,070	FEB. 93
AUTOMATIC GATES #2	827,480	JUNE 93
AUTOMATIC GATES #3	1,523,942	JAN. 94
MISCELLANEOUS	446,892	
TOTAL	7,000,000	

TECHNICAL MATERIALS

MANY REPORTS, TECHNICAL MATERIALS, TRAINING MATERIALS, ETC. HAVE BEEN DEVELOPED BY THE TDY AND TA STAFF.

These need to be translated into Arabic to be effectively used by IIP.

PROJECT PREPARATION DEPARTMENT COMPONENT

IRRIGATION MANAGEMENT SYSTEMS PROJECT
PROJECT PREPARATION DEPARTMENT COMPONENT

Objective:

Provide quality technical and economic feasibility studies which analyze investment options open to MPWWR and to prepare reports in English for submission to International Donors.

<u>Planned Outputs</u>	<u>Current Status</u>	<u>Remaining/Comments</u>
- Conduct feasibility studies, project evaluations & analyses.	- 22 Studies have been completed. The implementation cost of these studies amounted to over four billion L.E. - Assignment of an economic consultant has been approved.	- Two projects presently under study: 1- Agricultural intensification in west Nubaria. 2- Evaluation of ground water wells for irrigation all over the country.

Planned Outputs	Current Status	Remaining/Comments
	<p>The economist's assignment would be to study and evaluate 12 feasibility studies conducted by the Regional Irrigation Improvement Project (RIIP) to determine if general criteria could be outlined for conducting future irrigation improvement project feasibility studies.</p> <p>The consultant would then be expected to develop guidelines for conducting future feasibility studies for RIIP. These guidelines would be used by both PPD and RIIP offices.</p>	<p>- Project studies undertaken by the PPD have helped local irrigation departments examine alternative proposals and select the most beneficial, make more realistic cost estimates and identify possible risks and complications to their projects.</p>

Planned Outputs	Current Status	Remaining/Comments
<p>- staffing Create a staff of civil engineers, economists & agronomists to carryout feasibility studies, project evaluation and analysis.</p>	<p>- Highly professional staff are now qualified to do all types of project analyses for the MPWWR. They are divided as follows: a- 13 civil engineers b- 6 economists c- 4 agronomists</p>	<p>- The staff will be increased by six civil engineers for a total number of 19 civil engineers. They have been submitted to the PPD before the Biram.</p>
<p><u>Training</u> <u>Off-Shore Training</u> - courses teaching skills in economics, data gathering and manipulation aspects of project preparation.</p>	<p>- The PPD developed an ambitious training plan for off-shore and local training</p>	<p>- To be continued for the six newly engineers.</p>

Planned Outputs	Current Status	Remaining/Comments
<ul style="list-style-type: none"> - Designing and Managing Integrated Agricultural & Rural Development Programs - Project Analysis and Implementation for Agricultural & Rural Development 	<ul style="list-style-type: none"> - 36 persons have attended a total of 60 courses in these fields. 	
<p>Local Training In Economics, Computer, Report Writing, and English Language.</p>	<ul style="list-style-type: none"> - have been completed for most of the staff. 	<ul style="list-style-type: none"> - A technical expert in economics will come in May to conduct an intensive 4 week course in project appraisal for the new staff & 14 other engineers, economists, & agronomists.

<u>Planned Outputs</u>	<u>Current Status</u>	<u>Remaining/Comments</u>
<p data-bbox="141 186 469 235"><u>Commodities</u></p> <p data-bbox="141 243 760 349">The commodities planned for the PPD were:</p> <ul style="list-style-type: none"> <li data-bbox="141 357 760 479">a- vehicles (Jeep, Vans, Cars) <li data-bbox="141 527 760 576">b- CPT Word Processor <li data-bbox="141 633 760 787">c- Vax Mini computer system with ten on-line terminals <li data-bbox="141 844 760 998">d- Four Apple Mac. SE personal computers with four printers <li data-bbox="141 1063 760 1273">e- Communication system consisting of Fax, Telex system & telephone switch 	<ul style="list-style-type: none"> <li data-bbox="766 243 1356 349">- All commodities have been purchased. 	<ul style="list-style-type: none"> <li data-bbox="1362 243 2026 414">- Procurement of two vehicles is proposed in the new budget <li data-bbox="1362 479 2026 690">- One PC compatible and a lazer printer have been purchased and will be delivered soon

MAIN SYSTEMS MANAGEMENT COMPONENT

**IMS PROJECT WORKSHOP
APRIL 1-4, 1993**

MSM PROJECT OVERVIEW

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
MAIN SYSTEMS MANAGEMENT COMPONENT**

OBJECTIVE: PROVIDE A DATA MANAGEMENT SYSTEM TO ALLOW DECISION MAKERS AND OTHER PWR STAFF EASY ACCESS TO WATER DISCHARGE AND OTHER HYDROLOGIC DATA.

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
COMPUTERIZED NRIS DATA BASE	COMPLETE	ADD FLOW COMPUTATION. OPTIMIZATION/ ENHANCEMENTS ARE ONGOING AND WILL CONTINUE THROUGHOUT LOP.
COMMODITY INVENTORY SYSTEM	COMPLETE	EXPERIENCING PROBLEMS WITH STAFF IMPLEMENTING THE SYSTEM. TARGET TO ACHIEVE EFFICIENT OPERATION IS END OF 1993.
LAN FOR ACCESS TO DATA BASE	COMPLETE WITHIN MSM OFFICE WITH DROPS LOCATED IN MINISTER'S OFFICE, IRRIGATION DEPARTMENT AND PLANNING SECTOR.	PROVIDE LAN DROPS TO OTHER USERS UPON REQUEST, PROVIDE TELEPHONE MODEM CONNECTION TO WRC UPON REQUEST, PROVIDE DATA IN HARD COPY OR MACHINE READABLE FORM ON REGULAR BASIS TO ANY USERS UPON REQUEST.

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
MAIN SYSTEMS MANAGEMENT COMPONENT**

OBJECTIVE: ENHANCE PWWR'S CAPABILITY TO MORE EFFECTIVELY MANAGE WATER SUPPLIES BY ESTABLISHING A WATER MEASUREMENT, DATA COLLECTION AND COMMUNICATION NETWORK.

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
<ul style="list-style-type: none"> * 200 REMOTE DATA COLLECTION PLATFORMS * 2 MASTER STATIONS * 24 SUBMASTER STATIONS 	<p>192 OPERATIONAL</p> <p>COMPLETE (2 OPERATIONAL)</p> <p>22 OPERATIONAL</p>	<p>REMAINING 8 SITES SCHEDULED FOR COMPLETION BY 1 OCTOBER 1993.</p> <p>3 WAITING FOR ROOMS (SALHEYA, EL NASR, ELSALAAM), 1 SPARE.</p>
<ul style="list-style-type: none"> * 21 SUBMASTERS WITH 630 REMOTE SITES INCLUDING VOICE COMMUNICATION TO ALL SITES * BACKBONE COMM. SYSTEM CONNECTING 21 SUBSYSTEMS INCLUDING VOICE COMM. AND ONE MASTER STATION 	<p>SYSTEM DESIGN COMPLETE, FIELD INSTALLATION UNDERWAY AND FIRST SUBSYSTEM FACTORY TEST SCHEDULED FOR 5 APRIL.</p> <p>WORK PROCEEDING ON SCHEDULE</p>	<p>FIRST SUBSYSTEM (EL MINYA) SCHEDULED TO BE OPERATIONAL IN OCTOBER 1993. THE ENTIRE SYSTEM TO BE OPERATIONAL IN MID-1995.</p> <p>CONTINUE PLANNED ACTIVITIES</p>
<p>EQUIP AND TRAIN "40 WATER MEASUREMENT" TEAMS</p>	<p>EQUIPMENT DISTRIBUTED, INITIAL TRAINING COMPLETE AND MEASUREMENTS BEING MADE.</p>	<p>DEVELOP CALIBRATION OF REGULATORS USING FLOW MEASUREMENT DATA, MONITOR QUALITY AND QUANTITY OF FLOW MEASUREMENT DATA.</p>

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
MAIN SYSTEMS MANAGEMENT COMPONENT**

OBJECTIVE: ENHANCE PWR'S CAPABILITY TO MORE EFFECTIVELY MANAGE WATER SUPPLIES BY ESTABLISHING AN ORGANIZATION WITH PERSONNEL AND FACILITIES TO COMPETENTLY PLAN, MANAGE AND OPERATE THE SYSTEM.

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
NEW FACILITY FOR O & M AT DELTA BARRAGE.	BUILDING COMPLETE, ELECTRONICS REPAIR LAB OPERATIONAL.	INSTALL VDCS MASTER STATION AND TRANSFER OPERATIONS STAFF AND EQUIPMENT FROM EMBABA TO NEW BUILDING. PROCURE PHONE SYSTEM AND FURNITURE.
ESTABLISH ORGANIZATIONAL FRAMEWORK FOR O & M.	COMPLETED AND SUBMITTED FOR MINISTRY APPROVAL. APPROVAL NOT OBTAINED TO DATE.	PUBLISH AND IMPLEMENT AFTER APPROVAL
8 MS DEGREE CANDIDATES 125 SHORT TERM OFF-SHORE 1,275 IN-COUNTRY	2 COMPLETE, 6 ONGOING 27 COMPLETE 836 COMPLETE	MONITOR ONGOING MS CANDIDATES CONTINUE PROGRAM CONTINUE PROGRAM

IMS WORKSHOP; APRIL 1.4, 1993
MAIN SYSTEMS MANAGEMENT

CONSTRAINTS TO IMPLEMENTATION

BUDGET. MSM BUDGET PRESENTLY OBLIGATED IS NOT SUFFICIENT.

STAFF. ELECTRICAL ENGINEERS AND ELECTRONICS TECHNICIANS REQUIRED. MPWR IS ACTIVELY WORKING TOWARD SOLUTION.

ORGANIZATION. ORGANIZATION DEMONSTRATING CAREER PATHS FOR ELECTRICAL ENGINEERS MUST BE ADOPTED SOON.

STAFF RETENTION. RETENTION OF STAFF IS CRITICAL. SYSTEM TO MAKE IT ATTRACTIVE FOR STAFF TO STAY IS NEEDED.

**PLANNING STUDIES AND MODELS COMPONENT
AND
MONITORING FORECASTING AND SIMULATION**

FUTURE ACTIVITIES

Model Development and Promotion

- **Planning Distribution Model--USU**
 - Field Test on Bahr Mashtoul
 - Adapt to Sharkia Directorate
 - Field Indicator Results
 - Final Report

- **Irrigation Command Models--MPWWR**
 - Field test on Bahr Mashtoul
 - Apply to Decision Planning

- **Simulation Upper Nile River (CSU)**
 - Multi-Site Stochastic Flows

- **Res. Control Upper Nile (GTU)**
 - Case Study Of Power Prod.

- **Conjunctive Use Lower Nile (CSU)**
 - Case Study Of Lake Nasser/GW

- **Implement Decision Support (USBR)**
 - Model Integration Cairo Univ.

ACHIEVEMENTS

Objective -6

Technical Training.

Status

Off-Shore (International):

- 🍏 5 -Received MSc Degrees (3-UK Prog.)
- 🍏 8 -Participate Training USBR (Denver)
- 🍏 2 -Participate Training USU
- 🍏 3 - Participate Training UK.

On-Shore (Local):

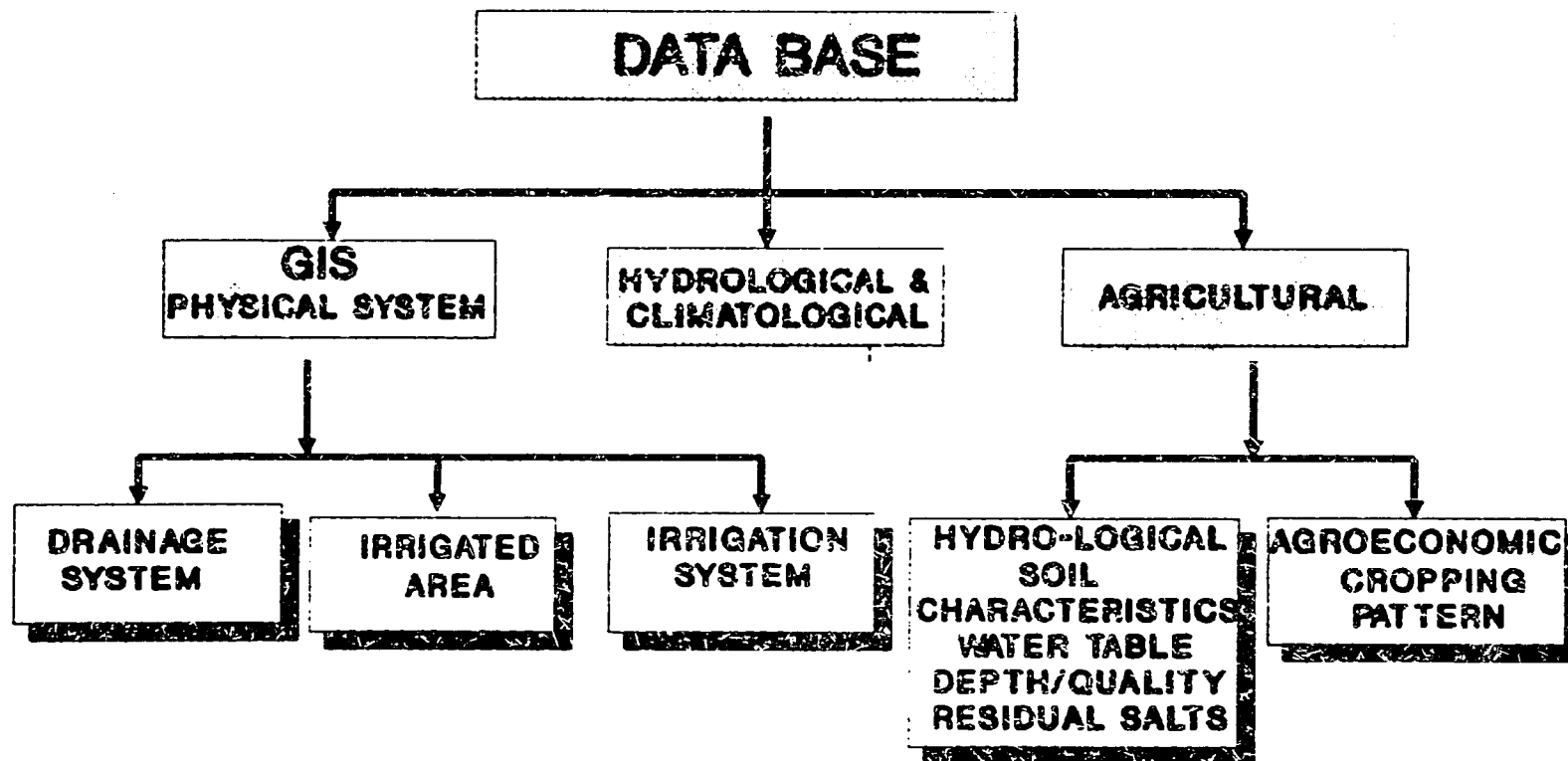
- 🍏 13 -Commercial software training
- 🍏 13 -Linear Programming
- 🍏 3 -Dynamic Programming
- 🍏 10 -C+ Language Training
- 🍏 16 -Network Opr./Mangt.
- 🍏 11 -Programming in DataBase
- 🍏 2 -Side-by-Side DWOPER
- 🍏 12 -Hydraulic Modeling w/USU
- 🍏 8 -Use Micro-Computer in Irr/Drain
- 🍏 9 -Water Resource Hydrology

Comments

Additional Techniques in:

- 🍏 -GIS Techniques
- 🍏 -Hydraulic Measurements
- 🍏 -Modeling Technology transfer to Directorates and IMS components

DSU INFORMATION SYSTEM (D S U I S)



ACHIEVEMENTS

Objective -5

Establish a DSU Information System

Status

DSU Information System Has Been Established

TO support :



Models



Planning



Operation



Research



Training

Comments

System is Currently IN Use And is On LAN
Being Sharable Within DSU . Updating OF
Information / Data Procedures is Being Carried
Forward.

LAN : Local Area Network

ACHIEVEMENTS

Objective -4

Provide Computer Hardware And Software Status

Procured :



4-Dec_ Stations With Unix Operating System



1-Macintosh



3-PCs



3-Portable Computers



LAN (Local Area Network) With :

- File server

- 14 Working Stations



10-Dot Matrix Printers



2-Laser Jet Printers

Comments

Additional Development To Present Hardware And Software I.E. 3-486/65 PCs -ARCINFO, PC Capability Increase, And Virus Protection.

ACHIEVEMENTS

Objective -3

Promotion of Irrigation Management

In Egyptian directorates

Status

Models :

- ⇒ Planning Distribution Model (PDM)
- ⇒ Unsteady Canal Hydraulic (CANAL)
- ⇒ Steady - State Model (STEADY)
- ⇒ Water Management Model (WMM)
- ⇒ Water Course Area Model (WCA)
- ⇒ Egyptian Agriculture Sector (ESAM)

Data Collection :

● Sharkia Directorate

- ⇒ GIS for Entire Sharkia Command Area
- ⇒ Water Measurements of Canals/Drains
- ⇒ Soil and Goundwater Monitoring
- ⇒ Crop Patterns and Production

● West EL Minia Directorate

- ⇒ Serry Canal System Automation

Comments

Cooperation With Directorate in Areas:

- ⇒ Bahr Mashtoul Pilot Area (Sharkia)
- ⇒ Entire Sharkia Command Area
- ⇒ Serry Pilot Area (West EL Minia)

