

**PLANNING STUDIES AND MODELS
COMPONENT OF THE IRRIGATION MANAGEMENT
SYSTEMS PROJECT:
START-UP WORKSHOP REPORT**

ALEXANDRIA, EGYPT

June 26-28, 1989

ISPAN Activity No. 655B

ISPAN REPORT No. 19



IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST

Sponsored by the U.S. Agency for International Development



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START-UP WORKSHOP REPORT**

Alexandria, Egypt
July 26-28, 1989

Prepared for the GOE Ministry of Public Works
and Water Resources and USAID/Cairo
under ISPAN Activity No. 655B

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by

Kathy Alison

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CONTENTS

CHAPTER	PAGE
ACKNOWLEDGEMENTS	iii
ACRONYMS	v
EXECUTIVE SUMMARY	vii
1. INTRODUCTION	1
1.1 Background	1
1.2 Terms of Reference	2
1.3 Interviews	2
1.4 Interview Findings and Issues Identified	3
2. THE START-UP WORKSHOP DESIGN	7
2.1 Overview of the Workshop	7
2.2 Workshop Goals	8
2.3 Workshop Schedule	8
2.4 Session Descriptions	10
3. OUTCOMES AND AGREEMENTS	13
3.1 Overview of Outcomes	13
3.2 Specific Recommendations and Agreements	14
3.2.1 Project Management Agreements	14
3.2.2 Recommendations on Key Project Issues	23
3.2.3 Major Workplan Agreements	28
3.3 Summary of Participant Evaluations	28
4. RECOMMENDATIONS AND CONCLUSIONS	31
APPENDICES	
A. Executive Summary and Chapter 1 of PSM Workplan	33
B. Workshop Participants	43
C. Suggested Guidelines for Panel Presentation	47
D. Planning Studies and Models--Detailed Work Tasks	51
E. Group Recommendations on Key Project Issues	67
F. Evaluation Results	85
G. Agreements Reached at the Planning Studies and Models Start-up Workshop	91
H. Description of Project from Project Paper	97

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ACRONYMS

CID, CSU	Consortium for International Development/ Colorado State University
HAD	High Aswan Dam
IBRD	International Bank for Reconstruction and Development
IMS	Irrigation Management Systems Project
ISPAN	Irrigation Support Project for Asia and the Near East
MFS	Monitoring, Forecasting and Simulation
MPWWR	Ministry of Public Works and Water Resources (Formerly MOI/Ministry of Irrigation)
MSM	Main Systems Management
MWP	Master Water Plan
NOAA	National Oceanographic and Atmospheric Administration
PASA	Participating Agency Service Agreement
PDM	Planning Distribution Model
PIS	Project Information System
PS	Planning Sector
PSM	Planning Studies and Models Project
RFTP	Request for Technical Proposals
SM	Survey and Mapping
SOW	Scope of Work
TDY	Temporary Duty Assignment (short term consultants)
TOR	Terms of Reference
UNDP	United Nations Development Program
USAID	U S. Agency for International Development

USBR	U.S. Bureau of Reclamation
WB	World Bank
WPG	Water Planning Group
WRC	Water Research Center

EXECUTIVE SUMMARY

The Planning Studies and Models (PSM) Project is housed in the Planning Sector of the Egyptian Ministry of Public Works and Water Resources (MPWWR). A start-up workshop for PSM was held June 26-28, 1989, at the Montazah Sheraton Hotel in Alexandria, Egypt. This was the fourth start-up workshop conducted this year for components of the Irrigation Management Systems (IMS) Project in Egypt. A total of seven workshops are planned for the sub-components of IMS, plus an eighth workshop for the IMS Coordinating Committee.

Thirteen individuals, representing MPWWR, the U.S. Bureau of Reclamation, (USBR), and U.S. Agency for International Development (USAID), participated in the PSM workshop.

Ministry representatives included the general director of the Technical Office and head of Irrigation Administration, as well as the new head of the Ministry Monitoring Office, who will be gathering information from all of the sub-components of IMS.

The workshop was designed and facilitated by Kathy Alison, Human Resource Development Program Manager for the Irrigation Support Project for Asia and the Near East (ISPAN), a centrally-funded USAID project.

The objectives of the workshop were to:

- exchange current information about the project that is essential for the remainder of the project;
- achieve agreement on and commitment to project goals and activities;
- provide an opportunity for the project team to become better acquainted;
- agree on the management roles and responsibilities of MPWWR, USBR and USAID;
- agree on procedures for managing the project;
- improve the ability of the group to work together as a team;
- discuss and develop strategies for the most important issues that will affect the project; and
- refine the workplan for the next year of the project.

Prior to the workshop, the facilitator conducted confidential interviews with twelve individuals, nine of whom were workshop participants. Six major issues were identified during the interviews and discussed during the workshop.

The six issues were as follows:

- the role of PSM in IMS and the Ministry, including priorities, objectives, and coordination with other IMS components;
- Egyptian technical staff needs and requirements, including selection, utilization, and training;
- the development of procedures for the procurement of computers, vehicles, and other commodities;
- the Participating Agency Service Agreement (PASA), how it works, the role of the advisers, and the support available from the Washington and Denver USBR office;
- short-term consultancies (TDYs), development of scopes of work, and identification of specialists to carry out the work; and
- status of the models developed under the UNDP project and the criteria for evaluating those models. (See Chapter 3 and Appendix F for more specific information on the issues and the recommendations made by the group).

A major outcome of this workshop was a better understanding of the objectives of PSM. PSM is actually a continuation of a major UNDP project which developed a number of computer models for the Ministry to use in planning for water use and distribution. The original project lasted for over 10 years, so there was confusion as to how this USAID-funded project differed from the UNDP project and what parts of the original project are still in existence.

Another major outcome of the workshop was a clarification of the purpose and terms of the PASA, the working agreement between USBR and USAID. The working relationships between the project director, the planning sector technical staff, the USBR advisers and USAID were also discussed and clarified.

Twenty-five major agreements were reached during the workshop. (See Appendix G for a complete list.) One agreement was a commitment to hold weekly staff meetings between the project director, Dr. Bayoumi Attia, or his designate; the project advisers, Al Graves and Jim Riley; and the technical staff of the planning sector. USAID project officer John Anania and Deputy Project Director Aly Seif will participate as appropriate. The workshop participants agreed that these weekly meetings are essential to getting the project moving. The meetings are scheduled for Monday mornings at 8:30 at the office in Giza.