Model Applications

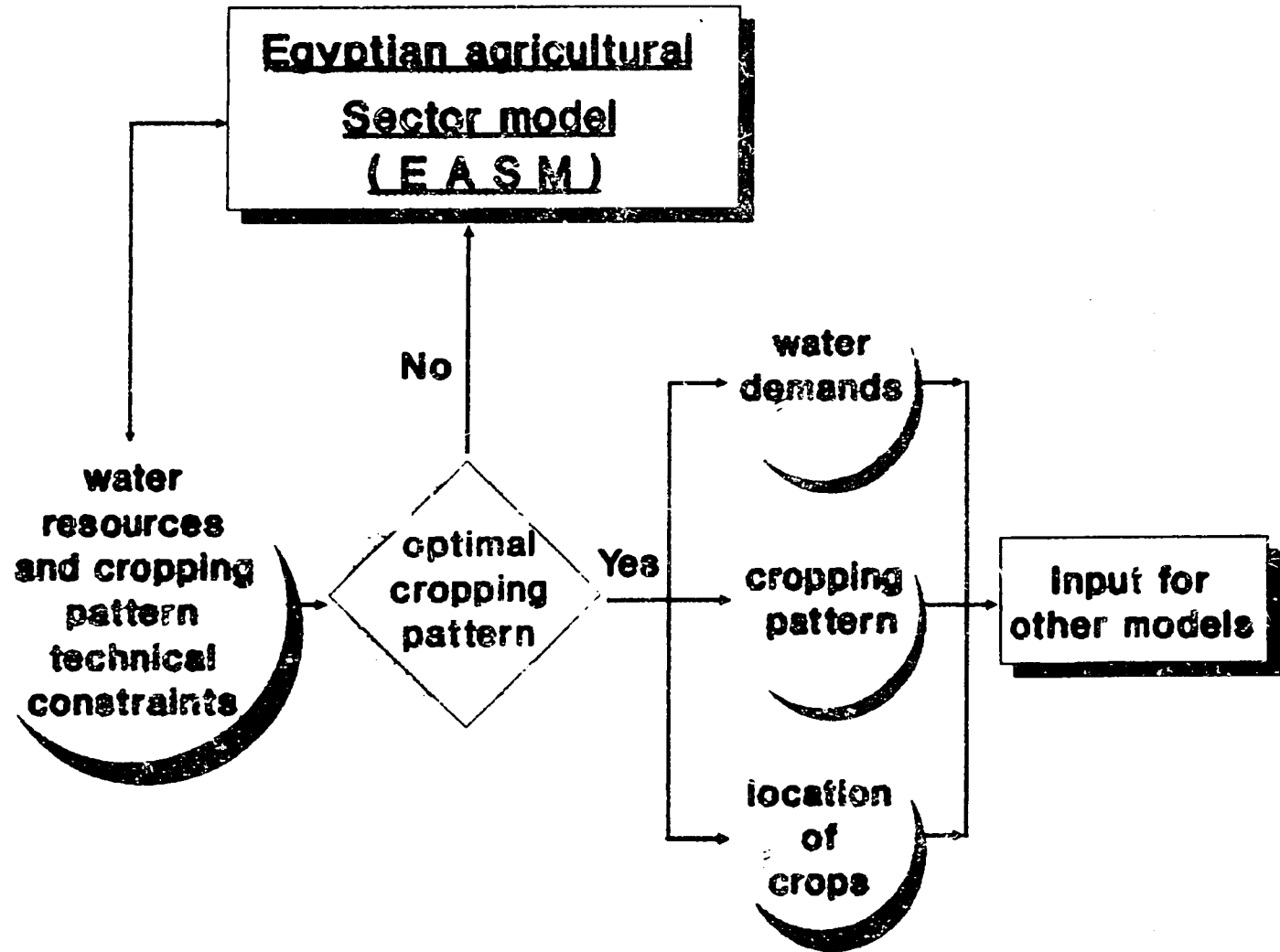
Planning

Operation

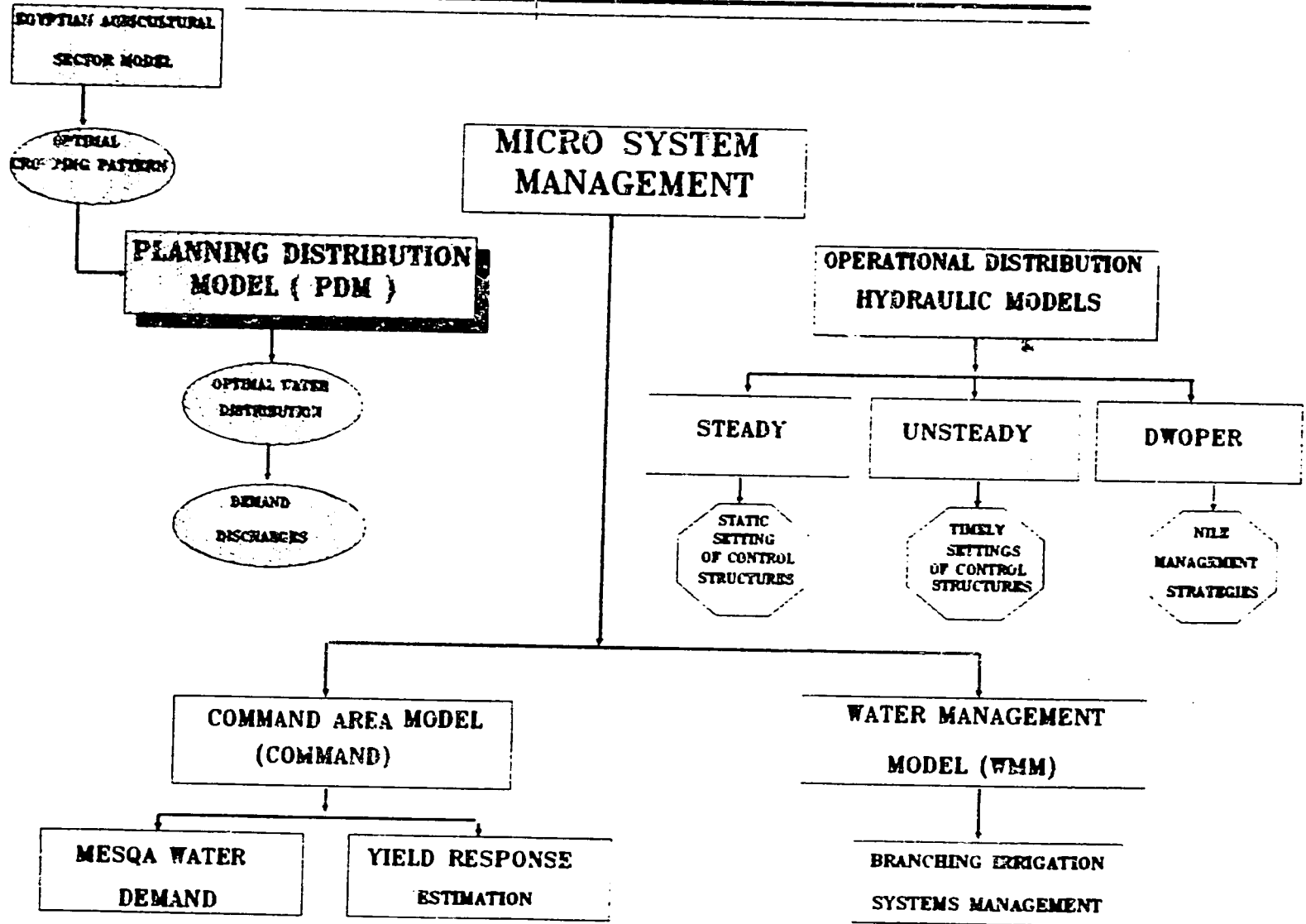
Training

Design Assistance

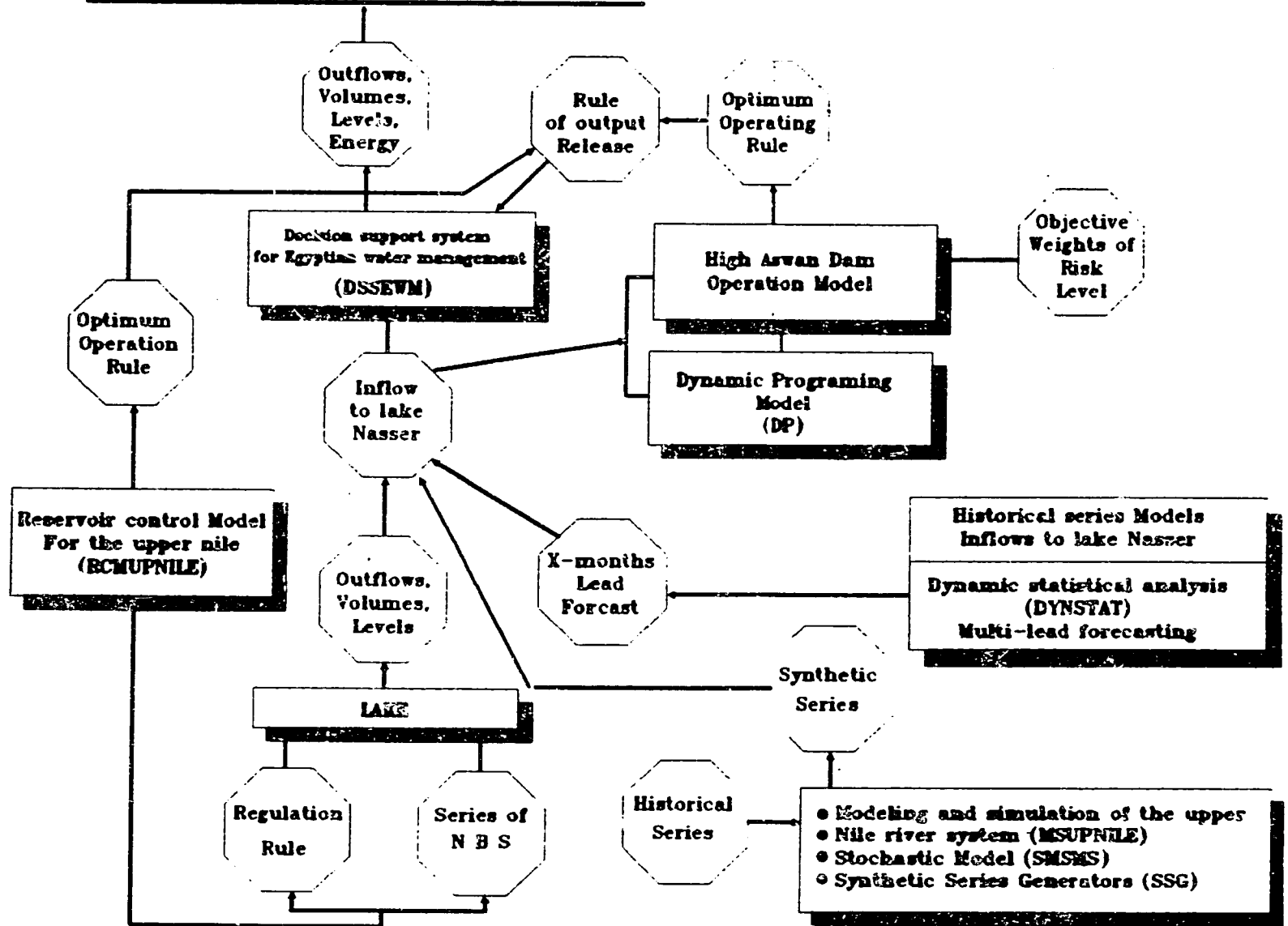
CROPPING PATTERN OPTIMIZATION



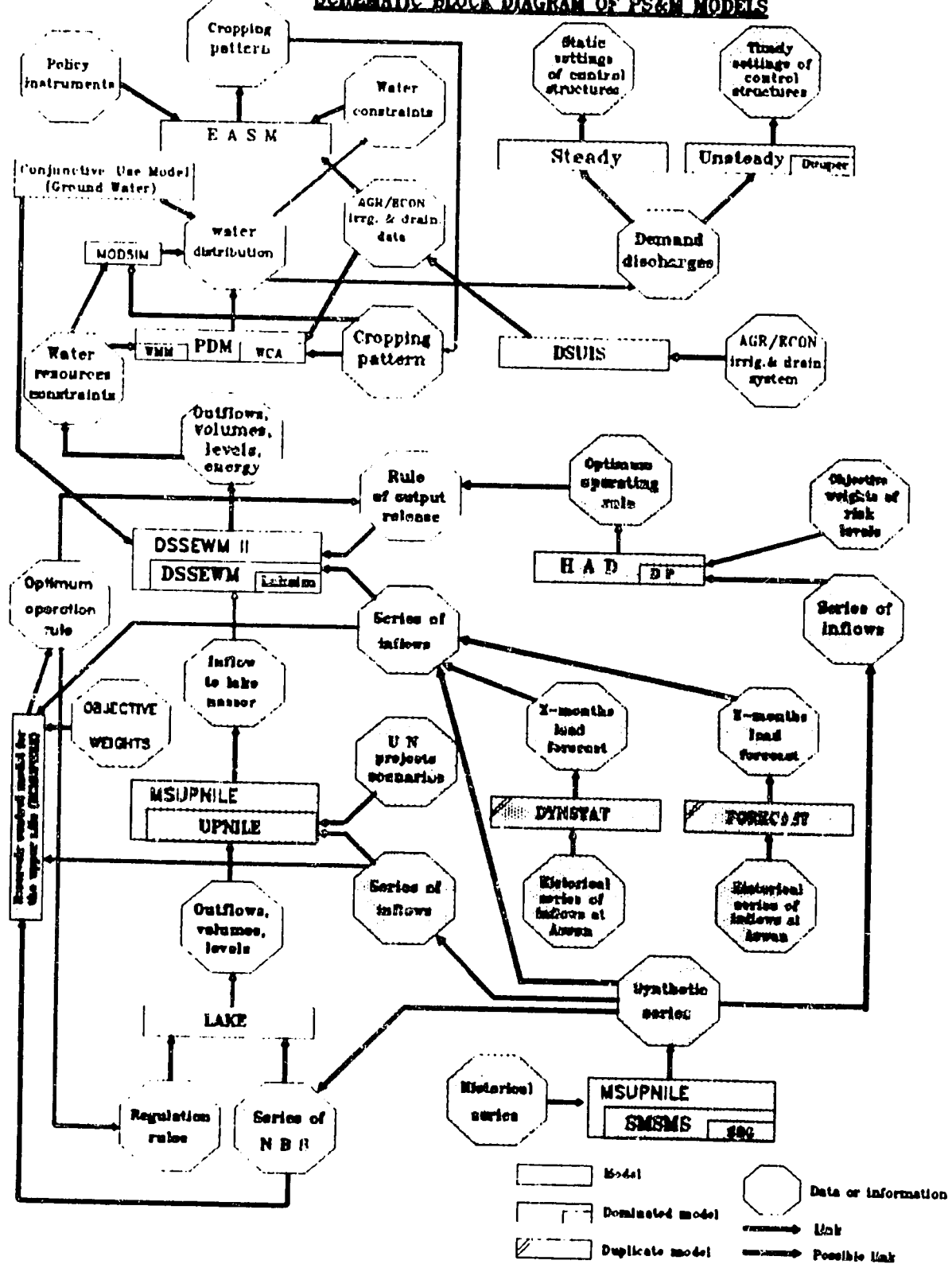
WATER DISTRIBUTION PLANNING MODELS



Egyptian water supply system



SCHEMATIC BLOCK DIAGRAM OF PS&M MODELS



ACHIEVEMENTS

Objective -1

Establish a Decision Support Unit (DSU)

Status

**Established within Planning Sector a DSU
with the following :-**

- **Computer Models Support Group**
- **Water Planning Group**
- **Administrative/Financial Group**

and

- **Nile Forecasting Center
(MFS Component)**

Comments

Promotion and training of DSU is being carried forward.

**Strengthening the linkages with other irrigation departments
and concerned authorities and supporting the decision
makers and policy planners;**

ACHIEVEMENTS

Objective -2

Develop and Apply Planning Tools

Status

Methodology Developed and Framework Established

Package Of Models For:

- 1) Supply Side Within Upper Nile Basin to
Lake Naser Entrance.**
- 2) High Aswan Dam Operational Policies**
- 3) Demand Side Within Nile Valley and
Delta in Egypt.**

Comments

**Additional Development, Calibration, and Field
Verification Of Models are Presently Being
Carried Out.**

JUSTIFICATION FOR PLANNING MODELS

★ Mathematical Models Are Proven Planning Tools.

★ Models Can Provide Rapid Simulated Alternatives

On Any Natural And Manmade Phenomenon Which

Can Be Mathematically Simulated.

★ Models Using Various Statistical Tools Can Decrease

The Amount Of Data Required To Provide Reasonabl

Simulated Planning Decisions.

PLANNING CONSTRAINTS



Lack Of Data / Information :



Lack Of Linkages



Lack Of Procedures and Planning Tools



Complexity Of System Interactions

PRIMARY PSM OBJECTIVES

- 1 * Establish a Decision Support Unit (DSU)**
- 2 * Develop and apply Planning Tools (MODELS)**
- 3 *Promotion Of Irrigation Mangement In Egypt's
Directorates**
- 4 * Provide Computer Hardware and Software**
- 5 * Establish a DSU Information System (DSUIS)**
- 6 * Technical Training**

PSM AGENCIES AND CONTRACTS

- **USAID**

**United States Agency for
International Development**

- **USU**

Utah State University

- **MPWWR**

**Ministry of Public Works &
Water Resources**

- **CSU**

Colorado State University

- **USBR**

**United States Bureau
of Reclamation**

- **GTU**

Georgia Tech University

- **UC**

University of Colorado

MFS OF THE RIVER NILE PROJECT

**An Overview of the Project Objectives, Implementation Status,
Future Plans, Problems and Constraints**

by

Dr. Bayoumi Attia, National Project Director
M. Andjelic, FAO Chief Technical Adviser

A) INTRODUCTION

The Ministry of Public Works and Water Resources (MPWWR) exerts permanent efforts in developing and improving use of the country's limited water resources .

Egypt is basically dependent on the Nile for its water. The climate is arid and annual rainfall does not exceed a maximum of 200 mm at the northern coast. Egypt's agriculture is possible only under irrigation. The River Nile is totally regulated through the High Aswan Dam (HAD), completed in 1968, which impounds HAD reservoir with a capacity of the order of magnitude of 130 billion m³.

The water balance figures of Egypt as estimated in 2000 show that available water supply may in a close future not be sufficient to satisfy the demand. To overcome this critical situation, the main options are: (i) to develop new sources of water; (ii) to increase water use efficiency and reduce water losses; and (iii) to reduce or suppress water uses of low priority.

The United States Agency for International Development (USAID) takes active part, and provides additional funds in support of the Irrigation Management System (IMS), an integral and comprehensive program of the MPWWR consisting of a number of irrigation & water resources projects. The overall goal of the IMS programme is "to improve the control of the Nile water for all uses and particularly their optimal allocation to and within agriculture as a means of helping increase agricultural production and productivity".

Existing studies have indicated that the IMS could lead to 15 percent increase in cropped area on currently cultivated lands and result in a 10 percent increase in unit yield. However, the potential benefit of the IMS programme is predicted on assumption that the necessary volumes of water would be available, when required.

Such a capability cannot be achieved without an adequate operational hydrological forecast system for the Nile River, particularly when the available inflow to HAD reservoir approaches or becomes less than the agricultural demand. When the average supply is significantly greater than the average demand, major benefits from real-time forecasting are probably minimal. However, when the demand approaches or exceeds the available supply, which would then have to be augmented by over-year

storage, a reliable long-term seasonal forecast of the magnitude of the expected supply (inflow into the HAD reservoir) becomes extremely valuable. Planning of the crops and the area to be cropped can be carried out on a timely basis. On the other hand, short-term forecasts become very valuable (both magnitude and timing) for operating the reservoir when it is nearly full or nearly empty.

(For instance, assuming the carry-over storage in the HAD reservoir is declining and the forecasted inflow during the forthcoming flood season (August, September, October) is 45×10^9 m³, with the normal water demand for the year being 55×10^9 m³, a decision must be made as to whether the total shortfall is to be taken out of the reservoir thus depleting the carry-over storage i.e., water supply for future years, or to plan the type of crops and the area to be cropped to maximize economic return based on making up only half of the deficit so that the impact may not be as traumatic as it would then be spread over more than one year.

The completion of the Jonglei Canal project would enable some use of Lakes Victoria and Albert as over-year storage reservoirs; the coordination of the releases from such over-year storage with the storage rule curves of the HAD reservoir will require an efficient monitoring and forecasting system to enable this relatively limited but adjustable supply to be used effectively.)

Given the tight situation of water management in Egypt, the most important benefit from the MFS Project might well be the ability to simulate the consequences of changes in the River system and in the climatological and hydrometeorological regime of the Basin. The MFS is aimed at developing and using hydrologic models that simulate the complete water balance for the entire Nile Basin. The simulation ability developed would allow to assess the consequences for Egypt of planned or actual water abstractions and of works across the river in the upstream countries, in order to plan appropriate adjustment measures.

The same consideration applies to accurate assessment of the results of water conservation projects in the wetlands and marshes of the middle basin. In this context, the overall Nile simulation model would represent a valuable contribution for regional cooperation in the settlement, according to objective criteria, of conflicting water interests.

The project for Monitoring, Forecasting and Simulation (MFS) of the Nile River has been launched in recognition of the above requirements. The MFS is a sub-component of the Planning Studies and Models Component of the Irrigation Management System and is also financially supported by USAID. Its implementation has been entrusted to the Food and Agriculture Organization of United Nations (FAO) as the executing agency, and the U.S. National Oceanic and Atmospheric Administration - National Weather Service (NOAA/NWS) as the main subcontractor. Implementation of the MFS project started beginning 1991. Its main goals, present status, future plans, major problems and constraints are discussed below in more details.