The workshop group also agreed to meet again in early September to review, revise, and clarify the project workplan through 1990. Because of lack of time, this objective was not discussed in adequate detail, so the group requested a follow-up session to focus on the workplan. ISPAN will help facilitate the follow-up workshop. The Ministry engineers assigned to this project who were not able to participate in this workshop should be strongly encouraged to participate in the workplan revision workshop.

The workshop group identified several major tasks that need to be added to the workplan. These tasks include:

- administrative tasks (for example, communications with USBR, filling out PIO/Ps and PIO/Cs, action memoranda and scopes of work, budgets, and support of TDYs while in Egypt);
- distribution of UNDP user-friendly computer models to the Ministry and directorates as well as training on use of the models;
- USAID requirements, including needs assessments and inventories of vehicles and commodities, plus training needs assessments; and
- qualitative/consolidated analysis of staffing needs.

The workplan workshop will focus on how these tasks and those already in the workplan will be accomplished and coordinated, and on the specific objectives and staff needs for each activity. The feasibility and appropriateness of the workplan, time constraints, and any additional budget requirements will also be discussed.

Other recommendations made during the start-up workshop concerned

- the need for advisers and local staff to travel to Ministry offices and departments that will be using the computer models (the end users) to determine user needs and current methods of data handling;
- the need to evaluate and modify the models and to involve end-users in this process; how to determine which models will be handled by local consultants, which by USBR, and which by outside contractors;
- how to make effective use of the local Ministry engineers while the project is gearing up and consultants are being identified;
- and the need for coordination among several of the IMS sub-components, including Planning Studies and Models, Main

Systems Management, Survey and Mapping, and Monitoring, Forecasting and Simulation. (See Chapter 3 and Appendix F for specific recommendations.)

Before the end of the workshop, participants were asked to evaluate the usefulness of the three days. In written evaluations, the group responded that the exercise had provided them with an opportunity to become better acquainted and to gain agreement on and commitment to project goals and activities. They also felt the roles and responsibilities of MPWWR, USBR, and USAID had been clarified, and that current project information had been exchanged.

The group felt that most of the issues constraining implementation had been raised and discussed.

One suggestion from the evaluations was that quarterly meetings be arranged with USAID (Ed Stains and John Anania) to monitor the progress of the project. The first such review meeting is scheduled for the week of August 20.

In summary, the entire group made a concerted effort to identify, confront, and come to terms with the major issues facing the project. Implementation of the project has been lagging for a number of reasons, including the following:

- lack of understanding about how the new project would operate versus how the UNDP project functioned;
- lack of Ministry technical staff to implement the project;
- lack of clarity about the roles of the USBR long-term advisers;
- a lack of understanding of the role of the project director and the advisers in terms of setting direction and priorities for the project;
- limited feedback from the project director to the technical advisers on items that were not acceptable;
- slow turn-around time for action memoranda;
- lack of understanding about USAID, USBR, and MPWWR bureaucracies; and
- the magnitude of the task involved.

The Ministry project director, resident advisers, and USAID project officer have made a commitment to follow through on the agreements reached at the workshop. Subsequent monitoring and evaluation will determine if the project objectives are attainable. An evaluation of the PSM project will be scheduled sometime within the next year. This will be a good opportunity to determine the degree

of commitment to the agreements made at the workshop, as well as the feasibility of the project itself.

Chapter 1

INTRODUCTION

1.1 Background

The Planning Studies and Models (PSM) sub-component of the Irrigation Management Systems (IMS) Project in Egypt is being carried out with the Egyptian Ministry of Public Works and Water Resources (MPWWR), through a Participating Agency Service Agreement (PASA) between the U.S. Bureau of Reclamation (USBR) and the U.S. Agency for International Development (USAID). The PASA was signed in April 1988. The two-person resident technical assistance team began arriving in Egypt in the fall of 1988.

USBR provides technical support (short- and long-term, U.S. and Egyptian technical assistance), training (in-country and off-shore non-degree programs), and commodity procurement (mainly computers to support model development and the Nile Forecast Center, and vehicles). USAID provides funding for the project.

The major activities of the project are to bring computer models that were developed under a previous United Nations Development Programme (UNDP) Project up to operational levels; to develop a water resource decision support unit in the MPWWR planning sector; and to develop a Nile Forecast Center in the Ministry Nile sector. The technical components for this last activity will be subcontracted to the National Oceanographic and Atmospheric Administration (NOAA).

The primary objective of the project is to help identify the most effective and efficient plans and operational policies for Egyptian water resources and irrigation systems. This will require use of reliable scientific techniques and mathematical models to simulate water flow in rivers and distribution of water to irrigated areas.

The project paper identifies six goals for PSM:

1. Preparation of a data information system for MPWWR, including an inventory of all data required for planning purposes;
2. Development of tools to determine the most efficient plan and operating policy for water distribution and drainage water reuse;
3. Development and refinement of tools to be used to determine the best long-term utilization policies for Egyptian water resources through conjunctive use of Lake Nasser and downstream groundwater;
4. Improvement of the Lake Nasser in-flow forecasting capabilities of the Ministry;

5. Strategic planning for and promotion of cropping patterns and land reclamation;
6. Assistance in developing the ability of MPWWR staff to continue implementing goals 1-5 successfully.

The project budget totals \$9.225 million with \$2.1 million for commodity purchases (computers and vehicles), \$3.3 million for expatriate assistance, \$0.6 million in consultant services, and \$1.1 million for training. (See Appendix A for the executive summary and chapter 1 of the PSM workplan.)

Seven of the ten IMS sub-components are in the start-up phase of activities during 1989. The Irrigation Support Project for Asia and the Near East (ISPAN) has been requested by MPWWR and USAID to conduct start-up workshops for these seven sub-projects, plus a workshop for the IMS Coordinating Committee. The PSM workshop, held June 26-28, 1989, in Alexandria, Egypt, was the fourth in this series of IMS start-up activities. Thirteen representatives from the Ministry, USAID, and USBR participated in the workshop. Kathy Alison, ISPAN Human Resource Development Program Manager, facilitated the workshop.