B) PLANNED OBJECTIVES AND OUTPUTS

To achieve its purpose the MFS project has been designed so as to:

- * Provide a multipurpose institutional tool to improve water management by establishing within MPWWR the Nile Forecast Centre (NFC) for performing hydrological forecasting and monitoring of short term variations of the Nile River flow in real time.
- * Develop an operational Nile Forecast System for the Nile Basin to predict streamflow inflow to the High Aswan Dam.
- * Establish a mechanism through the forecast system of the NFC to assess hydrologic impacts of climatic anomalies and change throughout the Nile Basin.
- * Provide data for validation of all models used for the High Aswan Dam operation and provide information so these models may also be used to assess the impact of a changing flow regime resulting from climatic variations.
- * Establish a Nile Information System to process, analyze, store, retrieve and publish water related data in accordance with users' needs and requirements.
- * Strengthen cooperation among the Nile Basin countries in the field of hydrology, meteorology, and water resources through technical workshops training seminars and other forms, with basic aim to facilitate expansion of the MFS system to other countries of the Nile region.
- * Provide hydrological and streamflow simulation models to cover the entire Nile Basin above the High Aswan Dam. The aim will be to have a system of fully integrated and operational models to simulate the whole Nile Basin as a single water resources management entity. This should help decision-makers in the basin to test the impact of various inflow prediction and water release policies, and the effect of different scenarios for water resources development in the Nile Basin.
- * Provide estimates of precipitation using satellite infrared (IR) imagery for parts of the Nile Basin with inadequate rain gage networks. Because parts of the basin have inadequate rainfall data, the hydrological models of the forecast system will be directly integrated with the satellite precipitation estimation procedures. This will require the satellite IR imagery to be stored in the NFC data base and to be provided as an input to the forecast system.
- * Acquire satellite based estimates of hydrological parameters such as the vegetation index and land use information. This information may be provided by extending existing systems or systems being developed by the Regional Remote Sensing Program for Africa.
- * Provide an improved basis for using climate information in making forecasts of Nile inflow into the High Aswan Dam reservoir and to provide objective estimates of the uncertainty in these forecasts. This will permit a more systematic approach to development of a risk-based decision

strategies for making water releases at Aswan. Train staff of the Nile Forecast Centre in all relevant fields of specialization so as to be capable of sustained operation and further development of the Centre.

At the country level, the project has been planned to be implemented in two phases; The Phase I, to be implemented in the period 1991-1993, is aimed at establishing the Nile Forecast Centre and providing it with basic facilities for initial real-time operation, and to develop a monitoring, forecasting & simulation system for the Blue Nile basin; The Phase II, to be implemented during the period 1993-1995, is planned to significantly reinforce the established NFC and to expand the MFS system to the Sobat, Atbara and White Nile river basins thus covering the entire Nile Basin.

A summary of overall objectives, outputs and schedule for implementation of the MFS Project, in the Phase I and Phase II, is presented in the ANNEX 1.

C) IMPLEMENTATION STATUS

Phase I of the MFS project has witnessed intensive activities in the period since May 1991. Some of the project's important objectives have already been achieved, thus indicating that an overall success of the project may well be at hand as originally planned.

Information about current status in producing the Phase I project outputs as related to each project objective is summarized in the ANNEXES 2, 3, 4, and 5.

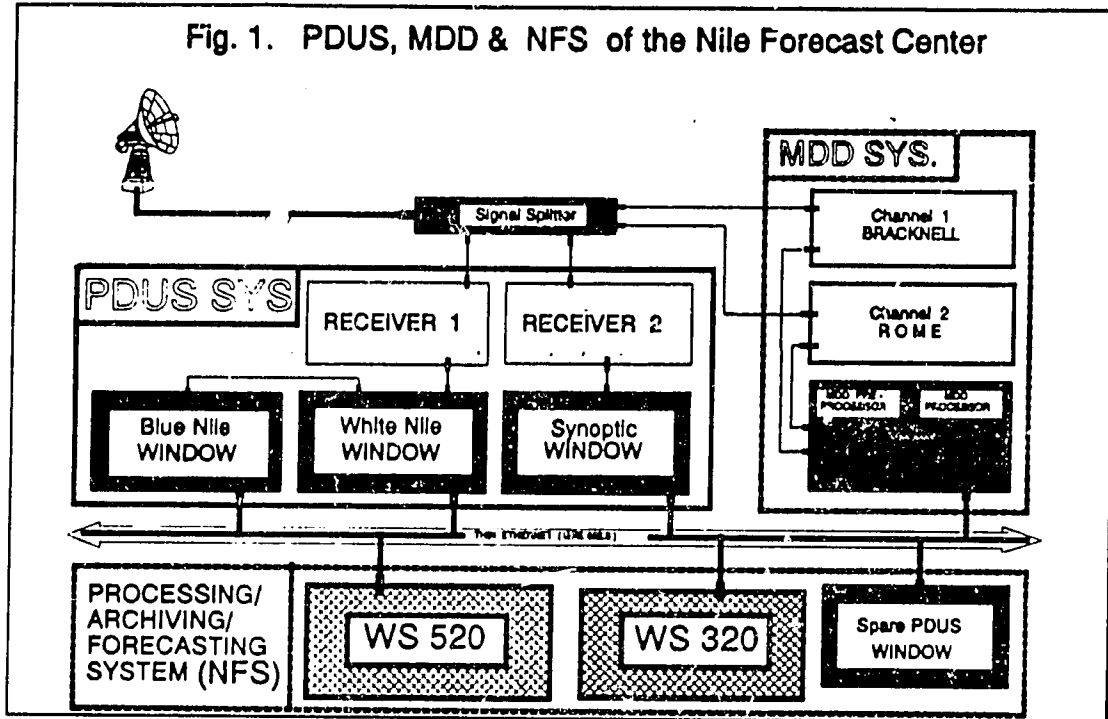
Some of the main achievements reached and outputs produced so far within the project may be highlighted as follows:

- * An appropriate and functional physical facility for the Nile Forecast Centre has been provided by the MPWWR;
- * The Primary Data User System (PDUS) for real-time satellite monitoring of the Nile Basin has been installed and made operational;
- * The Meteorological Data Distribution (MDD) system for receiving real-time raw meteorological data and weather analysis/forecasting products has been installed and made operational;
- * The two RISC/6000 series Workstations for data processing, forecasting and simulation of hydrological and meteorological processes in the Blue Nile Basin have been installed and made operational;
- * PDUS, MDD and Workstations have been integrated into an Ethernet based Local Area Network supported by TCP/IP protocol and FTP software for transfer of data and information;
- * Nile Forecast System Software, Version 1.1, has been installed, tested and made operational;
- * Three Egyptian engineers have completed training in the USA and are now on regular duty at the Nile Forecast Centre

while three more are now with the NOAA/NWS for an 8-month training (July 1992- March 1993).

The above achievements have conveniently been grouped into the three main modules of the Nile Forecast Centre, i.e. the Primary Data User System (PDUS); Meteorological Data Distribution System (MDD); and the Workstation Based Blue Nile Forecast and Data Archiving System (NFS).

The PDUS, MDD and NFS modules, as implemented within the MFS project, are illustrated in Figure 1 and described in more details below.



1. Primary Data User System (PDUS)

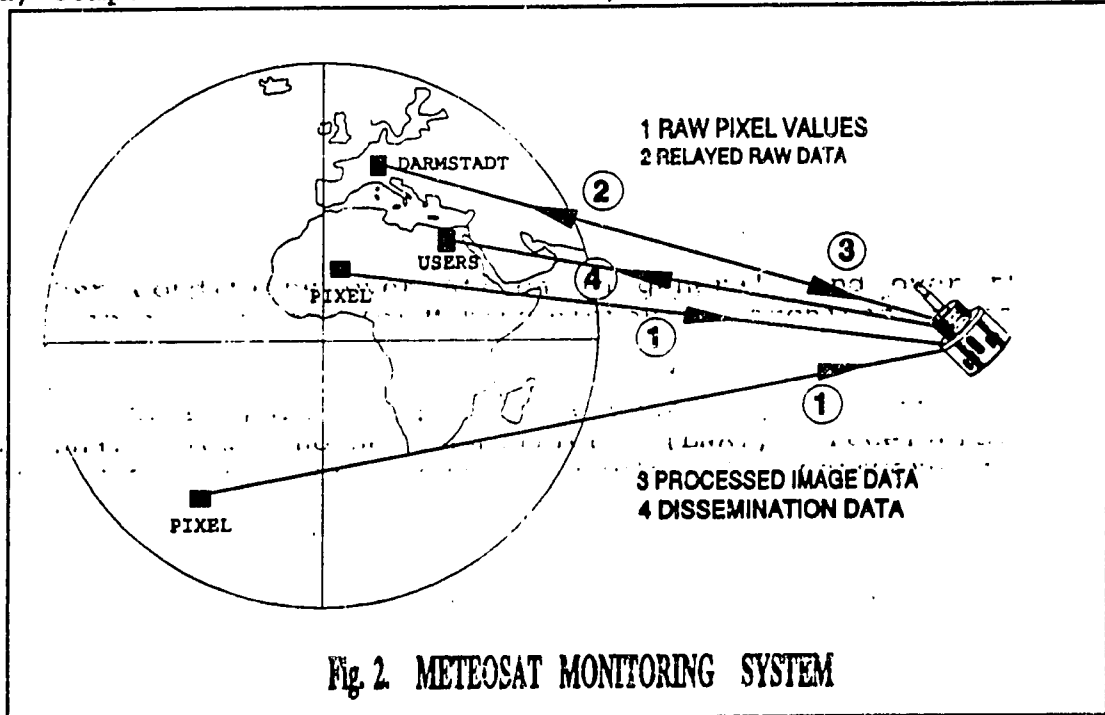
The PDUS became operational at the NFC in April 1992 and is used for real-time acquisition, primary processing, quality control, display, storage and automatic transfer of digital infrared, water vapor and visible images scanned over the African region by the METEOSAT, a meteorological satellite system owned by the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

Schematic of the METEOSAT system for environmental monitoring, processing and dissemination of images and other information is presented in Figure 2.

Its primary role within the NFC is to provide on-line real-time images of the Nile Basin, Africa, and Europe to the Centre. At present, the images are being used for: (a) Rainfall estimation over the Blue Nile basin; (b) Monitoring - tracking

weather conditions over Africa in general, and over the Nile Basin in particular; (c) Making historical archives of image data for later use.

Hardware part of the PDUS essentially consists of a dish antenna, low noise amplifier (LNA), receivers, PDUS microprocessors and a coaxial cable. The software basically includes modules for: (a) Real-time automatic capture, primary quality control, processing, and storage of the METEOSAT images; (b) Animation, level slicing, stretching, color image display, printing etc of the captured and processed images; (c) Transformation of coordinates from the METEOSAT pixel/line to the geographical longitude/latitude coordinate system and vice versa; (d) Computer communication via TCP/IP based Local Area Network.



Three PDUS processors are installed at the NFC. They are being used for capturing, processing and storing images of the three different windows: the Blue Nile, White Nile and the large so-called Synoptic Window covering the whole North Africa and part of Europe.

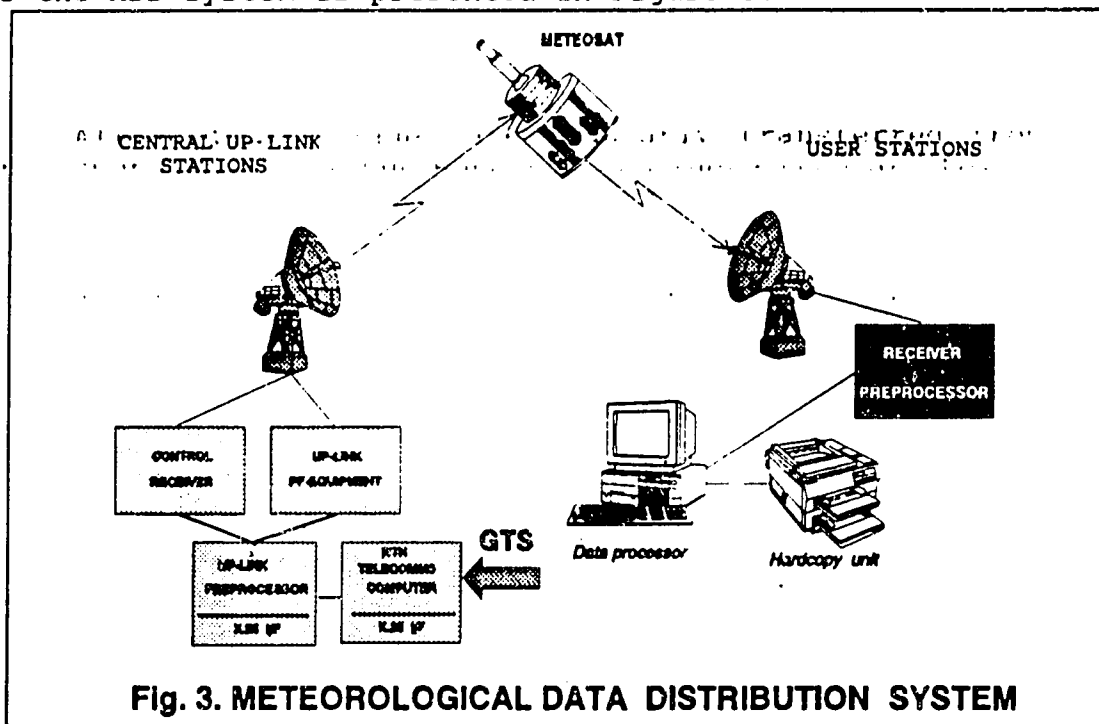
Processors of the Blue and White Nile Window are used for capturing/ processing infrared images for the Blue and White Nile basins every half an hour while visible band images are received, processed and stored in the same half hourly intervals during daytime (from 6,30 till 18,00 GMT);

The Synoptic Window computer is tuned for processing of the infrared images every hour, the visible band images are also processed every hour during daylight while the water vapor ones are being received, processed and stored in three-hourly intervals.

All captured images are regularly transferred from PDUS processors to RISC/6000 Workstations where they are temporarily stored, used as input into Nile Forecast System software for further processing and finally permanently archived on 8 mm magnetic tapes. An overall volume of image data that are being stored and archived on tapes amounts to 109.2 Mb per day.

2. Meteorological Data Distribution System (MDD)

The Meteorological Data Distribution is a new system for dissemination of observed raw meteorological data and meteorological/weather analysis products. The system was introduced and put into operation about a year ago by the EUMETSAT and World Meteorological Organization (WMO). Basically, the system uses raw meteorological data and weather forecast products available through the Global Data Communication System (GTS) of the WMO and disseminates this information to users in Africa using the METEOSAT as a communication satellite. Schematic of the MDD system is presented in Figure 3.



The MDD system has been implemented and made operational at the Nile Forecast Centre since April 1992. It plays an important role in providing the Centre with real-time precipitation and other raw meteorological data from synoptic stations located in the Nile Basin. In addition, it serves as an excellent source of good quality weather forecasts and other meteorological products; These products are available for Africa, in form of weather facsimile charts/ maps, from the European Centre for Medium-Range Weather Forecasts, Reading, UK, and several National Meteorological Centers from Europe, such as France, Germany and England.

MDD of the NFC consists of two receivers (one for receiving synop messages with raw meteorological data available through the Global Telecommunication System of the World Meteorological Organization, up-link station Rome, Italy, and the other for weather facsimile products, up-link station Bracknell, UK) and two microcomputers, while it takes advantage of, and uses the same antenna dish as the PDUS.

Basic software of the MDD system consists of a package for capture of meteorological data and products being disseminated by the METEOSAT, graphics display of captured data and weather maps, storage on local disk and printing. In addition, the system is furnished with PC/FTP Network Software for communication with other processors and Workstations via an Ethernet TCP/IP based Local Area Network.

3. Nile Forecast System (NFS)

Initial NFS software, Version 1.0, developed by NOAA/NWS for the Blue Nile Basin, has been installed at the two RISC 6000 Workstations of the Nile Forecast Centre beginning June 1992, just in time to use it and test its performance during the 1992 Blue Nile flood season. It consists of software, algorithms, models and techniques which will eventually be capable of simulating and forecasting flows along the Blue Nile river once the models are properly calibrated. The initial system is under constant refinement, an updated and improved NFS, Version 1.1, was installed in November 1992, and is planned to reach its full capabilities sometimes in June 1993, i.e. at the beginning of the forthcoming flood season.

The NFS has the following five main components:

- (1) Component for real-time capture of raw satellite Infra red, Visible and Water vapor images through PDUS as well as reception of observed raw meteorological data and weather analysis/forecast charts through MDD system;
- (2) Hydroclimatic and GIS Data Component;
- (3) Rainfall Estimation Component based on Infra-red satellite images;
- (4) Initial Simulation and Forecast Component for Blue Nile basin;
- (5) Data and System Archiving Component.

In addition, it is furnished with a User Interface which integrates all main components, and provides user friendly menu driven utilities for execution of different tasks and graphics display of either the input data or the processed products and final outputs.

Further details about the NFS being developed within the MFS project and its present capabilities can be found project documentation and in series of Nile Technical Notes written by different specialists/experts engaged in implementation of the MFS project.

The Nile Forecast System with standard parameters is being operationally run on daily basis at the Nile Forecast Centre since June 1992 and produces the following outputs:

- * Quality controlled and corrected infrared images of the Blue Nile Window received by the PDUS during the preceding 24 hours;
- * Gridded satellite rainfall estimates at each grid point/pixel of 5.5 x 5.5 km in size over the whole Blue Nile basin using several different methods/ procedures for estimation;
- * Gridded estimates of runoff and update of four state variables of hydrological models over the Blue Nile basin;
- * Time series of mean areal rainfall and discharges at selected locations along the Blue Nile river using both observed/ estimated as well as forecast precipitation.

Capabilities reached so far at the Nile Forecast Centre, in terms of both technology and know-how, enable it to perform a series of operational activities in real-time mode. Thus, the Centre is able to monitor meteorological and hydrological conditions in the Blue Nile Basin, perform different types of processing and management of the received data, analyze, and finally distribute to users different outputs from the NFS, PDUS, and MDD system.

Present operational activities of the Centre are defined in detail in a separate technical document of the Centre and are regularly executed by the Nile Forecast Centre staff.

D) WHAT REMAINS TO BE DONE

As the first operational activities of the NFC are getting momentum, the MFS project will continue to be implemented in accordance with implementation schedule and the Phase II project plan. (See also ANNEX 1 containing an overview of what remains to be done up to the end of Phase I as well as during implementation of the Phase II).

Some of the key future project outputs are related to: Re-calibration of satellite precipitation parameters and improvement of rainfall estimates over the Blue Nile Basin; Re-calibration of hydrologic model parameters and improvement of river flow simulations and forecasts in the Blue Nile basin; Development of data assimilation algorithms (e.g. Kalman filter) for real-time updating of model parameters/state variables of the Nile Forecast System; Expansion of monitoring activities to the whole Nile Basin; Expansion of modelling efforts to the White Nile Basin; Implementation of models and algorithms for Extended Streamflow Prediction in the Nile Basin; Integration of all components into a unique system for monitoring, forecasting and simulation of climatological, rainfall and river flow regime in the entire Nile Basin; Development of the Nile Basin Hydrometeorological Information System; Integration of the NFC monitoring, forecasting and simulation outputs into the PSM Project Information System of the MPWWR's Decision Support Unit; Further

training of the Nile Forecast Centre staff in several specialized fields such as satellite meteorology, hydrology and hydrological forecasting, software development, data processing, database management.