1.2 Terms of Reference

ISPAN was requested to provide a training specialist/facilitator to:

- Interview a cross-section of government representatives who work on the project, members of the PASA team, and USAID staff to identify issues and needs affecting the implementation of the project;
- Analyze the interview information to determine goals and issues and develop a workshop design and schedule;
- Conduct a 3-day start-up workshop using a mixture of full-group and small-group problem-solving activities based upon the general guidelines in the publication, "Facilitator Guide for Conducting a Project Start-up Workshop" (Edwards and Pettit, WASH Technical Report No. 41, March 1988); and
- Produce a report containing workshop results and agreements.

1.3 Interviews

Twelve confidential interviews were conducted in preparation for this workshop. The interviewees included seven people from the Ministry, three from USBR, and two from USAID. Questions were asked about their expectations for the workshop, their role in the project, their perceptions about the overall goals of the project, and major concerns, problems, and issues facing the project.

The interview data were analyzed and used to develop issue statements that were discussed at the workshop. The issues selected were those that were mentioned most often during the interviews.

The proposed workshop agenda, schedule, and list of issues were shared with the workshop steering committee prior to the workshop. This committee was made up of PSM Project Director Dr. Bayoumi Attia, USAID Project Officer John Anania, and USBR Senior Adviser Al Graves.

1.4 Interview Findings and Issues Identified

During the interviews, most individuals said they felt the workshop was badly needed. USBR advisers have been in Egypt since the fall of 1988, but no start-up workshop had been held, so most individuals were still unclear about the objectives of the project and the respective roles of the advisers, the project director, and the local staff. USAID's role was also unclear, especially since the PSM was a follow-on to a ten-year project that had been funded by the World Bank (WB) and UNDP and implemented through a series of short-term consultancies rather than long-term resident staff. The WB/UNDP project officially ended June 30, 1989, while the USAID project officially began in 1988.

Most of those interviewed had never been to this type of participatory workshop before, so they were curious about who the speakers would be and how they would have an opportunity to participate.

Six major issues and a series of questions affecting project implementation were identified during the interviews. These included the following:

1. The role of the Planning Studies and Models Project within the Ministry of Public Works and Water Resources and the Irrigation Management Systems Project.

What is the primary objective of the PSM project?

How will the project interact with the other IMS components?

How will the project interact with other Ministry offices that play a role in planning and distribution of irrigation water? When will this interaction begin?

How will the other IMS components and the Ministry know what the PSM project can do for them?

How will the PSM project be coordinated with the Monitoring, Forecasting and Simulation project?

2. How many more staff will be needed to work on the project? Who is responsible for this staffing?

To whom does the staff report?

How should work be assigned to PSM Egyptian staff?

What is their relationship to the PASA team?

What kind of training will be provided for the staff and how can this be coordinated with the workload?

As the project gets started, are there special tasks that the Egyptian engineers should be performing to prepare themselves for the work ahead?

What role will Egyptian consultant groups play in the project? How much of the project work should be done by local consultants? How will the local consultants be selected?

How should the Egyptian PSM staff interact with both the U.S. and Egyptian consultants who will be providing services to the project?

3. How will computer equipment and vehicles be procured?

Who will approve the specifications?

How long will procurement take after action memoranda are signed?

What other procurement issues need to be worked out?

Is special approval necessary from the Ministry or USAID for the purchase of computers or vehicles?

4. How does the PASA work? What are the roles and responsibilities of USAID, MPWWR, and USBR under the PASA?

How often should the project staff meet with the Ministry Project Director? With the USAID project officer? Who else should be involved in these meetings?

The PASA team may need to interact with others in the Ministry to evaluate the models. How can these meetings be set up? When will the PASA team and the engineers travel to the field to review the irrigation system in Egypt and the applications of the models?

What is the role of USBR's home office? What kinds of support does this office provide and what can't this office provide?

There are certain outputs required in the PASA. How will these outputs be monitored and evaluated? If there is no approval for work to proceed on a particular item (i.e., training plan or computer procurement or TDYs) what action can be taken to make the necessary changes and get the approvals so that work can proceed? Who should follow up on these issues?

5. How will the scopes of work for TDYs be developed and approved?

Who approves the scopes of work and the specialists who will do the work?

How will specialists be identified? Who will work with TDYs when they are in Egypt?

Who will the consultants report to, brief, and debrief on their work?

Will a Ministry counterpart be assigned to each consultant who works on the project?

Who should receive a copy of the consultant's final report?

Who follows up on any recommendations made in the final report?

6. What is the status of the user-friendly computer models that were developed under Phase 3 of the WB/UNDP project?

Have they been distributed to the directorates? If no, will they be?

If they have been distributed, has any training taken place on how to use the models? Who is responsible for training others in the use of the models?

How will these models be evaluated and modified? Who will be involved in the evaluation process? Will the directorates and other offices in MPWWR be involved in the evaluation and modification of the models?

Will any planning studies be done under the project? If so, who will identify the studies and who will carry them out? How will this work be coordinated with the modification of the existing models?

Chapter 2

THE START-UP WORKSHOP DESIGN

2.1 Overview of the Workshop

The overall purpose of a start-up workshop is to shorten the time needed to get a project up and running. This is accomplished by bringing the project's major players together in a residential setting and systematically addressing the issues identified in confidential interviews conducted prior to the workshop. The workshop also provides an opportunity for everyone to obtain current project information and ask questions about the implementation process. Ideally, this workshop also provides an opportunity to review the workplan for the coming year.

Even though the PSM project has been in operation for almost a year, there were still major questions and concerns about implementation. The workshop provided an opportunity to clarify those issues so that implementation could proceed more rapidly than it did during the first year.

There were three major groups involved in the PSM start-up workshop. (See Appendix B for list of participants.)

MPWWR Staff	This included the first undersecretary and head of the planning sector, the undersecretary and deputy project director, the general director for water resources development, the PSM project director, and a civil engineer who is one of the core project staff, plus the head of the administration unit of the planning sector. Other ministry representatives included the general director and head of irrigation administration, and the new director of the Ministry IMS monitoring office.
USBR Staff	This included the two PASA resident advisers (an hydraulic engineer and an irrigation systems engineer) and the Washington back-stop person.
USAID Staff	This included the Associate Mission Director for Irrigation and Land Development and the PSM Project Officer.

Thirteen people participated in the workshop. Most of the ministry participants were senior-level officials, rather than engineering staff. Unfortunately, four of the five ministry engineers assigned to the project were unable to participate. (Two were involved in a short course offered by the Consortium for International Development/Colorado State University, one had just had emergency surgery, and the fourth was not able to leave her family.) These engineers will be informed of the outcomes of the workshop and will be involved in the workplan workshop scheduled for September, 1989.