An additional important objective in further implementation of the project is seen in strengthening cooperation among Nile Basin countries with basic aim to expand and initiate transfer of the MFS technology and know-how to other countries of the region.

While talking about regional dimension of the MFS project, it should be recalled that its very concept was initiated with a comprehensive feasibility study concluded in 1988. That study was carried out by an international team composed of a number of outstanding worldwide recognized experts in this field. Most importantly, the study demonstrated that a hydrological forecast centre in Cairo, operating as part of a cooperative and regionally coordinated group of centers in other Nile Basin countries could significantly improve the monitoring, forecasting and simulation of river flow regime, hydrological, rainfall-runoff and climatological processes in the Nile watershed area.

This could also help reduce occasional tensions in the region that at times flare up among the Nile countries in connection with use of the Nile waters, thus contributing to better regional cooperation in general.

E) PROBLEMS AND CONSTRAINTS

As execution of the MFS is progressing, it is becoming increasingly evident that such a system, once expanded to the whole Nile region, could become a powerful tool in reducing many present uncertainties related to climate change, rainfall, runoff and streamflow regime in the Nile Basin. In turn, such a tool would enable decision-makers to reliably evaluate different scenarios, and find optimal generally acceptable solutions for the basin-wide water resources development in the Nile Basin.

However, expansion as well as performance improvement of the Nile Basin Monitoring, Forecasting and Simulation system depends to certain extent on good cooperation with the Nile countries, in particular Ethiopia, Sudan, Uganda and Kenya.

Thus, for instance:

* Better observed real-time hydrometeorological (rainfall and river flow) data from Ethiopia and Sudan are missing. These data are considered of utmost importance for the NFS;

* Acquisition of historical hydrometeorological data (in particular streamflow and rainfall data), topographic, soil type, soil cover and other maps of the Nile basin is also met with some difficulties which are gradually being overcome;

* Sudan had established its own Nile Forecast Centre but a link with that Centre has not been as yet established. Such a link would be very beneficial for both centers;

* The Nile Forecast Centre keeps attracting considerable attention of different governmental and non-governmental organizations, and many others; The Centre and the whole MFS project are experiencing increasing expectations regarding its forecasting potentials and capabilities. These expectations are, however, at times too and tend to overlook inherent technical and scientific limitations in this highly specialized field.

Better cooperation would certainly enable the whole MFS system to achieve higher accuracy and better performance. Efforts made so far within the project in promoting the cooperation have produced modest results. Much more needs, and is planned to be done in this regard in further implementation of the project. A project document for a regional multi-donor MFS project is planned to be jointly prepared with Nile countries during the Phase II. It will be proposed to be implemented upon completion of the Phase II with active participation of all Nile member states. Nonetheless, final outcome of these efforts still remains uncertain.

List of Annexes:

- ANNEX 1. MFS PROJECT: OVERALL OBJECTIVES, OUTPUTS AND SCHEDULE FOR IMPLEMENTATION**
- ANNEX 2. CURRENT STATUS OF THE PHASE I PROJECT OUTPUTS FOR THE OBJECTIVE No. 1**
- ANNEX 3. CURRENT STATUS OF THE PHASE I PROJECT OUTPUTS FOR THE OBJECTIVE No. 2**
- ANNEX 4. CURRENT STATUS OF THE PHASE I PROJECT OUTPUTS FOR THE OBJECTIVE No. 3**
- ANNEX 5. CURRENT STATUS OF THE PHASE I PROJECT OUTPUTS FOR THE OBJECTIVE No. 4**

**MONITORING, FORECASTING & SIMULATION (MFS) PROJECT:
OVERALL OBJECTIVES, OUTPUTS AND SCHEDULE FOR IMPLEMENTATION**

OBJECTIVES	OUTPUTS IN PHASE I (Feb. 1991 - Sep. 1993)	OUTPUTS IN PHASE II (Oct. 1993 - Oct. 1995)
1. To establish NFC and equip with facilities for data processing and monitoring of hydrometeorological conditions over the entire Nile Basin; Integrated NFC outputs into the PSM Project Information System of the MPWWR's Decision Support Unit;	<ul style="list-style-type: none"> * New physical facility for NFC; * NFC equipped with necessary hardware/software for real-time monitoring/data collection processing and archiving; * Establish initial organizational framework for NFC; * Core NFC staff trained; 	<ul style="list-style-type: none"> * Operate and maintain initial NFC; * Upgrade data collection/processing facilities; * Establish final organizational framework for NFC; * Complete training of NFC staff; * NFC forecast outputs integrated to the PSM PIS of the MPWWR's Decision Support Unit;
2. To implement at the NFC a Nile Forecast System for short and long-term forecasting of inflows into the HAD reservoir and simulation of basin response to various development scenarios in the Nile Basin	<ul style="list-style-type: none"> * Satellite rainfall estimation system for the Blue Nile Basin; * Nile Forecast/ Simulation System for the Blue Nile Basin with initial ESP capability; * Model Calibration module developed and integrated with NFS; * NFS components, GIS and data base for the Blue Nile integrated; 	<ul style="list-style-type: none"> * Satellite rainfall estimation system for the whole Nile Basin implemented; * Models for short and long-term rainfall prediction over the Nile Basin developed and operational; * Nile Forecast/Simulation System for the whole Nile Basin with full ESP capability established; * Model Calibration sub-system for all NFS components developed and operational; * NFS and NBHIS components integrated;
3. To establish at the NFC a Nile Basin Hydrometeorological Information System in support of the Nile Forecast System and MPWWR's Management Information System;	<ul style="list-style-type: none"> * GIS for the Blue Nile Basin; * Historical hydromet and reservoir data for the Blue Nile Basin acquired; * Initial Hydromet data base system for the Blue Nile established and integrated with GIS; 	<ul style="list-style-type: none"> * GIS expanded to the whole Nile Basin; * Data from the whole Nile Basin acquired; * GIS and other Nile data integrated into a Nile Basin Hydromet Information System (NBHIS); * NBHIS established and operated as a node of the MPWWR management information system;
4. To promote cooperation and coordination with Nile Basin countries in monitoring, forecasting and simulation of the Nile River, and water resources development;	<ul style="list-style-type: none"> * Establish links with HYDROMET(TECONILE), FAO regional projects in the Nile Basin, and related National water resources/hydrological agencies; * Information about MFS project, its objectives, initial achievements and products distributed to the respective regional/national organizations; 	<ul style="list-style-type: none"> * Channels of communications with Nile countries expanded and MFS products disseminated; * A regional cooperation plan in MFS fields beyond 1995 prepared jointly with other Nile countries; * A group of experts from the Nile Basin trained in MFS technology and water management subjects;

MONITORING, FORECASTING & SIMULATION (MFS) COMPONENT, PHASE I

OBJECTIVE 1: TO ESTABLISH NFC AND EQUIP WITH FACILITIES FOR DATA PROCESSING AND MONITORING OF HYDROMETEOROLOGICAL CONDITIONS OVER THE ENTIRE NILE BASIN; INTEGRATED NFC OUTPUTS INTO THE PSM PROJECT INFORMATION SYSTEM OF THE MPWWR'S DECISION SUPPORT UNIT

PLANNED OUTPUTS IN PHASE I	CURRENT STATUS	REMAINING TASKS / COMMENTS
NEW FACILITY FOR NFC;	ADEQUATE PHYSICAL FACILITY & PREMISES FOR THE NFC PROVIDED AT THE MPWWR'S BUILDING, PLANNING SECTOR, IMBABA.	NONE.
NFC EQUIPPED WITH NECESSARY HARDWARE/ SOFTWARE FOR REAL-TIME MONITORING/DATA COLLECTION PROCESSING AND ARCHIVING;	PDUS/MDD HARDWARE & SOFTWARE SYSTEM FOR SATELLITE IMAGE AND METEOROLOGIC DATA COLLECTION OPERATIONAL; TWO RISC/6000 WORKSTATIONS FOR DATA PROCESSING/ ARCHIVING OPERATIONAL; ALL COMPONENTS INTEGRATED INTO ETHERNET BASED TCP/IP LAN.	OPERATE AND MAINTAIN THE SYSTEM; MAKE MAINTENANCE CONTRACT FOR RISC/6000 WORKSTATIONS WITH IBM-EGYPT TILL & INSTALL TWO MORE RISC/6000 WORKSTATIONS AT NFC BY JUNE 1993; PREPARE FOR THE COMING FLOOD SEASON.
ESTABLISH INITIAL ORGANIZATIONAL FRAMEWORK FOR NFC;	ORGANIZATIONAL CHART OF THE NILE FORECAST CENTRE COMPLETED; TWO DIVISIONS OUT OF FOUR (I.E. DIVISION OF REMOTE SENSING & DATA COLLECTION AND OPERATIONAL FORECASTING DIVISION) ESTABLISHED AND OPERATIONAL.	DEPUTY DIRECTORS OF THE TWO ESTABLISHED DIVISIONS OF THE NFC TO BE FORMALLY APPOINTED BY THE MINISTRY.
CORE NFC STAFF TRAINED IN MFS TECHNOLOGY;	48 M/M TRAINING ABROAD COMPLETED; ADDITIONAL 3-MONTH TRAINING FOR AN ENGINEER ONGOING; 3 IN-COUNTRY TRAINING COURSES COMPLETED, WHILE THE TRAINING COURSE IN FIELD OF METEOROLOGY IS ONGOING; ON-THE-JOB TRAINING ONGOING.	CONTINUE AND COMPLETE ONGOING PROGRAMS; MAKE PREPARATIONS FOR CONTINUATION OF THE TRAINING PROGRAM DURING THE PHASE II.

MONITORING, FORECASTING & SIMULATION (MFS) COMPONENT, PHASE I

OBJECTIVE 2: TO IMPLEMENT AT THE NFC A NILE FORECAST SYSTEM FOR SHORT AND LONG - TERM FORECASTING OF INFLOWS INTO THE HAD RESERVOIR AND SIMULATION OF BASIN RESPONSE TO VARIOUS DEVELOPMENT SCENARIOS IN THE NILE BASIN

PLANNED OUTPUTS IN PHASE I	CURRENT STATUS	REMAINING TASKS / COMMENTS
SATELLITE RAINFALL ESTIMATION TECHNIQUE FOR THE BLUE NILE BASIN DEVELOPED, IMPLEMENTED & OPERATIONAL	A SYSTEM CONTAINING FIVE RAINFALL ESTIMATION TECHNIQUES DEVELOPED, INSTALLED AT THE NFC WORKSTATION & OPERATIONAL; PERFORMANCE OF EACH TECHNIQUE TESTED FOR THE LAST, 1992 FLOOD SEASON IN THE BLUE NILE BASIN.	RE-CALIBRATION OF THE WHOLE SYSTEM ONGOING BASED ON ADDITIONAL IMAGE/RAINFALL DATA COLLECTED AT THE NFC; FINAL SATELLITE RAINFALL ESTIMATION SYSTEM SCHEDULED TO BE INSTALLED & OPERATIONAL IN JUNE 1993.
NILE FORECAST/SIMULATION SYSTEM FOR THE BLUE NILE BASIN WITH INITIAL ESP CAPABILITY DEVELOPED, IMPLEMENTED & OPERATIONAL	INITIAL TWO VERSIONS (1.0 & 1.1) OF THE NILE FORECAST SYSTEM DEVELOPED, INSTALLED AT THE NFC WORKSTATION & OPERATIONAL; PERFORMANCE OF BOTH VERSIONS TESTED FOR THE 1992 FLOOD SEASON IN THE BLUE NILE BASIN.	DEVELOPMENT OF THE NFS VERSION 2.0 FOR THE BLUE NILE BLUE ONGOING; SCHEDULED TO BE INSTALLED & OPERATIONAL IN JUNE 1993.
MODEL CALIBRATION MODULE DEVELOPED AND INTEGRATED WITH NFS;	UNDERWAY, SCHEDULED TO BE OPERATIONAL IN AUGUST 1993.	SUB-CONTRACTOR CONTINUES ACTIVITIES AS SCHEDULED.
NFS COMPONENTS, GIS AND DATA BASE FOR THE BLUE NILE INTEGRATED;	FIRST INTEGRATION COMPLETED WITHIN NFS VERSION 1.0 AND 1.1 THROUGH A VERSATILE MENU DRIVEN USER INTERFACE; USER INTERFACE INSTALLED AT THE NFC AND OPERATIONAL.	FINAL INTEGRATION ONGOING, SCHEDULED TO BE COMPLETED IN JULY 1993.

MONITORING, FORECASTING & SIMULATION (MFS) COMPONENT, PHASE I

OBJECTIVE 3: TO ESTABLISH AT THE NFC A NILE BASIN HYDROMETEOROLOGICAL INFORMATION SYSTEM IN SUPPORT OF THE NILE FORECAST SYSTEM AND MPWWR'S MANAGEMENT INFORMATION SYSTEM;

PLANNED OUTPUTS IN PHASE I	CURRENT STATUS	REMAINING TASKS / COMMENTS
GIS FOR THE BLUE NILE BASIN;	COMPLETED FOR THE BLUE NILE BASIN.	DEVELOPMENT OF ADDITIONAL SOFTWARE TO DERIVE HYDROLOGICAL PROPERTIES FROM GIS ONGOING AS SCHEDULED.
HISTORICAL HYDRO-METEOROLOGICAL AND RESERVOIR DATA FOR THE BLUE NILE BASIN ACQUIRED;	UNDERWAY, SLIGHTLY BEHIND SCHEDULE.	CONTINUE PLANNED ACTIVITIES ON ACQUISITION OF HISTORICAL DATA FROM DIFFERENT SOURCES. WILL BE EXTENDED BEYOND PHASE I IN COOPERATION WITH NILE COUNTRIES, REGIONAL PROJECTS AND ORGANIZATIONS.
INITIAL HYDROMETEOROLOGICAL DATA BASE SYSTEM FOR THE BLUE NILE ESTABLISHED AND INTEGRATED WITH GIS;	FIRST VERSION COMPLETED.	FURTHER ACTIVITIES UNDERWAY AS PLANNED, SCHEDULED TO BE COMPLETED IN JULY 1993.

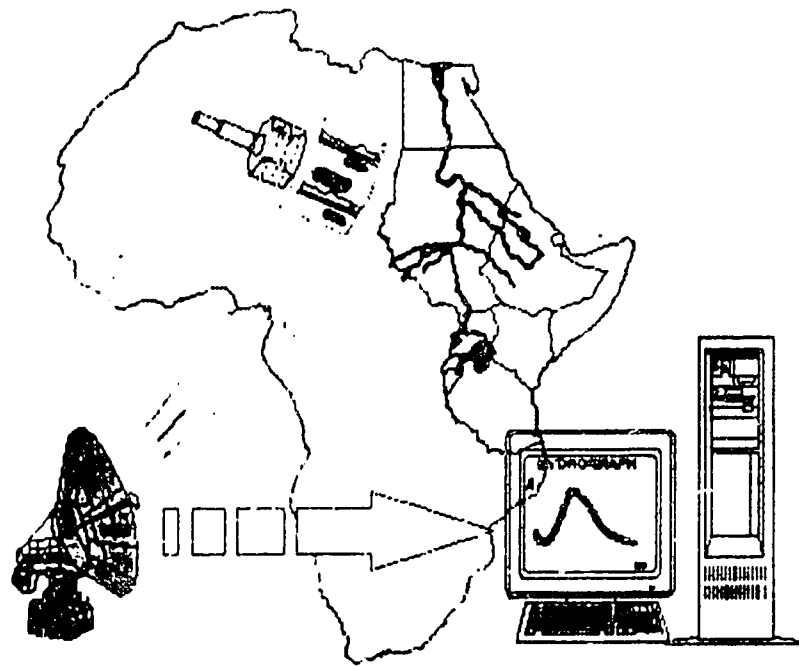
MONITORING, FORECASTING & SIMULATION (MFS) COMPONENT, PHASE I

OBJECTIVE 4: TO PROMOTE COOPERATION AND COORDINATION WITH NILE BASIN COUNTRIES IN MONITORING, FORECASTING AND SIMULATION OF THE NILE RIVER, AND WATER RESOURCES DEVELOPMENT:

PLANNED OUTPUTS IN PHASE I	CURRENT STATUS	REMAINING TASKS/COMMENTS
INITIAL LINKS WITH HYDROMET (TECCONILE), FAO REGIONAL PROJECTS IN THE NILE BASIN, AND RELATED NATIONAL WATER RESOURCES/HYDROLOGICAL ORGANIZATIONS AND SERVICES ESTABLISHED;	PARTIALLY COMPLETED.	EFFORTS TO ESTABLISH BETTER LINKS AND WORKING ARRANGEMENTS PLANNED TO BE INTENSIFIED DURING PHASE II.
INFORMATION ABOUT MFS PROJECT, ITS OBJECTIVES AND INITIAL ACHIEVEMENTS PUBLISHED AND DISTRIBUTED TO THE RESPECTIVE REGIONAL AND NATIONAL ORGANIZATIONS;	PARTIALLY COMPLETED. INFORMATION ABOUT MFS PROJECT PUBLISHED IN A SEPARATE BROCHURE AND DISTRIBUTED TO NILE BASIN COUNTRIES/REPRESENTATIVES.	REPORT ON ACTIVITIES OF THE NFC DURING THE 1992 FLOOD SEASON BEING PREPARED AND SCHEDULED TO BE DISTRIBUTED IN APRIL 1993; ARRANGEMENTS UNDERWAY FOR DISTRIBUTING NFC BULLETIN DURING THE 1993 FLOOD SEASON.