The workshop was designed as a series of team-building activities. The project team was given various tasks to complete in small mixed groups, followed by report-outs to the large group. As recommendations and agreements were formulated, they were recorded and typed for final review and ratification by the group. Copies of all workshop agreements were given to participants prior to the end of the workshop.

The facilitator directed the process, giving instructions to the group, monitoring the small group work and discussions, asking clarifying questions, and guiding the full-group agreement and discussion process.

2.2 Workshop Goals

The workshop was designed to meet the following goals:

- exchange current information about the project that is essential for the remainder of the project,
- achieve agreement on and commitment to project goals and activities,
- provide an opportunity for the project team to become better acquainted,
- agree on the management roles and responsibilities of MPWWR, USBR, and USAID,
- agree on procedures for managing the project,
- improve the ability of the group to work together as a team,
- discuss and develop strategies for the most important issues that will affect the project, and
- refine the workplan for the next year of the project.

2.3 Workshop Schedule

The three-day workshop began Monday morning, June 26, with an overview of the objectives, guidelines, and schedule and closed late Wednesday afternoon, June 28.

The schedule of activities included:

June 26, 1989

AM Workshop Opening

Session 1: Welcome and introduction to the workshop.
Objectives, guidelines for working together, and schedule.

Session 2: Introductions and get-acquainted exercise

Session 3: Project information panel and question and answer session

Presenters included Dr. Bayoumi, Al Graves, and John Anania.

PM Session 3, continued: Questions and answers/sharing project information

Session 4: Overview of interview results

Session 5: Expectations about how to manage the project
(small groups)

June 27, 1989

AM Session 5, continued: Presentations, clarifications, agreements on management expectations (small groups and plenary sessions)

PM Session 6: Discussion of first three project issues (small groups and plenary report-outs)

June 28, 1989

AM Session 6, continued: Discussion of remaining three project issues (small groups and plenary report-outs)

PM Session 6, continued: Final report outs

Session 7: Review of major agreements, recommendations, and next steps

Session 8: Brief overview of PSM workplan, identification of additional tasks to be added to workplan, scheduling of follow-up workshop to develop/revise/refine workplan

Session 9: Evaluation of workshop/Closing

2.4 Session Descriptions

In this section, a brief description is given of each session. The results of the sessions will be discussed in the next chapter.

The Workshop Opening

The facilitator welcomed the group and reviewed the workshop objectives, guidelines for working together, and schedule.

Get Acquainted Activity

Participants were asked to interview someone in the room they wanted to know better and find out their role in the project, the skills they bring to the project, their expectations about working as part of a team, and their favorite hobby or leisure activity. Each person took turns introducing his or her partner to the large group.

Project Information Session

A panel composed of the Project Director, Dr. Bayoumi Attia; USBR Senior Adviser Al Graves; and USAID Project Officer John Anania presented an overview of the project.

The presentations included each panelist's ideas on the mission of PSM, his vision/hope for the future of the project, the role the PSM group should play in the Egyptian Irrigation Sector, the most important project priorities, and the biggest challenges facing implementation of the project. (See Appendix C for panel guidelines.)

Participants were then asked to develop a list of clarifying questions for the panelists. Groups alternated in asking questions and the appropriate panel members responded.

This session continued after lunch.

Overview of Interview Results

The facilitator presented the results of the individual interviews conducted prior to the workshop. (See section 1.4 above). The interview results were used to provide a framework and rationale for the management expectations and issue discussions that followed.

Management Expectations

The objective of the project management session was to discuss and agree upon how project staff would work together in the future.

The steps involved in the session included:

- Description of the management picture of the project;
- Discussion of six aspects of good project management;
- Development by small organizational groupings of a list of expectations of project management that the other groups should meet;
- Presentation and clarification of expectations by representatives from each group;
- Discussion by organizational groups of their reactions to other groups' expectations;
- Discussion of reactions by the large group and agreement on working relationships among the three groups.

In the development of their lists of expectations, the organizational groups were asked to answer the following questions;

How do you expect the other groups to share project information with you?

What do you expect the working relationships to be with the other groups involved in implementation of the PSM project?

What kinds of written reports do you expect to receive from the other groups? What kinds of reports do you expect to prepare for the other groups?

How much do you expect to be involved in decisions that are made by the other groups involved in the project?

How do you expect to monitor individual and overall project performance?

To what extent do you want to be involved in planning project activities with the other groups?

This session began the first afternoon and lasted all morning of the second day. As a result of this session, a number of agreements were reached between and among the groups. The results of the exercise are presented in chapter 3, section 3.2.1.

Discussion of Project Issues

This session provided an opportunity for the group to discuss issues that had been identified during the interviews. The procedure used was to assign participants to an issue based on their knowledge of it and to work on issues in small group sessions.

Three small groups met for several hours on the first three issues. Report-outs from these issues were given by a representative from each group. Following the report-outs, a small group consisting of Dr. Bayoumi, Al Graves, John Anania, and Dick Ives met to discuss Issue 4, clarification of the roles and responsibilities of the PASA.

Early the next morning, the groups discussed the remaining two issues and reported on their recommendations and suggestions. This session ended by lunchtime, but by then it was apparent that there would not be enough time to review and revise the workplan. Because the USBR representative from Washington had already left and the senior adviser was leaving the next morning, it was decided to end the workshop as planned on Wednesday afternoon, rather than extend it for another half-day.

Final Workshop Agreements and Summary

This session consisted of a review of the agreements that had been reached during the workshop, as well as decisions on issues that needed follow-up. Task assignments were made and dates and times of meetings were set during this session.

Overview of the Workplan

The senior adviser presented a brief overview of the detailed work tasks contained in Chapter XI of the project workplan (see Appendix D). After a brief discussion, the group brainstormed additional tasks that needed to be added to the workplan. The group requested that ISPAN conduct a 2- or 3-day session in September on the revision of the workplan. This meeting is to take place at a residential site and will include the Ministry engineers assigned to the project who were not able to participate in the start-up workshop.

Evaluation and Closing

The written workshop evaluations were distributed and completed by the participants. Dr. Bayoumi thanked the group and the facilitator for their work in making the workshop a success.

Chapter 3

OUTCOMES AND AGREEMENTS

3.1 Overview of Outcomes

Final evaluations from the workshop showed that the participants were satisfied with the workshop format and outcomes. The major outcomes of the workshop were as follows:

- a better understanding of the history, purpose, and desired outcomes of the Planning Studies and Models project, how it evolved, and how it differs from the WB/UNDP predecessor project;
- an understanding of the need to begin closer collaboration with other IMS projects that can benefit from the PSM project's work;
- a clearer understanding of the roles and responsibilities of the project director, technical advisers and project officer;
- a better understanding of the PASA agreement and how it works;
- commitments by all three groups (USBR, MPWWR, USAID) to hold frequent meetings to discuss the project, including major obstacles that are hindering implementation, and to identify specific steps that are needed to move the project along;
- an opportunity for team members and Ministry representatives to become better acquainted;
- the chance to discuss a number of specific issues that were stopping the implementation of the project and causing hard feelings among the different groups;
- agreements to share information and reports about the project in a more timely fashion;
- a commitment to train and use the local Ministry technical staff in the evaluation and modifications of the models;
- a commitment to involve the end-users of the models in their evaluation and modifications so that the work will meet the needs of the end-users;
- clarification on technical advisers' working hours and the use of local staff and office facilities; and

- an agreement to have more discussions on the types of reports that will be produced by the project.

3.2 Specific Recommendations and Agreements

In this section, project management agreements and specific recommendations and agreements addressing each of the major issues are presented. For a full version of each issue group's original report, see Appendix E.

3.2.1 Project Management Agreements

There are three distinct groups (MPWWR, USAID, and USBR) with major responsibility for the successful completion of this project. To ensure that the project runs smoothly, six aspects of project management were considered and agreements reached by the three groups. The six aspects of project management that the groups considered were: information-sharing, ideal working relationships, written reports, decision-making, monitoring performance, and involvement in planning. A seventh category was available for any other management items the groups wanted to discuss.

The agreements reached among the three groups during this session are presented on the three matrices plus agency responses that follow.

MANAGEMENT EXPECTATIONS

USAID EXPECTS OF:

EXPECTATION	USBR	MPWWR
1. Information-sharing	<ul style="list-style-type: none">- Weekly meetings- Individual discussions	<ul style="list-style-type: none">- Weekly meetings- Individual meetings- Project steering committee
2. Ideal Working Relationships	<ul style="list-style-type: none">- Open Discussion of issues- Document issues/problems for future discussions	<ul style="list-style-type: none">- Provide supervision to USBR staff- Provide frequent feedback to USBR & USAID
3. Written Reports	<ul style="list-style-type: none">- Quarterly progress reports (jointly prepared by USBR & MPWWR & submitted to USAID)	<ul style="list-style-type: none">- Action memos-consultants- TDY reports-Quarterly progress reports- Annual reports
4. Decision-making	Implementation (procurement, training, travel)	<ul style="list-style-type: none">- Inform about decisions that impede progress or affect USAID, i.e., procurement, training, travel
5. Monitoring Performance	<ul style="list-style-type: none">- Quarterly progress reports- Monitor TDY in-country work- Weekly meetings/discussions	<ul style="list-style-type: none">- Action taken on issues- Weekly meetings
6. Involvement in Planning	<ul style="list-style-type: none">- When activities deviate from project workplan- During annual review and development of workplan for subsequent periods	
7. Other	<ul style="list-style-type: none">- Full day's work- Hire staff to handle administrative matters	<ul style="list-style-type: none">- Monthly financial advance/expenditure statements- Utilization of USAID-funded staff

USBR's Response to USAID Expectations

The USBR Advisers agreed with USAID's expectations in terms of information-sharing, ideal working relations, written reports, decision-making, performance monitoring, and involvement in planning and other recommendations.

In terms of USAID's expectations of the Ministry in the area of working relations between the Ministry and USBR, there were several concerns about the term "supervision." This was clarified to include supervision by Dr. Bayoumi of project-related activities, including project-related travel by advisers. This does not include travel by other USBR employees in the U.S. on project business, except that information on such travel should be given to the project director and technical advisers by Dick Ives.

Scheduled leave and administrative matters should be discussed with Dr. Bayoumi. If conflicts arise, USAID is available to mediate.

The operative word is teamwork.

The Bureau agreed to work on the development of job descriptions preliminary to hiring administrative staff to work with the advisers. It was agreed that Al Graves would follow up in August.

MANAGEMENT EXPECTATIONS

USBR EXPECTS OF:

	<u>USAID</u>	<u>MPWWR</u>
1. Information-sharing	<ul style="list-style-type: none">- Provide staff bulletins and Niler (USAID in-house publication) regularly- Keep USBR informed of discussions with MPWWR project director (re: action memoranda, project-related items)	<ul style="list-style-type: none">- Keep USBR aware of project-related work- Provide CVs and job descriptions for PSM staff to facilitate training programs; advise on organization by July 16
2. Ideal Working Relationship	<ul style="list-style-type: none">- Recognize USBR staff are same as USAID-direct hire- Project officer to provide assistance, as needed, with USAID management office- Recognize USBR involvement in MFS project	<ul style="list-style-type: none">- Prioritize work to be accomplished by USBR and advise on changes- Understand role of USBR advisers (technical performance vs. coordination of others' technical efforts)- Recognize administrative requirements- Recognize USBR involvement in MFS project- Close working relationship with Egyptian counterparts in model review/development

3. Written Reports	<ul style="list-style-type: none"> - Project's quarterly expenditures - Directives and issues documents 	<ul style="list-style-type: none"> - Provide clear direction on required reports (understand that evaluation/development of models does not produce a large quantity of technical reports) - Participate in writing of reports.
4. Decision-making	<ul style="list-style-type: none"> - Sign action memos promptly or advise on problems 	<ul style="list-style-type: none"> - Sign action memos promptly or advise on problems - Take lead in project
5. Monitoring Performance	<ul style="list-style-type: none"> - Periodic feedback on performance - Do not let issues build up - Redefine expectations as needed 	<ul style="list-style-type: none"> - Periodic feedback on performance - Do not let issues build up - Consensus among leaders
6. Involvement in Planning	<ul style="list-style-type: none"> - Keep USBR informed of MFS Progress 	<ul style="list-style-type: none"> - Keep USBR apprised of direction of PSM Project
7. Other		
TDYs	<ul style="list-style-type: none"> - Access to Embassy compound 	<ul style="list-style-type: none"> - Office space - If possible, provide transportation.
Work Hours	<ul style="list-style-type: none"> - Recognize MPWWR hours - Recognize homework that is done outside of office hours 	<ul style="list-style-type: none"> - Expect MPWWR to get USBR advisers to work by 8 a.m. - Overtime provision will be required for driver to get USBR to work by 8 a.m.