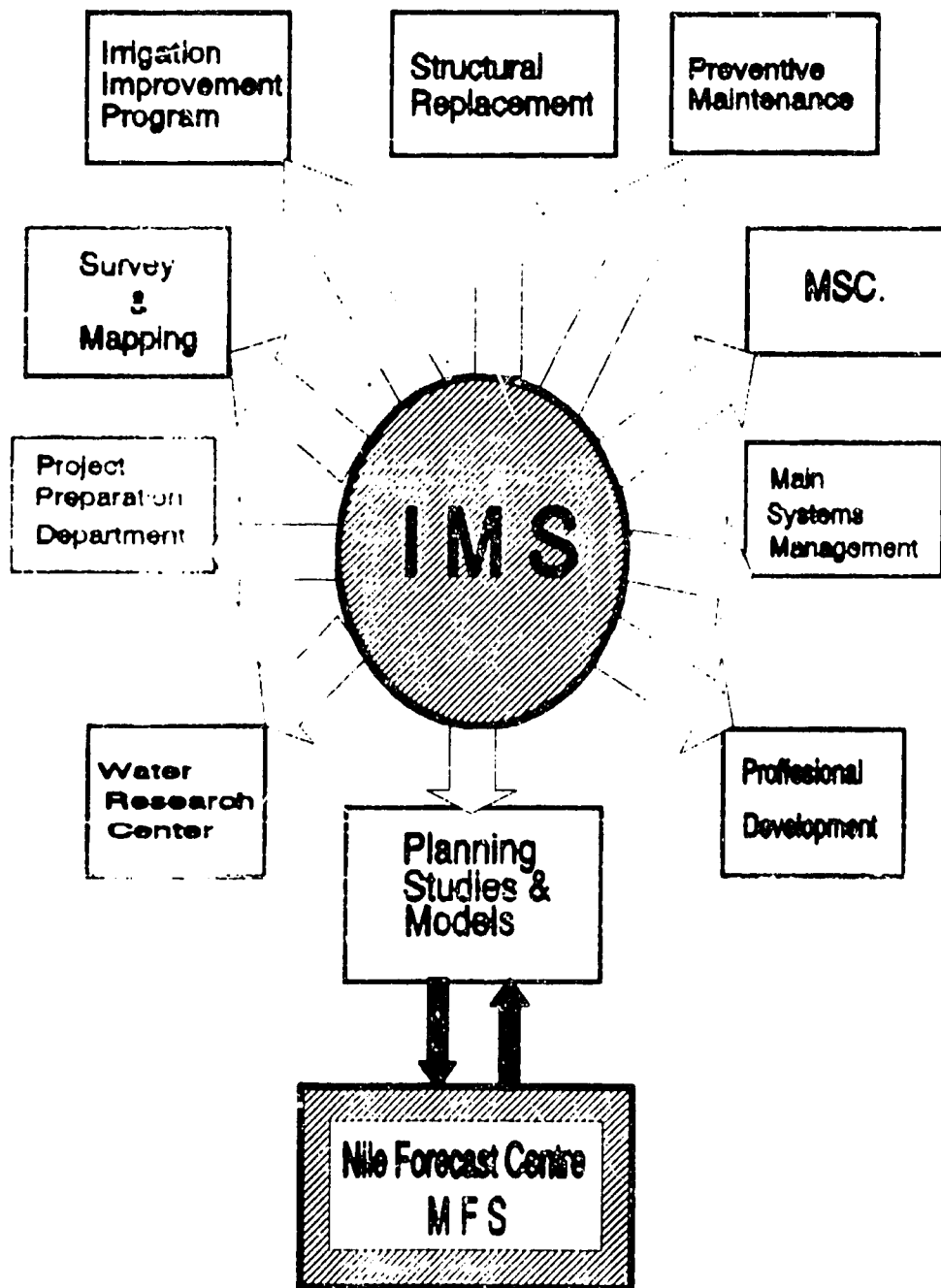
**MINISTRY OF PUBLIC WORKS AND WATER RESOURCES
PLANNING SECTOR**

**MONITORING, FORECASTING & SIMULATION
PROJECT**

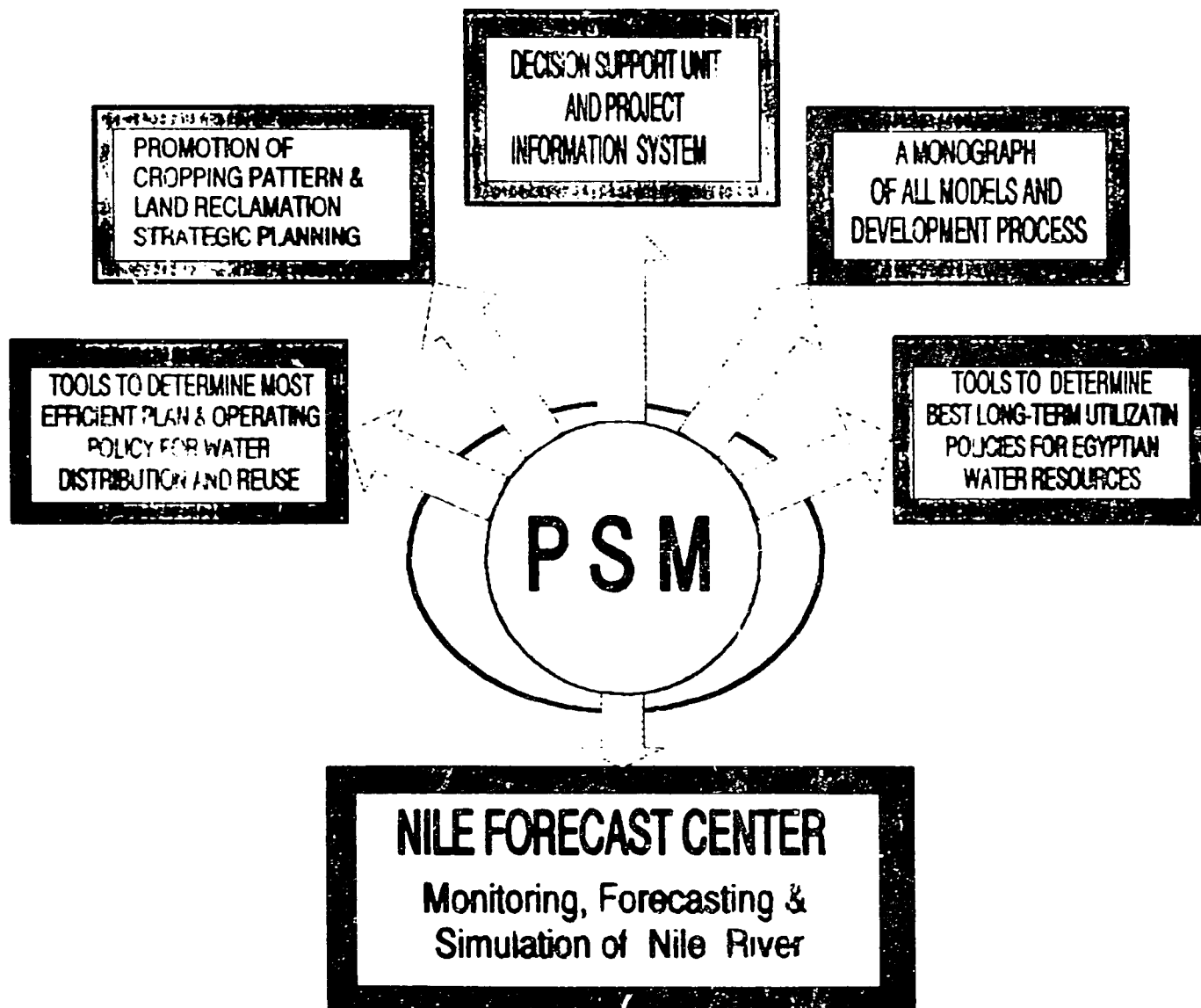


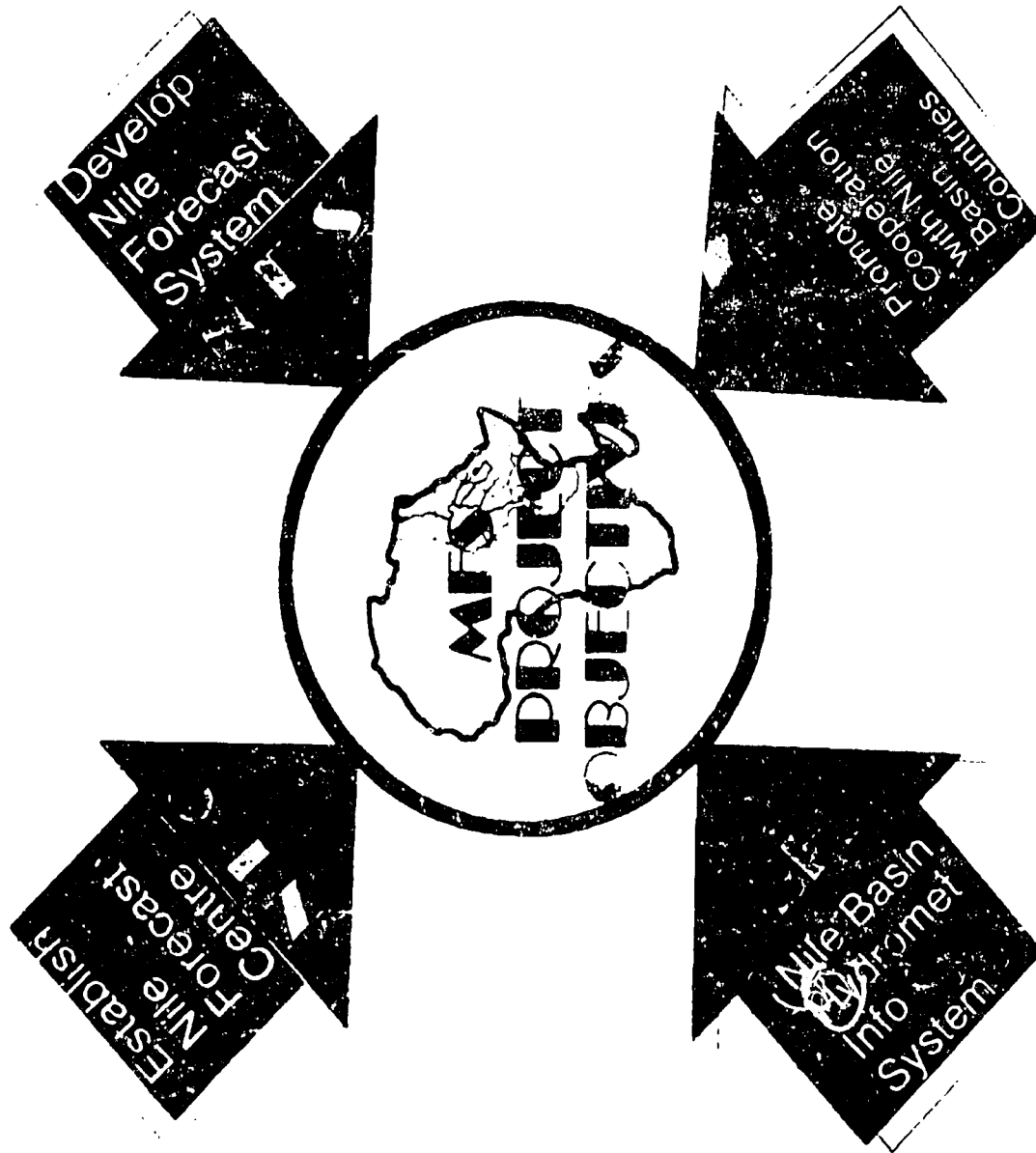
NILE FORECAST CENTER

COMPONENTS OF IRRIGATION MANAGEMENT SYSTEM



MAIN ELEMENTS OF PLANNING STUDIES AND MODELS COMPONENT (PSM)





OUTPUTS

PHASE I (1991/93)

PHASE II (1993/95)

OBJECTIVE 1:

Establish NFC, equip it for monitoring & data processing; Integrate NFC outputs into PSM PIS



New physical facility for Nile Forecast Center



NFC equipped with necessary hardware/software for real-time monitoring, data collection, processing and archiving



Establish initial organizational framework for Nile Forecast Center



Core Nile Forecast Center staff trained



Operate and maintain initial Nile Forecast Center



Upgrade data collection/processing facilities



Establish final organizational framework for Nile Forecast Center



Training of the Nile Forecast Center staff completed



NFC forecast/simulation outputs integrated into the PSM PIS of the MPWWR's Decision Support Unit

OUTPUTS

PHASE I (1991/93)



Satellite rainfall estimation system for the Blue Nile Basin



Nile Forecast/ Simulation System for the Blue Nile Basin with initial ESP capability



Model Calibration component developed and integrated with Nile Forecast System (NFS)



NFS components, GIS and Data Base for the Blue Nile integrated

PHASE II (1993/95)



Satellite rainfall estimation system for the whole Nile Basin Implemented



Models for short and long-term probabilistic rainfall prediction in the Nile Basin developed and operational



Nile Forecast/Simulation System for the whole Nile Basin with full ESP capability established



Model calibration sub-system for all NFS components developed and operational



Nile Forecast System and Nile Basin Hydrometeorological Information System integrated

Implement Nile Forecast System for forecasting & simulation of river flow regime in the Nile Basin

COMPLETIONS

PHASE I (1991/93)



GIS for the Blue Nile Basin developed



Historical hydromet, reservoir and other data for the Blue Nile Basin acquired and stored



Initial Hydrometeorological data base for the Blue Nile Basin established & integrated with GIS

PHASE II (1993/95)



GIS expanded to the whole Nile Basin



Historical data from the whole Nile Basin acquired and stored



GIS and historical hydrometeorological data for the Nile Basin integrated into a NBHIS



NBHIS established and operated as a node of the MPWWR's Management Information System

To establish at the NFC a Nile Basin Hydromet Information System

MOISTURE PRODUCTS

PHASE I (1991/93)

Initial Links with Nile Basin regional organizations, FAO projects and national water resources agencies established

Information about MFS, its objectives, initial achievements, and potential benefits prepared & distributed to the Nile region with invitation for cooperation

PHASE II (1993/95)



Channels of communication with Nile countries expanded & used for transfer of MFS products



A regional cooperation plan in MFS fields, beyond 1995, prepared jointly with other Nile countries



A group of experts from the Nile countries trained in MFS technology and water management

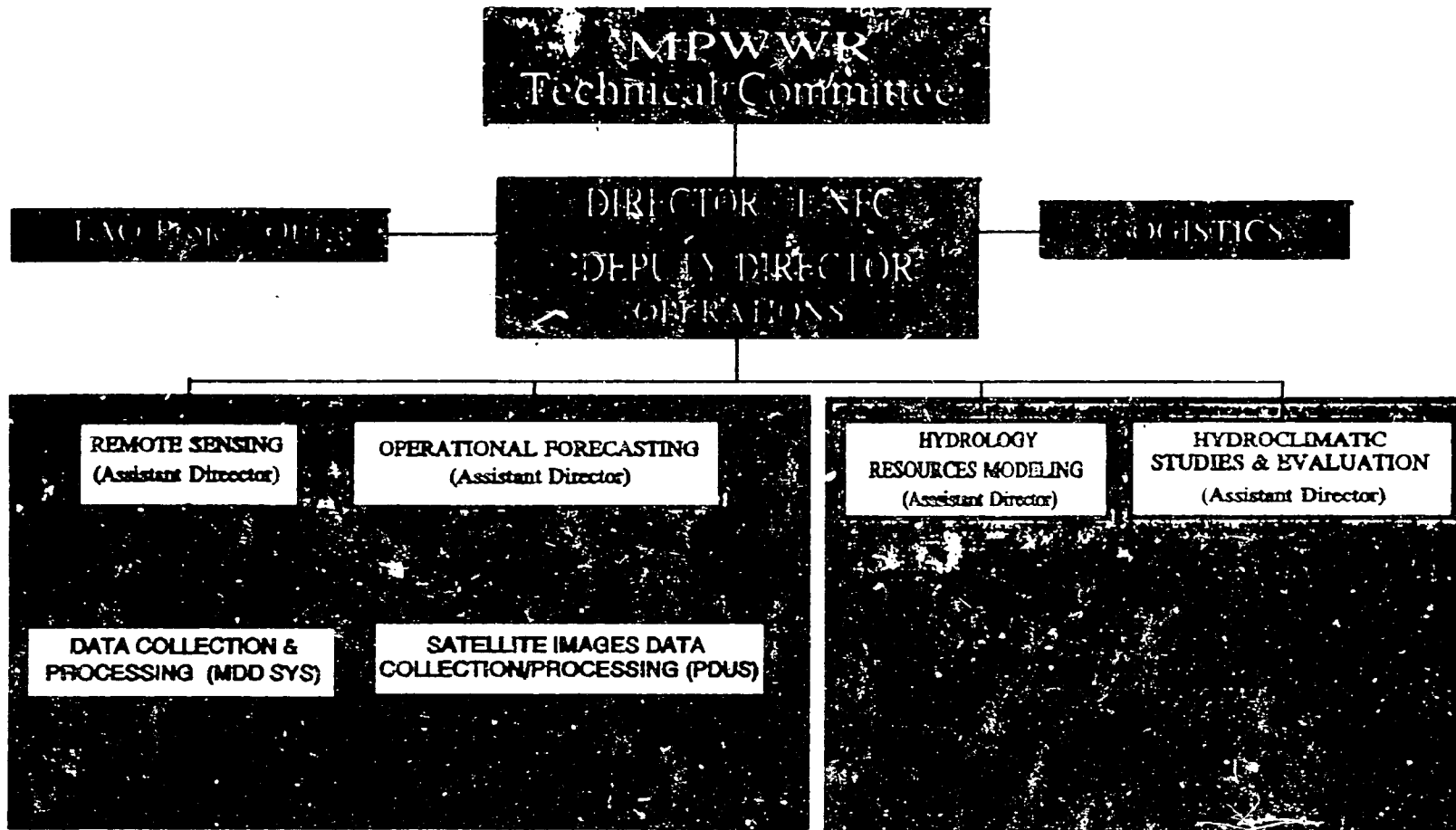
To promote cooperation with the Nile Basin countries