MANAGEMENT EXPECTATIONS

MPWR EXPECTS OF:

EXPECTATIONS	USBR	USAID
1. Information-sharing	<ul style="list-style-type: none">- Weekly meetings (technical staff and two advisers and Director)- Monthly meetings (chief of administration and finance, senior adviser and project director)	<ul style="list-style-type: none">- Monthly meetings Senior Adviser, chief of monitoring, office of IMS, chief of administration and finance, and project director
<p>* It was agreed that weekly staff meetings will be held every Monday morning at 8:30 a.m., and will include the technical staff, advisers, and Dr. Bayoumi. John Anania will participate in some meetings and will check with Dr. Bayoumi in advance. Dr. Bayoumi can request John's participation any time. Aly Seif will also participate from time to time.</p>		
2. Ideal Working Relationship	<ul style="list-style-type: none">- Full cooperation with local staff, within the approved workplan- Communications with other Ministry departments with the approval of the project director	<ul style="list-style-type: none">- Reasonable response to action memoranda
3. Written Reports	<ul style="list-style-type: none">- Monthly progress reports- Semi-annual report- Annual report- Final report	<ul style="list-style-type: none">- Through monitoring office of IMS
4. Decision-making	<ul style="list-style-type: none">- Advice and recommendations for decisions	<ul style="list-style-type: none">- Action memorandum- Workplan- Major modification of program
5. Monitoring Performance	<ul style="list-style-type: none">- Progress reports- Steering committee meetings- Presentations and demonstration of achieved activities	<ul style="list-style-type: none">- Monthly and weekly meetings

EXPECTATIONS	USBR	USAID
6. Involvement in Planning	- Full involvement	- Limited involvement in planning - Sign off on workplan
7. Other	<ul style="list-style-type: none"> - Prepare meeting agendas - Prepare meeting minutes - Suggest detailed technical work for project actions in the approved workplan, lead will be taken by project director - Prepare draft RFTPs and TORs - Project director and advisers should establish rigorous schedules for work and monitoring TDYs - All communications to other groups concerning major project activities should be with approval of project director 	

USAID's Response to
MPWWR's Expectations

1. Information-sharing	<ul style="list-style-type: none"> - Will attend weekly meetings when available - Will attend monthly meetings regularly 	
2. Ideal Working Relationship	<ul style="list-style-type: none"> - Routine action memos will be signed within two days - Action memos requiring clearances will need one working week for signatures 	
3. Written Reports	<ul style="list-style-type: none"> - Until electronic MIS is developed, AID wants to receive hard copies directly from project director - Quarterly reports should be submitted to AID by PSM 	
4. Decision-making	<ul style="list-style-type: none"> - Need direct access to project director 	

5. Monitoring Performance - Reiterate need for weekly and monthly meetings

6. Involvement in Planning* Agreed - Need to approve annual workplan

7. Other N/A

* In the area of involvement in planning, AID added a need to review the workplan on a yearly basis. The group agreed to meet around the first of January, 1990, to develop and review next year's workplan. Responsibility for workplan development rests with the Ministry and USBR advisers. AID will assist as necessary and sign off. The date for developing and reviewing the 1990 workplan was later changed to September, 1989.

USBR's Response to MPWWR's Expectations

USBR agreed with the Ministry's expectations in the area of information-sharing ideal working relationships, decision-making and monitoring performance.

In terms of written reports, there was much discussion about the objectives, formats, audiences, timing, and detail needed in these reports and of whether all of the reports are required.

1. Agreement was reached that Dr. Jim Riley and Dr. Bayoumi Attia will meet on Monday, July 3 at 8:30 a.m. to: 1) discuss and define the contents of the semi-annual and other reports, 2) determine resources needed (staff numbers and qualifications), and 3) determine whether reports will be prepared on a preset schedule or as specific work is completed. They agreed that the outcome of their discussion would be put in writing.
2. A second agreement was reached on quarterly reports which are required by USAID and the Ministry monitoring office. The reports should focus on the workplan in terms of what has been accomplished versus what was planned. Problems that are hindering completion of tasks should also be included in the report.

3.2.2 Recommendations on Key Project Issues

- Issue 1. The role of the Planning Studies and Models component within MPWWR and IMS.

The role of PSM is to help decision-makers analyze and resolve problems associated with Egypt's water resources. It was agreed that PSM has a low profile and that not many decision-makers in the Ministry use the resources available. In addition to improving the models so that they are more useful to decision-makers, the group saw a need for more collaboration with other parts of the Ministry and other IMS project components. The group also identified a need for more information-sharing on the capabilities of PSM. It was suggested that a periodic newsletter be published for the Ministry, identifying the services available through PSM. (It was later decided that this item should be discussed at the workplan workshop in September.)

There were several specific action steps suggested, including the following:

Action: Dr. Bayoumi should make a special presentation at the August IMS coordinating committee meeting on PSM and request and recommend more coordination between PSM and other projects, specifically Main Systems Management, Survey and Mapping, and Monitoring, Forecasting and Simulation.

Action: Dr. Bayoumi should make quarterly update reports on the progress of the project to the IMS coordinating committee.

Issue 2: Staffing Requirements for the Project

The project has a limited number of engineers working on the models (five at this time). The group was asked to identify future staffing needs, to whom these engineers should report and how work should be assigned, how the local staff would interact with the technical advisers, and how training of the local staff would be coordinated with their workload.

The group recommended that seven more engineers be hired and trained by the project. This will mean that at least two engineers will be assigned to learn each of the six models. The engineers will report to Dr. Bayoumi, and work assignments will be made based on discussions with the project director and the technical advisers. The staff will be expected to work directly with the technical advisers on specific models and other activities and studies. Training for the staff should be based on the training plan developed by a USBR short-term consultant in a report already submitted to Dr. Bayoumi. Other non-technical and management training needs should also be identified. New engineers should receive orientation training from the existing staff. Additional training in the use of the user-friendly models should also be designed for all local staff.

When consultants (local or expatriate) begin work on the various models, the local staff should be involved in the entire process, including the provision of information and data to the consultants before the consultancy begins. This will allow the Ministry technical staff to become familiar with the models. The collaboration between consultants and local staff may include travel for the local staff to the consultants' offices (in the U.S. or Egypt) as part of the on-the-job training for the project.