Monitoring, Forecasting and Simulation Project

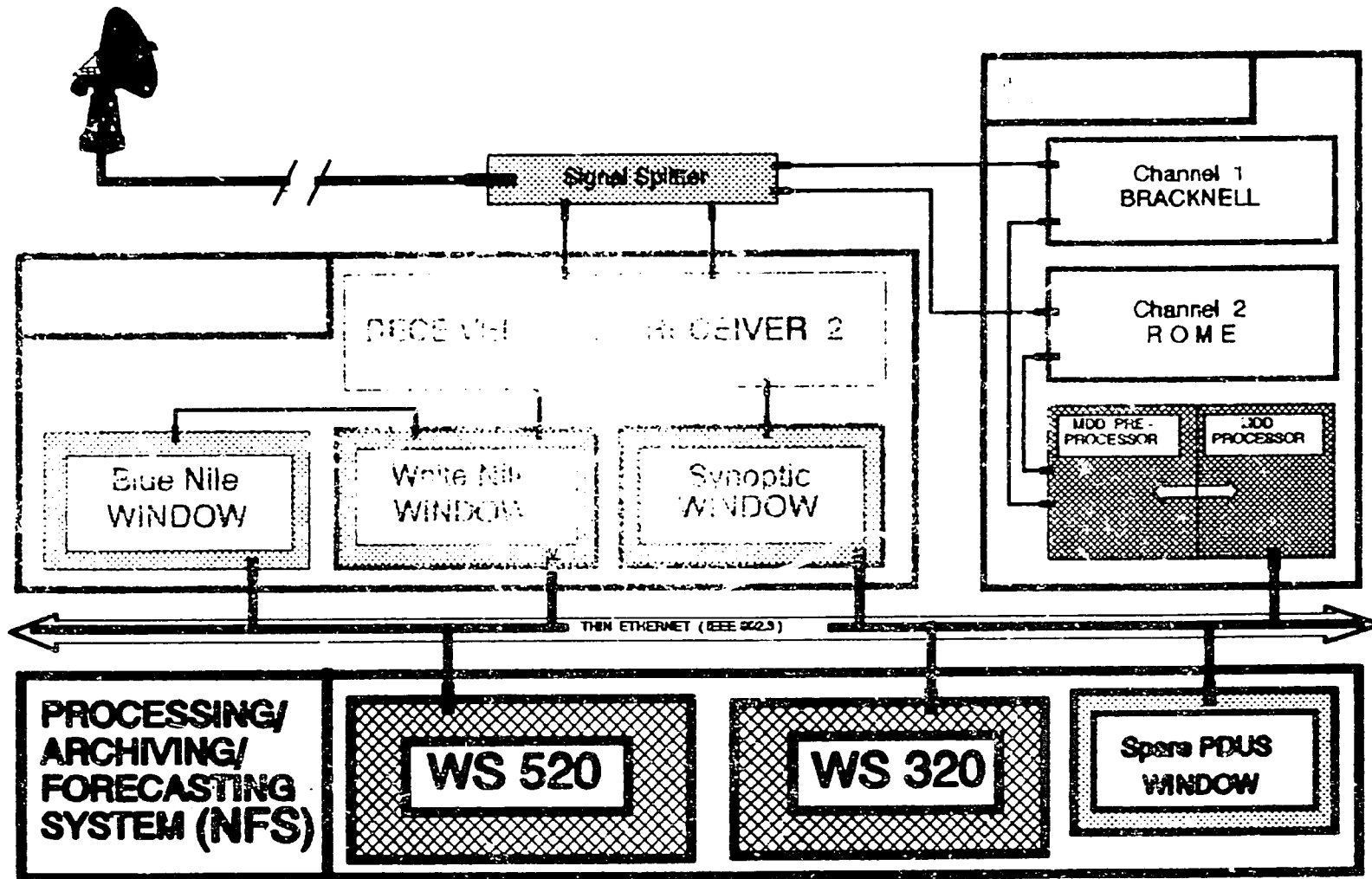
PROBLEMS AND CONSTRAINTS

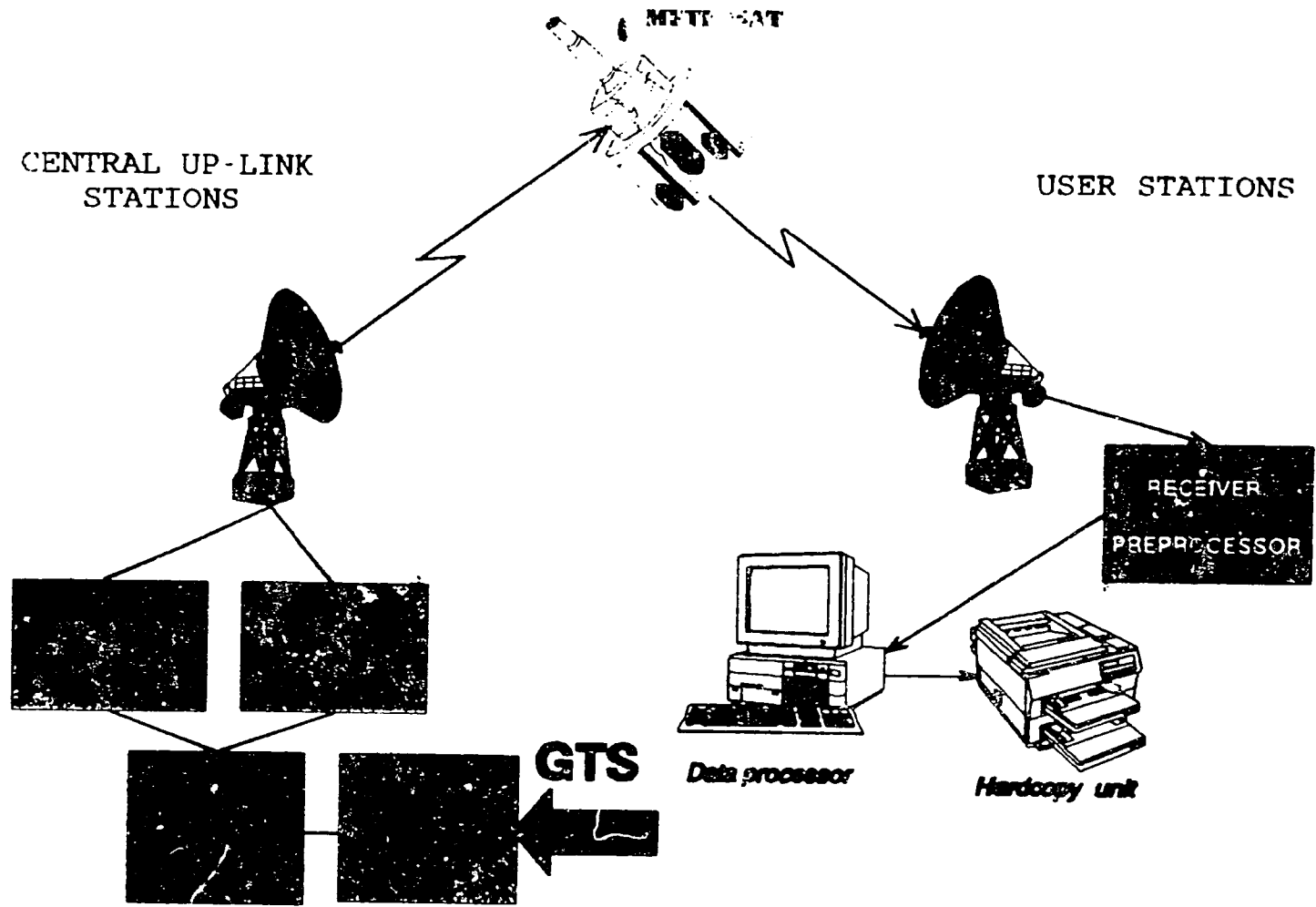
- ➡ **Insufficient Real-Time Data**
 - ➡ **More Historical Data Needed**
 - ➡ **Expectations from MFS too High**
 - ➡ **Cooperation in the Nile Basin**
 - ➡ **Sustainable Operation of NFC**
-



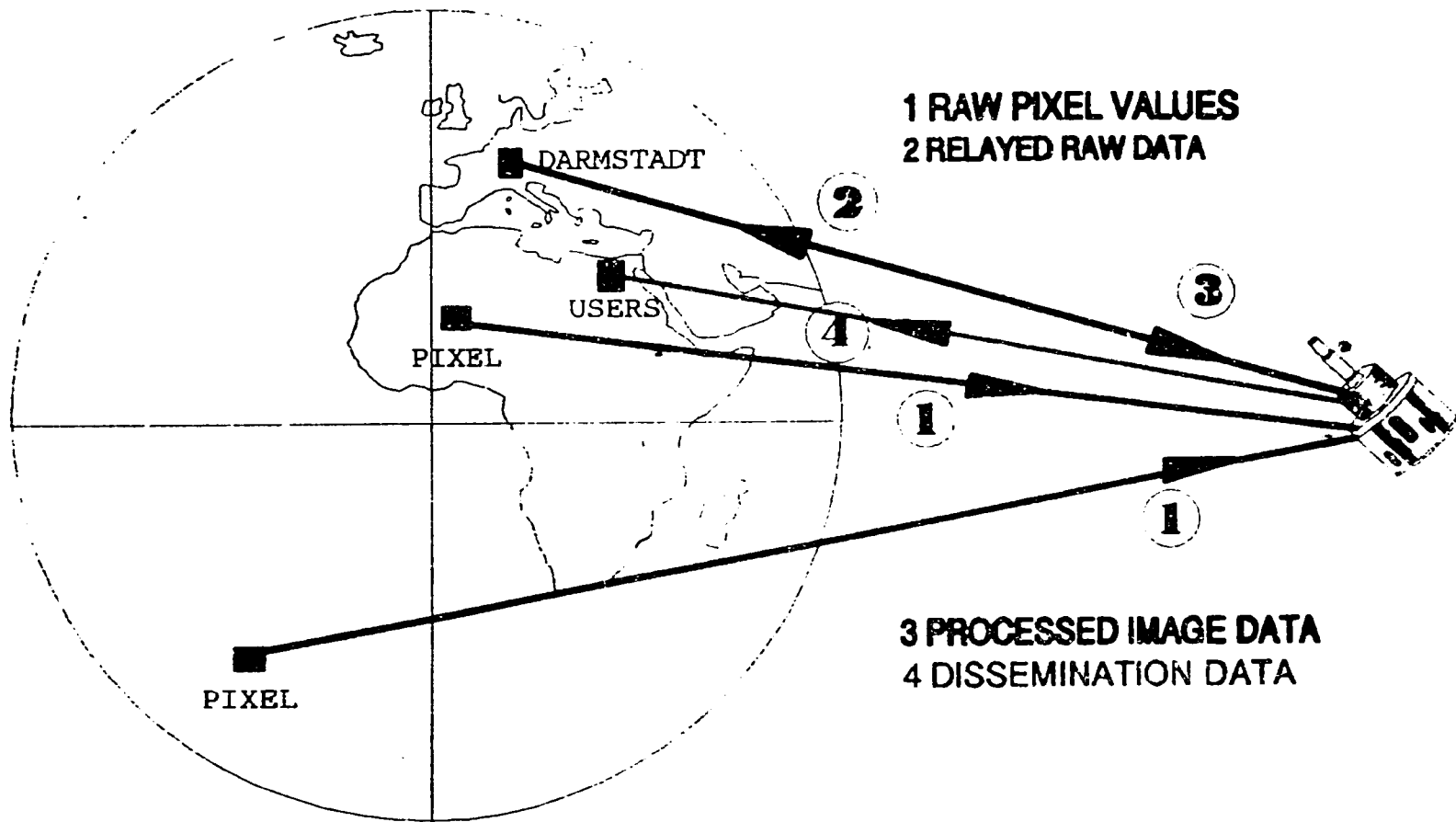
ORGANIZATION OF THE NILE FORECAST CENTER (NFC)

PDUS, MDD & NFS OF THE NILE FORECAST CENTER





METEOROLOGICAL DATA DISTRIBUTION SYSTEM



METEOSAT MONITORING SYSTEM

PREVENTIVE MAINTENANCE COMPONENT

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
PREVENTIVE MAINTENANCE COMPONENT**

OBJECTIVES: PROVIDE A MAINTENANCE CAPABILITY IN SIX (6) GOVERNORATES FOR ON-GOING REPAIR AND MAINTENANCE OF IRRIGATION STRUCTURES, CHANNELS, ACCESS ROADS; AND TO PROVIDE MAINTENANCE CAPABILITY FOR REPAIR OF ALL SUPPORT EQUIPMENT AND VEHICLES.

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS																												
Construction of 6 repair shops; funded by GOE L.E. 14.7 million; plus the furnishing of equipment, tools and staff worker to make repair shops fully operational facilities.	<ul style="list-style-type: none"> - 5 repair shops with construction completed; 1 repair shop under construction - Repair shops have staff partially trained and most of repair shop equipment is in place. 	During 1993/94 there is major emphasis on continuation of equipment utilization and training of mechanics and technicians.																												
Appointment of GOE maintenance staff comprising engineers, operators and technicians for maintenance programs in 6 governorates.	Appointments of key engineers, operators and technicians have been made in all locations, some staffing shortages remain.	Staffing shortages are being dealt with through new appointments and transfers of worker from other locations.																												
<p>On-shore training in Equipment maintenance and Irrigation Maintenance disciplines:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Civil Engineers</td><td>28</td><td>Civil Eng. Course</td><td>28</td> </tr> <tr> <td>Mechanical Eng.</td><td>21</td><td>Mech. Eng. Course</td><td>161</td> </tr> <tr> <td>Mechanics</td><td>39</td><td>Mechanic Courses</td><td>350</td> </tr> <tr> <td>Technicians</td><td>48</td><td>Technician Course</td><td>459</td> </tr> </table>	Civil Engineers	28	Civil Eng. Course	28	Mechanical Eng.	21	Mech. Eng. Course	161	Mechanics	39	Mechanic Courses	350	Technicians	48	Technician Course	459	<p>Training completed thru 31/03/93 Maintenance description:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Engineering Courses</td><td>104</td> </tr> <tr> <td>Mechanics Courses</td><td>178</td> </tr> <tr> <td>Technicians Courses</td><td>338</td> </tr> </table>	Engineering Courses	104	Mechanics Courses	178	Technicians Courses	338	<p>Training Courses Remaining 1993/94:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Engineering Courses</td><td>85</td> </tr> <tr> <td>Mechanics Courses</td><td>172</td> </tr> <tr> <td>Technicians Courses</td><td>121</td> </tr> </table>	Engineering Courses	85	Mechanics Courses	172	Technicians Courses	121
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<p>Off-Shore Training in Maintenance Disciplines:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Observation</td><td>23</td> </tr> <tr> <td>Mechanical Engineers</td><td>15</td> </tr> <tr> <td>Civil Engineers</td><td>14</td> </tr> </table>	Observation	23	Mechanical Engineers	15	Civil Engineers	14	<p>Completed through 31/03/93:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Observation</td><td>13</td> </tr> <tr> <td>Mechanical Engineers</td><td>10</td> </tr> <tr> <td>Civil Engineers</td><td>9</td> </tr> </table>	Observation	13	Mechanical Engineers	10	Civil Engineers	9	<p>Remaining to Accomplish by November 1993</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Observation</td><td>10</td> </tr> <tr> <td>Mechanical Engineers</td><td>5</td> </tr> <tr> <td>Civil Engineers</td><td>5</td> </tr> </table>	Observation	10	Mechanical Engineers	5	Civil Engineers	5										
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Civil Engineers	5																													

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
PREVENTIVE MAINTENANCE COMPONENT**

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
Procurement of 500 major pieces of maintenance equipment plus minor items for equipment repairs and spare parts.	75% of equipment and spare parts have arrived; balance of equipment to arrive during 1993	Complete equipment and spare parts procurement. There is a shortage of funding to procure 10 Hydraulic Excavators.
Development of Spare Parts Inventory Control System (SPICS); Development of Kafr El Zayet Central Warehouse for control of spare parts inventories.	Inventory System is developed and system is Arabized; training in progress. Warehouse completed, fully staffed and operational.	Utilization and operational training of staff in use of the inventory system is on-going in 6 governorates and at Kafr El Zayet. Plan is being made to construct a second warehouse at Kafr El Zayet.
Development & Implementation of Management Operations For Management Systems (MOMS). This is a system for planning and scheduling maintenance repair work for irrigation structures, channels and access roads.	Development of MOMS system is complete and Arabization is complete; implementation and training of engineering staff in governorates to commence in May, 1993.	Required engineers have been appointed to lead the implementation and training of the MOMS system.
Development and implementation of Equipment Management System (EMS). This system controls the proper maintenance activities for equipment.	Developed and Arabization of EMS completed; implemented training in governorates began in 1992,	Utilization and training in Arabized system on-going. Training will continue through 1993/94.
Development and implementation of Maintenance Management Handbook.	First draft is nearing completion by MKE; to be reviewed by project in April.	Completion of the handbook and thereafter approval, Arabization and distribution will occur. Training of personnel using the handbook will take place in 1993/94.

WATER RESEARCH CENTER COMPONENT

WATER RESEARCH CENTER COMPONENT

WRC OBJECTIVES	REVISED OUTPUTS	MAG. OF REV. OUTPUTS
<p>To enhance WRC's effectiveness in doing research to provide solutions to problems affecting P&WR in its activities for the control, management and development of Egypt's water resources.</p>	<p>Institutionalization of a process for identifying research needs and setting priorities.</p> <p>High priority research results (technical and policy related) published</p> <p>Institutionalization of a process for dissemination of research results.</p> <p>Trained staff (academic, short term technical, managerial, in-country academic and on-the-job).</p> <p>Establishment of an off Campus graduate (US) program.</p> <p>A documentation and management information system</p>	<p>Yearly workplans, as well as a comprehensive 5 year workplans for each of the 11 research institutes.</p> <p>Reports on topics such as overall system performance, cost recovery, water quality, etc.</p> <p>A formalized plan for dissemination of research results.</p> <p>31 PhDs 44 MSCs 192 person-months of technical short courses 43 person-months of tech/management OJT training thru the Salt River Project. 60 persons attending international conferences.</p> <p>10 courses 225 participants</p> <p>An information processing, storage and retrieval system.</p> <p>A bilingual central library Computer based systems to track accomplishments and expenditures, control inventories and maintain personnel and training records.</p>

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
WATER RESEARCH CENTER COMPONENT**

OBJECTIVE: ENHANCE WRC'S EFFECTIVENESS IN DOING RESEARCH TO PROVIDE SOLUTIONS TO PROBLEMS AFFECTING PWWR IN ITS ACTIVITIES FOR THE CONTROL, MANAGEMENT, AND DEVELOPMENT OF EGYPT'S WATER RESOURCES.

PAGE 1

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
YEARLY WORKPLANS, AS WELL AS A COMPREHENSIVE 5 YEAR WORKPLAN FOR EACH OF THE 11 RESEARCH INSTITUTES.	WORKPLANS DEVELOPED AND INPLACE, WORKING ON 1993-94 CURRENTLY.	WORKPLAN FOR 1993-1994 WILL BE AVAILABLE BY 1JUN93
REPORTS ON TOPICS SUCH AS OVERALL SYSTEM PERFORMANCE, COST RECOVERY, WATER QUALITY, ETC.	REPORTS EXIST ON PERIODIC BASIS FOR TECHNICAL SUBJECTS.	STORED IN INSTITUTES AND REQUESTS CAN BE MADE FOR REPORTS.
A FORMALIZED PLAN FOR A DISSEMINATION OF RESEARCH RESULTS.	DISSEMINATION OF RESEARCH IS THRU FORMAL RESEARCH PAPERS AND CONFERENCES.	STORED IN LIBRARY AND CAN BE AVAILABLE.

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
WATER RESEARCH CENTER COMPONENT**

OBJECTIVE: ENHANCE WRC'S EFFECTIVENESS IN DOING RESEARCH TO PROVIDE SOLUTIONS TO PROBLEMS AFFECTING PWWR IN ITS ACTIVITIES FOR THE CONTROL, MANAGEMENT, AND DEVELOPMENT OF EGYPT'S WATER RESOURCES.

PAGE 2

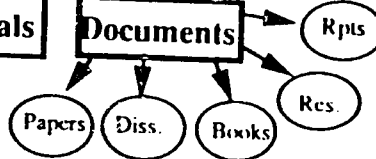
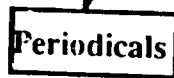
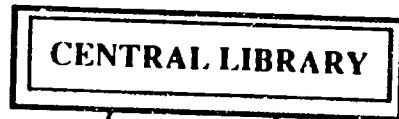
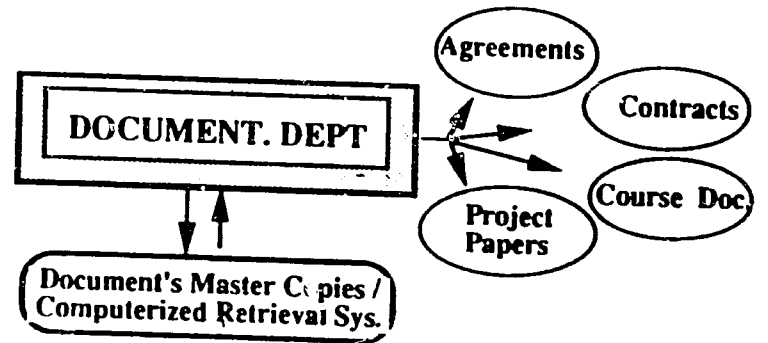
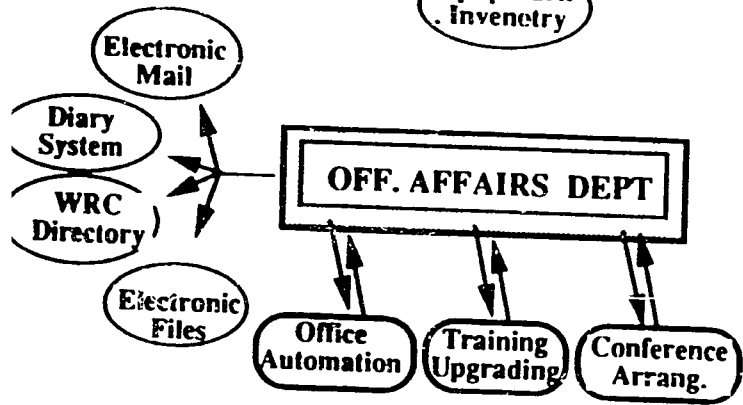
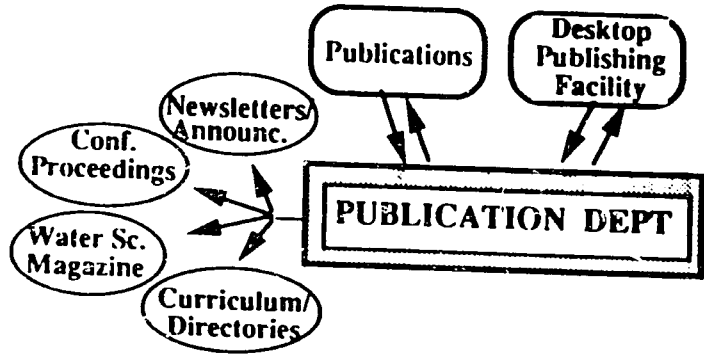
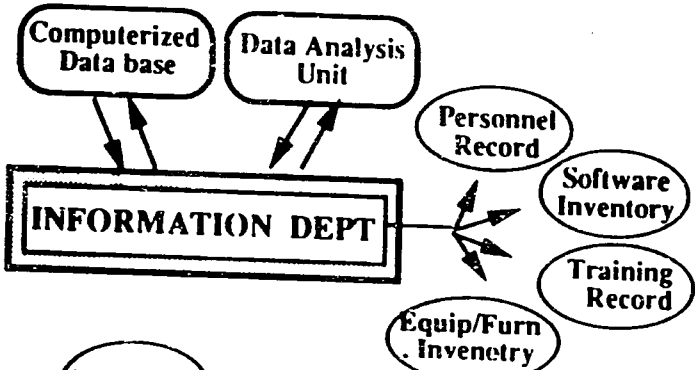
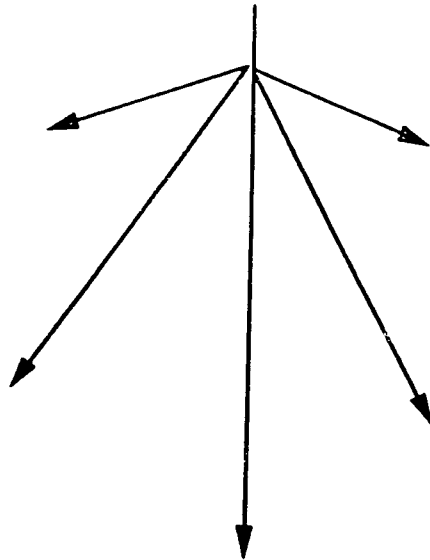
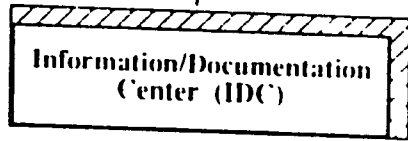
PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
TRAINED STAFF: ACADEMIC - 31 Ph. D.'S 44 M. Sc.'S TECHNICAL SHORT COURSES: COURSES - 192 PERSON MONTHS ON-JOB-TRAIN. - 43 PERSON MOS.	COMPLETED ACADEMIC STAFF: Ph. D.'s - 3 M. Sc.'s - 37 SHORT COURSES ATTENDED: COURSES - 152 PERSON MONTHS OJT - 30 PERSON MONTHS	ACADEMIC STAFF WILL COMPLETE BY 30JUN94: Ph. D.'s - 28 M. Sc.'s - 7 SHORT COURSES TO ATTEND: COURSES - 40 PERSON MOS. OJT - SRP TERMINATED
CAIRO CAMPUS FOR CSU: COURSES - 10 PARTICIPANTS - 225 INTERNATIONAL CONFERENCES: STAFF - 60 PERSONS	CAIRO CAMPUS COURSES: COURSES COMPLETED - 8 PARTICIPANTS - 186 INTERNATIONAL CONFERENCES: STAFF - 62 PERSONS	CAIRO CAMPUS COURSES: 2 COURSES IN 1993 PARTICIPANTS - 39 ADDITIONAL - 8 PERSONS

**IRRIGATION MANAGEMENT SYSTEMS PROJECT
WATER RESEARCH CENTER COMPONENT**

OBJECTIVE: ENHANCE WRC'S EFFECTIVENESS IN DOING RESEARCH TO PROVIDE SOLUTIONS TO PROBLEMS AFFECTING PWR IN ITS ACTIVITIES FOR THE CONTROL, MANAGEMENT, AND DEVELOPMENT OF EGYPT'S WATER RESOURCES.

PAGE 3

PLANNED OUTPUTS	CURRENT STATUS	REMAINING/COMMENTS
<p>AN INFORMATION PROCESSING, STORAGE AND RETRIEVAL SYSTEM:</p> <ul style="list-style-type: none"> * BILINGUAL CENTRAL LIBRARY COMPUTER BASED SYSTEMS * EXPENDITURES AND INVENTORY SYSTEM * PERSONNEL AND TRAINING SYSTEM 	<p>PROCESSING, STORAGE AND RETRIEVAL SYSTEM:</p> <p>APPROXIMATELY 75 % COMPLETED</p> <p>ACCOUNTING SYSTEM BEING DEVELOPED AND INVENTORY SYSTEM COMPLETED</p> <p>DEVELOPED AND IN PROGRESS TO IMPLEMENT SYSTEMS</p>	<p>PROCESSING, STORAGE AND RETRIEVAL SYSTEM:</p> <p>WILL COMPLETE BY 30JUN94</p> <p>WILL COMPLETE BY 30JUNE94</p> <p>IMPROVEMENTS DURING 1993-4 WILL COMPLETE BY 31DEC93</p>



ACHIEVEMENTS

Office Affairs Dept.

Information Dept.

Office Automation

OA Applications:

- * Electronic Mail
- * Diary System
- * Record Manag.
- * Tel. Directory

Conferences

21 International and national conferences, Meetings and Workshops

10 Joint CSU/WRC Training Courses

TRAINING

- * 6 pre-departure Orientation Seminars
- * NCR computer Tr. courses
- * Special Intensive English Training

6 Automated DB Packages utilized and completed:

- * In- out Country Training
- * software Inventory
- * Short course and Conf. Announcements
- * Technical Library
- * Personnel Record
- * WRC Researcher Directory

CENTRAL LIBRARY

- **Classification, cataloguing and labeling of books and periodicals (about 17,000 volume collection).**
- **Computerized Lib. Management Program developed.**
- **Acquisition contract with int. publishers to provide WRC with most up-to-date books and period.**

PUBLICATIONS

- **Regular publ. (newsletter, water science mag.).**
- **Special publ. (conference proceedings, announcements, info. bulletins).**
- **Desktop Publishing: An enhanced graphics system with scanner, film recorder and colored printer was purchased.**

DOCUMENTATION

- **Permanent retention of the master copies of documents of special interest for WRC (Agreements, Contracts, Official Papers, ...etc.) with a safe record keeping and computer-assisted retrieval system.**

CENTRAL LIBRARY

- **Establish Local Area Network between WRC and its 11 Res. Inst.**
- **Arrangements for on-line comm. on the national and international scales.**
- **Operate a computerized query and loan service.**
- **Provide facility for search on compact disk (CD-ROM).**

PUBLICATIONS

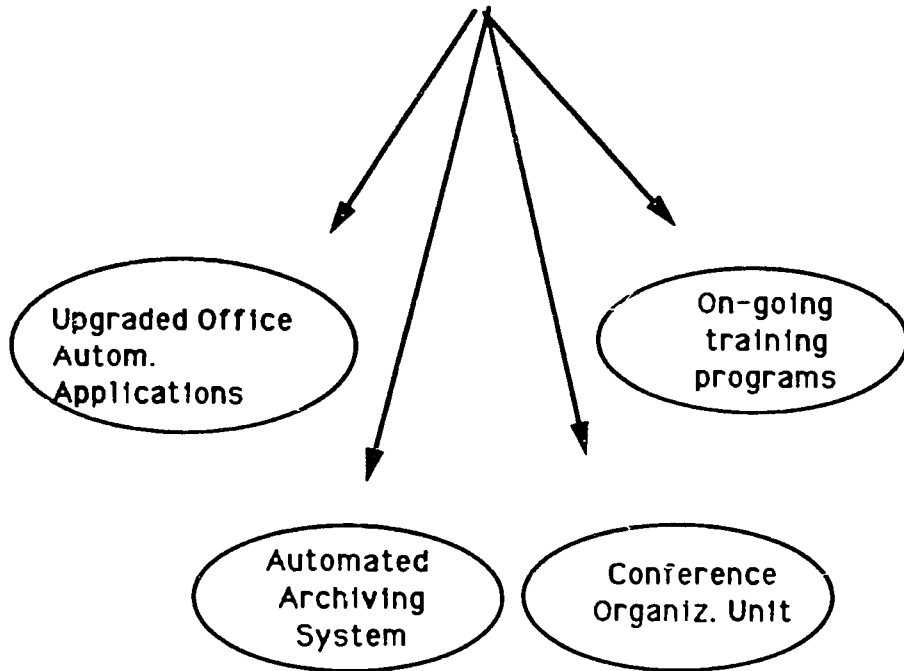
- **Operate the new graphics system to enhance printing facilities and produce original colorful artworks and designs for presentations.**

DOCUMENTATION

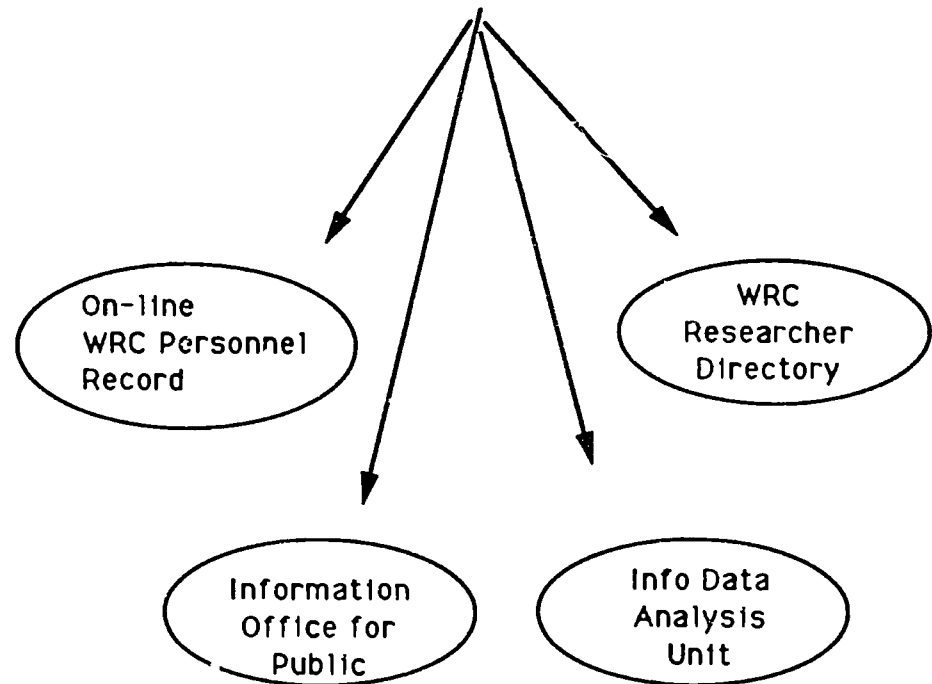
- **Enlarge the Documentation Dept. and develop a fully automated retrieval and back-up systems.**

FUTURE PLANS

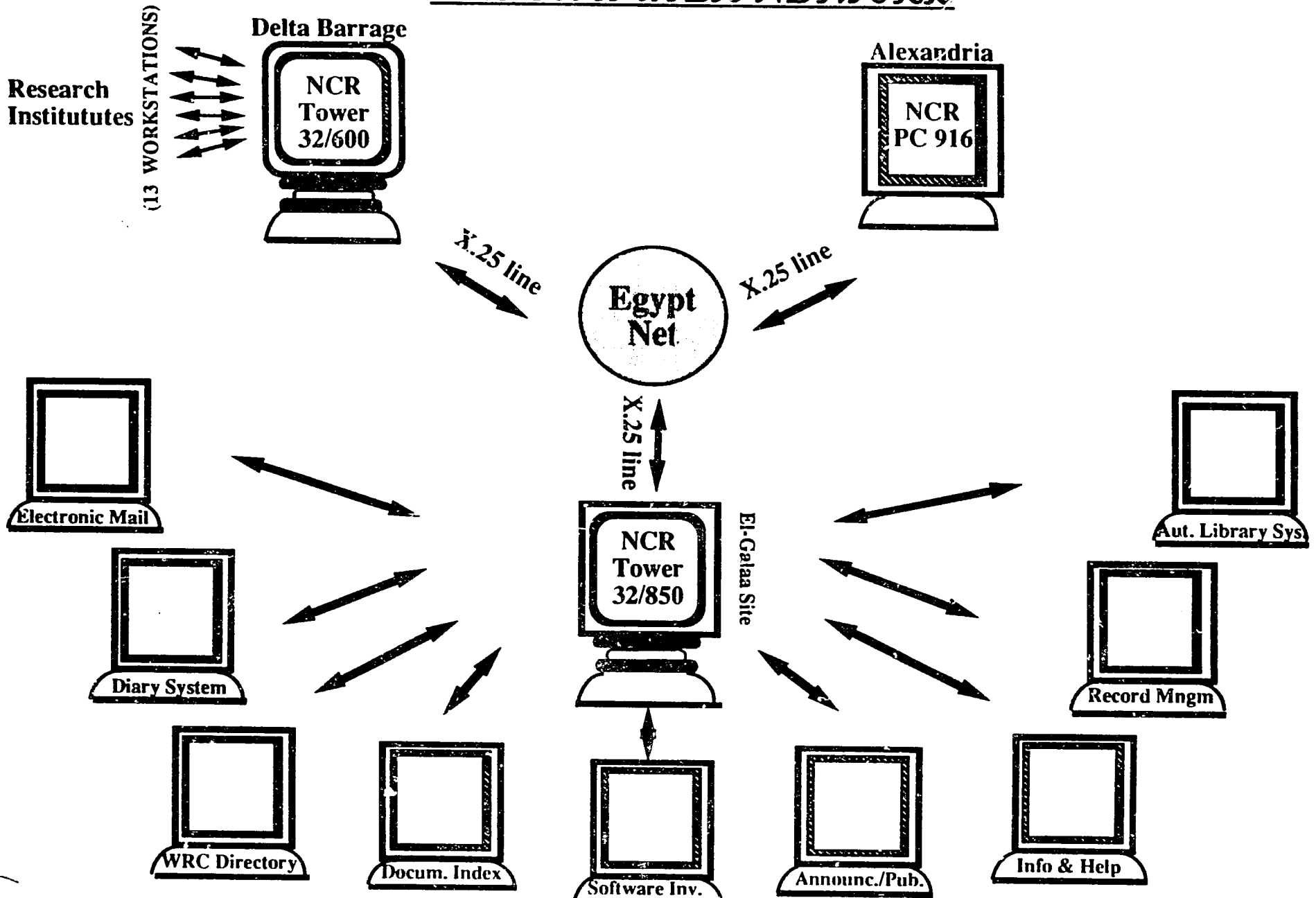
Office Affairs Dept.



Information Dept.

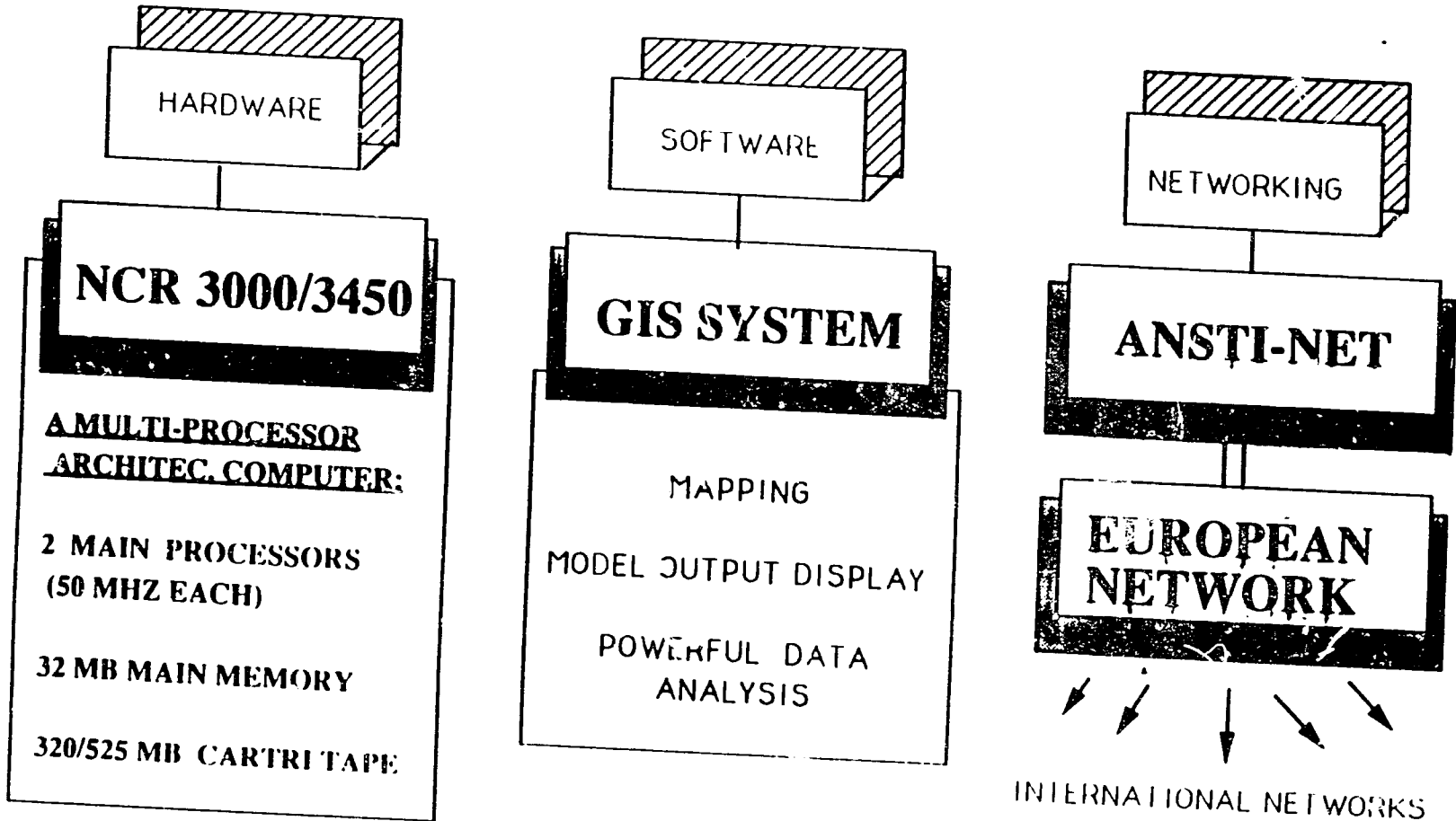


WRC COMPUTER NETWORK



1/2

FUTURE OF THE IDC, WRC



PROFESSIONAL DEVELOPMENT COMPONENT

"Professional Development Project"

Introduction

The Progress of any Firm or Country is based on two principal factors:

- o The Physical Resources
- o The Human Resources

Importance of the Human Resources in getting the max. Benefit from the available Physical Resources

Highest level of quality and quantity are best achieved when the Human resources are developed through programs of Training.