Action: Dr. Bayoumi will be responsible for the staffing and agreed to follow up with the Ministry on staffing needs for PSM.

Action: Dr. Bayoumi will submit the training plan developed by the USBR consultant to USAID for approval by July 9.

Action: Additional training needs (non-technical and management) should be identified by USBR and the Ministry and submitted to USAID by September 15.

Action: A local consultant, Dr. Hatem, who developed the user-friendly models under the WB/UNDP project, should be contracted with to conduct a needs assessment and develop a specific training plan on the models for the Ministry engineers. This assessment should begin in August.

In a related issue, there are a number of carry-over staff from the WB/UNDP project that are not actively involved in this project. USAID, the project director, and technical advisers scheduled a meeting for July 5 to discuss and resolve this staffing issue.

Issue 3: Procurement of Computer Equipment and Vehicles

A two-person team, made up of USBR's Washington back-stop person and the project's administrative head, discussed ways of streamlining the procurement process. The need for quick turn-around on action memos so that procurement actions could begin was restated. The action memos are used by the Ministry and USAID to approve the specifications for the procurement. After the action memo is signed by Dr. Bayoumi and USAID, procurement of vehicles can take up to 9 months and procurement of computers will take an estimated 3-4 months. No procurement is taking place now, because USBR is awaiting decisions on action memos that have been submitted to Dr. Bayoumi for the purchase of vehicles and computers.

Action: Dr. Bayoumi should make decision on proposals for computers and vehicles and either have specifications redone or approve them and send them on to USAID for sign-off and forwarding to USBR for procurement.

Action: General Osman begin the process of obtaining decrees for vehicles that will be purchased by the project for shipment to Egypt.

Issue 4: The PASA and how it works

The PASA (participating agency service agreement) is a contract between USAID and USBR. The roles of the various groups involved in the PASA are as follows: USAID approves or disapproves action memoranda and monitors the progress of work, based on the workplan. The Ministry signs action memoranda indicating approval, directs the project, and provides local staff to do the work and be trained. USBR implements the action approved by the action memoranda (procurement, training, travel), and provides advice to the project team.

In order to develop better communications between the technical advisers and the project director on project management and implementation of the PASA the group recommended that weekly and monthly meetings be held. (See management expectations of MPWWR and USAID on information-sharing.)

In terms of implementation of the project, the outputs of the PASA cannot be met without the approval of the project director, Dr. Bayoumi, and project officer, John Anania. Any problems and concerns with action memoranda will be discussed at weekly meetings so that obstacles can be overcome.

Through the PASA agreement, USBR staff from the Denver office will be used to evaluate and modify a number of the models. Local consultants, including a consultant group at Cairo University and others, plus international consultants outside USBR, will also be used on the project, with the stipulation that local Ministry staff will be trained as part of the scope of work. The PASA mechanism can be used to hire these consultants, through an action memorandum and a competitive bid process.

The Washington office of USBR provides back-stopping for the project. This includes such activities as identifying USBR staff and outside consultants to work on short term consultancies, procuring commodities, and arranging travel

and per diem. All USBR support activities are in Denver, so all requests are forwarded there by the Washington office.

Action: Weekly staff meetings for the project director, technical staff, and advisers will be held every Monday morning at 8:30.

Action: Monthly meetings will be held with the project director, senior adviser, chief of Ministry monitoring office, and administrative chief of project, plus USAID. Meetings are scheduled for the last Tuesday of every month at 8:30 am.

Action: In July, Al Graves will seek assistance and commitment from USBR in Denver for adequate and appropriate staff to support the evaluation and modification of the models.

Action: Dr. Bayoumi will share copies of the weekly and monthly meeting minutes with the planning sector chairman after each meeting. The brief minutes will be prepared by the technical advisers.

Issue 5: Selection and approval of short-term consultants (TDYs)

The initial scopes of work for short-term consultants will be developed by the technical advisers from the existing workplan and submitted to Dr. Bayoumi and USAID for approval. If necessary, Dr. Bayoumi will provide other information needed to develop an appropriate scope of work. The status of consultant requests will be discussed at the weekly staff meetings, so that any problems in the scopes of work can be identified quickly.

In the past, USBR/Washington has selected consultants either USBR staff or others. The Ministry has requested a say in the selection process and USBR has agreed to provide the Ministry, when possible, resumés of up to three possible candidates for each TDY. The Ministry will then make the final choice. **Editor's Note:** Coordination of this selection process will be very important. There is usually a tight turn-around time between approval of a TDY request and scheduled start date for the work. Therefore, decisions on candidate selection must be made quickly to permit schedules to be finalized. Delays could mean that the candidate of choice is not available for the work and an alternative will have to be selected.

Consultants will report to Dr. Bayoumi during TDY and regular meetings will be scheduled with the project director and the resident advisers so that work can be monitored and modified as needed. Ministry counterparts (project engineers) will be assigned to work with consultants before, during, and after their work in Egypt. This will provide continuity as well as a learning experience for the local staff.

Before leaving the country, consultants should submit review copies of their draft reports to the project director and the PSM staff, the resident advisers, and USAID. The final version should be submitted to the planning sector head, with comments from the advisers. Consultant reports should include specific

recommendations on next steps and follow-up that will be needed and who should do the work. This will help guide the next stage of the task. This requirement should be stated explicitly in each scope of work.

Action: USBR will provide a choice of candidates to carry out scopes of work, if possible, so that the Ministry can participate in the selection process.

Action: Dr. Bayoumi will set up regular meetings with consultants, resident advisers, and consultant counterparts in order to monitor the progress of the work.

Issue 6: Evaluation and modification of existing computer models.

Several of the computer models have been converted to user-friendly models, but none of them have been distributed to the end-users. The group strongly recommended that the models be distributed both within the Ministry and to the field, that training on how to use the models be designed and implemented, and that the end-users be involved in the evaluation and modification of the models. Since none of this work is now reflected in the resident advisers' workplan, it was recommended that these tasks be added during the workplan workshop in September.

Recommendations were also made on how to proceed in identifying experts to evaluate and recommend modifications for the existing models. (See issue 6, Appendix E for specific recommendations.)

It was also recommended that the head of the planning sector survey the Ministry to obtain information on planning problems and needs in the area of water distribution and use. These findings will be used to set priorities for future planning studies.