The Main Goal for P.D. Project

to develop professional capabilities within MPWWR to improve management and operating efficiency through:

- o Facility (6 October, Menya, Kafr El Sheihk)
- o Developing Policies
- o Training Activities
- o Sustainability

1. T.C. in 6 October City:

A. Civil Works:

Classrooms, Labs, Hotel, etc., 70 %

B. Additional Works:

1. Telephone Connections 80 %

2. Electricity Transformers 76 %

3. Air Conditioning (Central & Split units) (on process)
(Approved 21/2/93)

4. Furniture Works 60 %

5. Fire Protection, Decoration (on process)

C. Commodities & Equipments:

1. Commodities Delivered \$ 457,911

2. Commodities Ready for Advertisement \$ 49,309

3. Bid Documents to USAID for Approval \$1.915,492

Comments: Completion of T.C depend on Availability of:
\$ 9.05 Mil
Arrival of Equipments

2. Developing Policies:

Policy Paper for T.C. has been prepared

Staff Handbook T.C. has been prepared

Management Information System (MIS) Program has been completed

- o Training Needs Assessment**
- o Monitoring Evaluation**
- o Training Management**
- o Inventory**
- o Finance**
- o Administration**

To Keep MPWWR and Staff Informed of P.D. Activities

- o News Letter**
- o Brochures**
- o Course Cataloges**
- o Audio Visual Aides**
- o Video Tapes to be used through courses**

Comment:

Policy Paper still under revision

Training for Staff on (MIS) planned to be started April 15

3. Training Activities:

A. Courses Development

10 New Courses were developed 1992

7 New Courses developed 1993

- o Canal Design by computer
- o Power house
- o Inventory & Salaries by computer
- o Analyzing experiments, Models used for irrigation by computer
- o Electronic circuits
- o Technical Inspection for Pumping Stations
- o Design of irrigation constructions by computer

B. Courses Delivering:

To cover the following areas:

- Technical
- Management
- Electrical & Mechanical
- Computer
- Newly Appointed Engineers
- Financial & Administration
- Promoting

3. Training Activities (Cont.)

C. Performance Standards and Evaluation:

- Initial Test
- Applications & Exercises During Course 25 %
- Attendance of Trainees 25 %
- Final Test 50 %
- Total for Passing more than 65 %

D. Local Training for MPWWR Staff:

- 9485 Participants. (1982-1992)
- Target 13000

E. Off Shore Training for MPWWR Staff:

- 407 Participants. (1982-1992)
- Target 380

Comment:

- Courses are offered according to Training Needs Assessment
- Evaluation Standards has been used since 1992
 - o Evaluation forms delivered by (Instructors & Participants & Coordinators) are considered to develop and review courses.

4. Sustainability:

A. Funding

1. MPWWR Approved:

New Additional Staff

Funding Rates:

L.E. 317000 92/93

L.E. 584000 93/94

L.E. 823000 94/95

L.E. ~~823000~~ 95/96

L.E. 2000000 96/97

2. USAID Approved:

\$ 0.5 Million - Requested \$ 3.0 Millions

(Operating Budget - Staff Training - Technical Assistance)

B. Cooperation with foreign countries:

- 13 courses had been delivered for 61 Participants of Arab Trainees at 1992
- 2 courses will be delivered through 1993 for International Trainees. (Washington D.C.)
- Uganda, Kenya, Syria have asked for attending some courses through 1993

C. Special account for T.C. is Required to deal with:

- Courses offered for outdoor MPWWR Trainees.
- Using Conference Room, Hotel for Conferences.
- Using Material Lab, Soil Lab, for Providing Services on Demand
- Covering Quick Maintenance & Expenses of Training
- Incentives for Staff

Professional Development Project
Status Report
March 10, 1993

1. Bid Documents to USAID for approval:

<u>Document Number</u>	<u>Description</u>	<u>Date of Last Delivery to AID</u>	<u>Value est.</u>
IFB 004	Vehicles	Feb. 93	\$ 125,000
IFB 011	Audio Visual	Feb. 93	179,799
IFB 013	Computer Supplement	Feb. 93	238,693
IFB 014	Kitchen Laundry	Mar. 93	534,000
IFB 016	Outdoor Laboratories	Mar. 93	250,000
Contract			
RFO 006	Indoor Laboratories	Aug. 91	528,000
PAM 17	Photocopiers	Nov. 92	60,000
		Sub Total	1,915,492

2. Commodities Delivered

<u>Document Number</u>	<u>Description</u>	<u>Delivery Date</u>	<u>Value of Delivered Items</u>
AM 76	Library Books	On Going	63,159
AM 1	Soils Books	----	1,473
PAM 2	Soils Lab Equip	5/91	54,041
PAM 3	Computers	3/91	70,514
PAM 4	Vehicles	5/91	74,514
PAM 5	Teaching Equip	7/91	6,949
PAM 7	Computer Software	3/91	6,965
PAM 8	Satellite teaching Equip	2/92	32,354
PAM 9	Apple Mac + Other	12/92	63,471
PAM 10	SM/QC Lab Equip	6/92	53,239
PAM 12	On Farm Equip (Kafr)	12/92	31,232
		Sub Total	457,911

3. Commodities Ready for Advertisement

PAM 15	Shop Tools	49,309
Total 1,+2+3=		2,422,712

SURVEY AND MAPPING COMPONENT

Irrigation Management Systems Project

Surveying & Mapping Component

Dr. Mona El Kady

Project Director



IMS-Surveying and Mapping Component

- Contract signed – 27 Dec 89
- Contractor – Geonex International
- Project begun – 31 Jan 90
- Initial Budget – \$28,500,000
- Initial Completion – 27 Dec 92
- Amended Budget – \$37,100,000
- Amended Completion – 30 Jun 95



Component Objectives

- Modernization
- Training
- Production



Facility Modernization

- Governorate cadastral offices – complete
- Map production plant – complete
- Printing plant – awaiting press



Surveying Modernization

- GPS receivers — 8
- Total stations — 19
- Bar code reading levels — 2
- Self-levelling levels — 6
- HP-48sx calculators — 20
- Survey software
- Vehicles — 54 (43 for survey) plus
34 additional survey vehicles in 1993



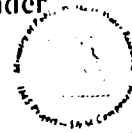
Map Production Modernization

- Automated typesetting – operational
- Modern cartographic photo lab – operational
- Digital map production system – operational
- Digital orthophotomap system – operational
- Printing press – awaiting USAID approval



Land Records Modernization

- Automated Siguel El-Ainne production – underway
- Automated cadastral survey data collection – underway
- Digital cadastral overlay production – underway
- Digital cadastral map production – underway
- Integrated land information system – under development



Crop Inventory Modernization

- 1:20,000 CIR photography – complete
- Photointerpretation – complete
- Orthophoto basemaps – production underway
- Data transfer – underway
- Crop & Soil Information System – design developed and tested



Organizational Modernization

- Technical specifications – numerous completed
- Operating procedures – numerous completed
- Technical library – fully operational
- Asset management system – fully operational
- Strategic Plan for ESA – programmed for FY 93-94



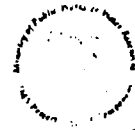
Training Programs

- Senior Management Seminars – Cairo,
- Middle Management Training – U.S.A
- Technical Training Sessions – Egypt



Senior Management Seminars

- Electronic surveying – completed
- Digital photogrammetry – completed
- Automated cartography – completed
- Geographic information systems – completed
- Computer systems management – scheduled
FY 93-94



Middle Management Training

	Trainees	Weeks
Production management	8	4
Survey operations	5	6
Digital stereo & carto	8	6
Photo interpretation	3	6
Land records conversion	4	6
Orthophoto production	2	3
✓ System management	4	3



Production Programs

- Aerial photography
- Base mapping
- Cadastral surveying and mapping
- Crop and soil inventory
- Land information system
- Geodetic network enhancement



Aerial Photography Programs

- Black & White – complete
 - 1:40,000 scale, 65,077 sq. km.
 - 1:10,000 scale, 12,276 sq. km.
 - 1:5,000 scale, 45 towns and villages
- CIR – complete
 - 1:20,000 scale, 49,600 sq. km.



Egyptian Survey Authority

Crop & Soil Inventory – 31 Mar 1993

- Photo interpretation
 - Winter photography - 100 %
 - Summer photography - 65.7 %
- Data transfer
 - Winter photography - begun Jan 93
- Final crop and soil maps
 - Winter photography - begun Feb 93
- Crop and Soil GIS - database design completed and tested



Geonex International

Egyptian Survey Authority

Cadastral Mapping – 31 Mar 1993

- Parcel Surveying
 - Beheira - 82.7 %
 - Sharquiya - 37.9 %
- Preliminary cadastral maps
 - Beheira - 78.0 %
 - Sharquiya - 33.9 %
- Final cadastral maps to Siguel El-Ainne
 - Beheira - 16.0 %
 - Sharquiya - 9.0 %



Geonex International

Siguel El-Ainee – 31 Mar 1993

- Field data collection – 39 villages, 16% of project area
- Data entry & edit – 22 villages, 10.5%
- Real Estate review – 19 villages, 7%
- Public review – 14 villages, 5.5%
- Registered – 9 villages, 3.6%



Base Maps – 31 Mar 1993

- Control surveys – 1:40,000 scale
 - Horizontal and vertical - 100%
- Control surveys – 1:10,000 scale
 - Beheira - H: 100 %, V: 100 %
 - Sharquiya - H: 100 %, V: 84 %
 - Asyut - H: 40 %, V: 59 %
 - Sohag - awaiting completion of Asyut
- Aerial triangulation
 - 1:40,000 - 100%
 - 1:10,000 - 16 %
 - 1:5,000 - none required



Base Maps – 31 Mar 1993

- Stereo compilation
 - 1:40,000 scale - 100%
 - 1:10,000 scale - 6.0 %
 - 1:5,000 scale - awaiting completion of control surveys

- Cartographic completion
 - 1:50,000 - 1.4%, printing awaiting press procurement
 - 1:100,000 - awaiting 1:50,000 scale maps
 - 1:2:500 - awaiting 1:10,000 scale compilation
 - 1:1,000 - awaiting 1:5,000 scale compilation



Geodetic Network Enhancement

- New project activity

- Schedule to begin 1 July 1995



Significant Project Modifications

- Aerial Photography – area of coverage expanded as a result of a better than anticipated performance by the EAF.
- Cadastral Mapping – Asyut and Sohag temporarily delayed due to lack of USAID funding for equipment and operating expenses.
- LIS Pilot – size of pilot area reduce to one adequate for demonstrating the feasibility and value of a Land Information System while matching the funding available.

Problems and Constraints

- E.S.A. salary structure – trained personnel looking for and accepting employment elsewhere.
- Middle management – insufficient personnel available to fill the positions required to manage the new technologies.
- Incentives – field crews get per diem; office production workers do not.

19/6

Problems and Constraints

Funding Uncertainty

- Staff Morale – project team adversely affected.
- O&M – FY 93-94 program requires approximately £E 3.5 million for daily operations and maintenance.

Conflicting Regulations

- Per diem.
- Social insurance.
- Vehicle insurance.
- Vehicle registration.



Problems and Constraints

Vehicle Shortage

- USAID prohibition on vehicle procurements.
- Customs' Service Fee – £E 600 per quarter.
- Rental Expense – approximately \$790,500 will have been spent before additional project vehicles can arrive.

Procurement Approval Process

- Slow
- Cumbersome
- Inconsistent



1997

Institutional Development

- **Equipment** – requires money.
- **Training** – requires personnel and time.
- **Managerial Effectiveness** – requires technical knowledge, practical supervisory experience, and the personal courage to change the way one does business.
- **Organizational Effectiveness** – requires senior managers with vision and leadership, and a willingness to change the way the organization does business.



“The pyramids were not built in one day.”



Egyptian Survey Authority

Project Funding (\$ x 1,000)

	Budget	% ↓	Mar 93	→ %
Tech Assistance	17.1	60.1	16.5	96.5
Tech Consultant	0.3	0.9	0.3	100.0
LCOM Equipment	9.0	31.6	8.4	93.3
LOB – USAID	2.1	7.4	2.1	100.0
Total	28.5	100.0	27.3	95.8



Geonex International

Egyptian Survey Authority

Project Funding (\$ x 1,000, 000)

	Total	TA	LCOM	LOB
27 Dec 92	28.5	17.1	9.0	2.4
30 Mar 93	28.5	17.1	9.0	2.4
31 Aug 9	?	19.8	?	?
30 Jun 95	37.1	24.5	9.9	2.7



Geonex International

STRUCTURAL REPLACEMENT COMPONENT

STRUCTURAL REPLACEMENT

Started in 1981

- * 22,000 small/medium structures needed replacement
- * 5 Governorates initially
3232 structures -- downstream and upstream control gates tested in two canals.
- * \$ 20.5 million -- 80% covered by USAID

1985 - second phase

- * 19 irrigation Governorates covered
- * \$ 80.8 million spent
- * Total number of medium and small structures: 19,257
- * Constructed 5 big regulators at a cost of approximately L.E. 1 million each

Equipment

- * 11 regulators fitted by radial gates - expanded to canals (regulators)
- * Downstream Control Structures integrated w/IIP

Inventory

- * All small and medium structures in Ministry in 19 governorates 42000 structures.
- * Data computerized
- * Staff trained -- Construction Engineers

Laboratories

- * Soil testing
- * Appraise engineer capability
- * Quality Control
- * Construction Manual Produced and 1000 Copies distributed for all the directorates that belong to the Ministry
- * 19 Computers distributed for each directorate + 1 apple Machentoch in H.Q.

OVERVIEW OF IMS PROJECT GOAL, SUB-GOAL, AND PURPOSE

IMS PROJECT

IMS PROJECT GOAL	IMS PROJECT PURPOSE	END OF IMS PROJECT STATUS
<p>Goal To improve the control of Nile waters for all uses and particularly their optimal allocation to and within agriculture as a means of helping increase agricultural production and productivity.</p> <p>Measures of goal achievement: Agricultural production and productivity increases. Farmers have adequate water supplies and are experiencing productivity increases.</p>	<p>To strengthen PWWR's capabilities for:</p> <p>A. Planning and Design</p>	<p>PWWR implementing projects and programs that are well designed, carefully analyzed, and adequately financed by international donors and/or the GOE.</p>
<p>Subgoal To improve the operating efficiency of the water distribution system for agricultural irrigation and for other uses.</p> <p>Measures of subgoal achievement: Farmers have adequate and predictable water supplies required for crop; support structures in the irrigation system facilitate agricultural production; and water is freed up for agricultural and other uses.</p>	<p>B. Operation</p>	<p>Improved operation of HAD/ Lake Nasser and improved control of the water distribution system resulting in the timely distribution of the proper amounts of water to end users on an equitable basis.</p>
	<p>C. Maintenance</p>	<p>The irrigation and drainage system is maintained to prolong the infrastructure investment and so that maintenance is a positive factor in the performance of the canals, drains, and their control structures.</p>
	<p>D. All primary functions (planning, design, operation and maintenance)</p>	<p>Irrigation improvement program providing an integrated systems approach to carry out PWWR primary functions (i.e. rational planning, improved design, more efficient operation and adequate maintenance).</p>

IMS OBJECTIVE TREE

**AGR STRATEGIC OBJECTIVE:
(PROJECT GOAL)**

**INCREASED AGRICULTURAL PRODUCTIVITY
PRODUCTION AND INCOMES**

**PROGRAM OUTCOMES:
(PROJECT SUBGOAL)**

POLICY
LAND AND WATER
USE EFFICIENCY
TECHNOLOGY

**IMS PROJECT PURPOSE:
STRENGTHENS MPWWR'S
CAPABILITY FOR**

PLANNING &
DESIGN
OPERATION
MAINTENANCE

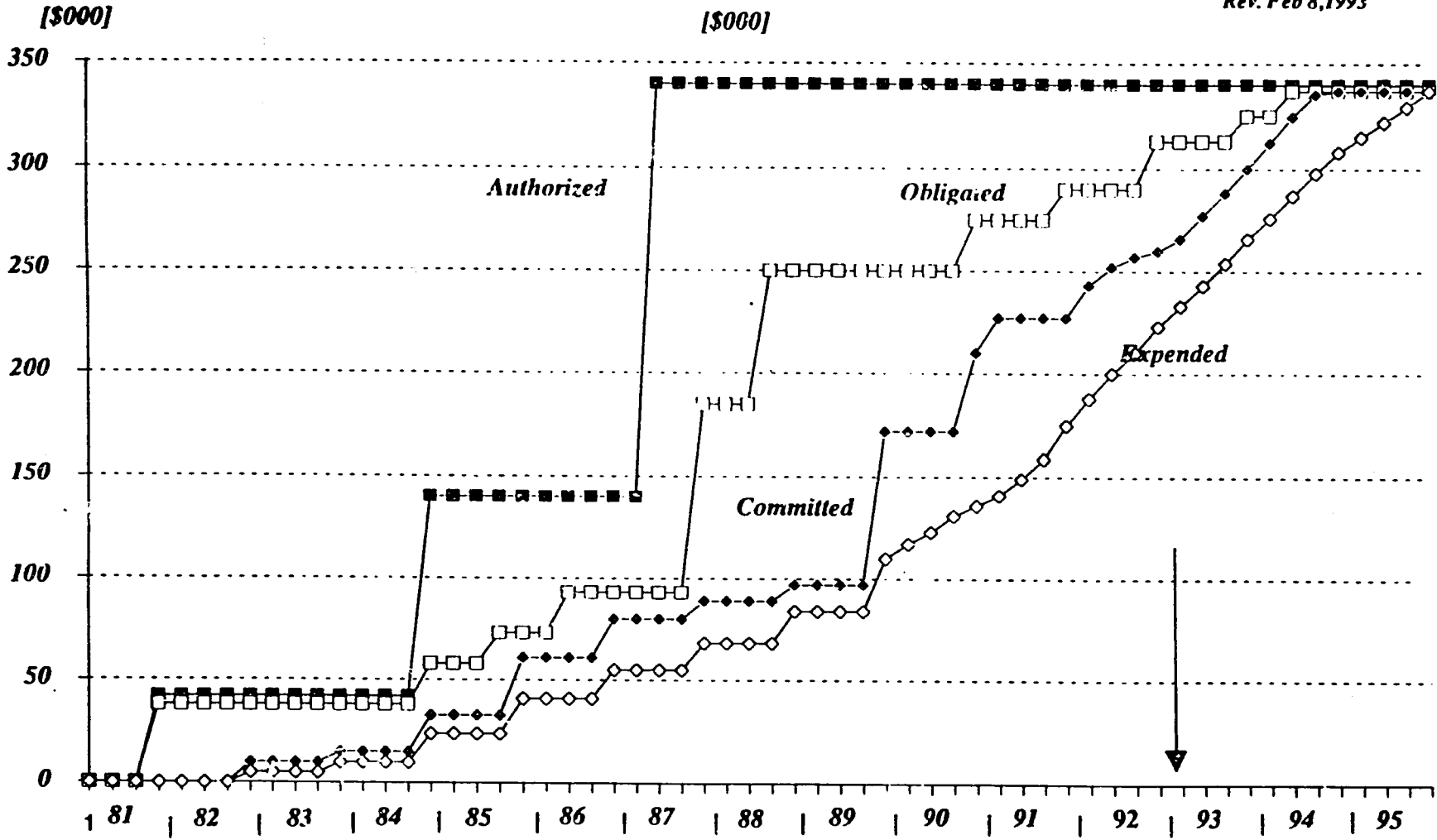
OF WATER
DISTRIBUTION
SYSTEM FOR
AGRICULTURE
& OTHER
USES

**PROJECT COMPONENTS:
(OUTPUTS)**

IIP WRC PSM MISC	IIP - - - PSM PD WRC SM PPD MISC/MO	IIP SR - MSM PSM PD WRC SM MISC/MO	IIP SR PM - PSM PD WRC SM - MISC/MO	IIP WRC
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iMS Financial Status
[(\$000)]

Rev. Feb 8, 1993



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WHAT STILL NEEDS TO BE DONE

- COMPLETE PROVISION OF INPUTS AND DEVELOPMENT OF INSTITUTIONAL CAPABILITY (physical, human resources, organization and operation, administration and management)
- INSURE SUSTAINABILITY THROUGH FULL INTEGRATION INTO MPWWR - make components permanent parts of MPWWR organization and operation
- IMPROVE PRODUCTIVITY/OPERATIONAL EFFECTIVENESS OF EACH COMPONENT
- REALIZE BENEFITS OF INTEGRATION (MARRIAGE) OF COMPONENTS

ISSUES/PROBLEMS/CONSTRAINTS

1. Structural Constraints
 - operational budgets
 - organization and management
 - salaries and incentives
2. Effective and Efficient Use of Resources
 - accountability - lack of holding responsible
 - commodities - no use, under use, misuse/abuse
 - operations and maintenance
 - financial
 - management for effective flow of funds
 - misuse