Action: Dr. Bayoumi, the resident advisers, and John Anania will meet in September to complete the Request for Technical Proposals and Terms of Reference for the Planning Distribution Model, Forecasting Model, Agro-Economic Model, and Operational Distribution Model. The terms of reference should include interviews with end-users about the need for these models and systems and what they should include.

Action: Work should begin on deciding where and how the models will be distributed, how users will be trained, and what follow-up will be needed. Specific tasks and responsibilities will be discussed at the workplan workshop in September.

Action: The chief of the planning sector will ask appropriate departments in the Ministry to identify and describe their planning problems and needs in the area of water distribution and use.

3.2.3 Major Workplan Agreements

The Planning Studies and Models workshop was scheduled for only three days, rather than the usual four, due to travel and meeting schedules of several of the key participants. Therefore, there was not sufficient time to address the project workplan for the next year. During the final session, the group recommended that ISPAN facilitate another workshop in September to focus solely on the 1990 workplan objectives, tasks, and staff needs. It was also recommended that the engineers who were unable to participate in this workshop be included in the second one. This was agreed to.

The group suggested that the following major tasks be added to the workplan at the September workshop.

- administrative tasks (for example, communications with USBR, filling out PIO/Ps and PIO/Cs, action memoranda and scopes of work, budgets, support of TDYs while in Egypt);
- distribution of UNDP user-friendly computer models to the Ministry and directorates as well as training on use of the models;
- USAID requirements, including needs assessments and inventories of vehicles and commodities, plus training needs assessments; and
- qualitative/consolidated analysis of staffing needs.

The workplan workshop will focus on how these tasks and those already in the workplan will be accomplished and coordinated and on the specific objective and staff needs for each activity. The feasibility and appropriateness of the workplan, time constraints, and any additional budget requirements will also be discussed.

3.3 Summary of Participant Evaluations

The participants evaluated this workshop as being very useful. A complete evaluation summary is provided in Appendix F. All of the goals of the workshop, except refining the work plan for the next twelve months, were considered met.

On a scale of one to five (with five being highest), participants were asked to rate the achievement of workshop goals. The highest-rated goal -- to provide an opportunity for the project team to become better acquainted -- received a rating of 4.73. The goal of gaining agreement on and commitment to project goals and activities received a rating of 4.45.

The next highest-ranking objective was to agree on the management roles and responsibilities of the Ministry, USBR, and USAID, (4.36), followed by the discussions and development of strategies for the most important issues

affecting the project (4.27), and the exchange of current project information (4.18).

The two lower-ranking objectives were improving the ability of the group to work together as a team and agreeing on procedures for managing the project, both of which received a 3.91 rating.

When asked what was the most important benefit of the workshop, some of the participant responses were:

- identifying problems and their solutions,
- getting people working on the project to share their expectations of how they can do the job successfully,
- setting a point from which progress (or lack of it) can be measured,
- bringing all of the issues constraining implementation out into the open.

When asked what could be done to improve the workshop, several participants said nothing or had no comment. Several others mentioned the workplan. One responded that the involvement of more staff would have helped.

When asked what areas were left unresolved or needed special attention, several commented on the discussion of the workplan. One participant mentioned that the reporting system needs further discussion, while another commented that follow-up on the agreements in a few months will provide an indication as to whether all the issues were identified. One participant suggested that quarterly meetings be held in order to introduce greater accountability.

The participants responded favorably on the arrangements and accommodations. One respondent suggested that it would have been good to arrange a luncheon or dinner for the full group. The facilitator received marks of "more than excellent," "excellent," or "outstanding" from the participants. One person commented that the facilitator "always managed to direct discussions right to the point, she had a good way of analyzing the problems that arose and coming up with the right questions that can clarify the topic."

Chapter 4

RECOMMENDATIONS AND CONCLUSIONS

The detailed agreements and recommendations generated during the Planning Studies and Models workshop represent long hours of work and effort by the participants. To ensure that the work will not be wasted, all participants must commit themselves to honoring the agreements.

The facilitator recommends that:

- Every effort be made to hold the weekly meetings to ensure that communications links stay open between the project director, technical advisers, and local staff;
- USAID monitor these weekly meetings on a monthly basis to make sure they are being held and that problems are being discussed and resolved;
- USAID hold the review meeting scheduled for the week of August 20 to follow up on commitments made at this workshop and to identify other issues that need to be addressed;
- Activities be organized to inform the engineers who were unable to attend the workshop about its outcome;
- The workplan workshop be scheduled for 2 to 3 days during the week of September 10 in a residential setting so that the workplan can be discussed and modified;
- Dr. Bayoumi provide leadership to the project in terms of priorities and problems that need to be dealt with; this includes frequent conversations with the resident advisers on expectations and needs.

In conclusion, this project is at a critical stage of implementation. If activity does not increase, there is little hope that the project can be implemented in the planned time-frame. This would be most unfortunate since both the Ministry and USBR have talented staff working on the project. However, unless the two groups begin to cooperate and communicate in a more supportive way, there is little that can be done to develop the Planning Studies and Models project into a viable Decision Support Unit for the Ministry. The tools and the talent are there, and commitments have been made in this workshop to work out the differences. The final outcome rests with the workshop participants.

APPENDIX A

**EXECUTIVE SUMMARY AND CHAPTER 1
OF PSM WORKPLAN**

Appendix A

Executive Summary and Chapter 1 of PSM Workplan

Executive Summary

Initiated as a continuation of an IBRD/UNDP Project, the Planning Studies and Models (PSM) component of the Irrigation Management Systems (IMS) Project has matured into an important component in the overall water-planning efforts of the Ministry of Public Works and Water Resources (MPWWR). In addition to bringing the computer models developed under UNDP up to an operational level, PSM will also develop a Water Resource Decision Support Unit (DSU) in the Planning Sector to carry on the work of the Water Planning Group (WPG).

Agency Responsibilities

The Ministry of Public Works and Water Resources will provide the Project Director and the local staff for the PSM component.

USAID will provide the funding for the project and review and approve workplans, reports, procurement actions, personnel actions, study tours, training needs, and TDY assignments.

The PSM component will be carried out under a Participating Agency Service Agreement (PASA) with the U.S. Bureau of Reclamation (USBR). USBR will provide two technical experts for three years to administer the technical support, commodity procurement, and the required training.

Objectives

The primary objective of the project is to help identify the most effective and efficient plans and operation policies for the Egyptian water resources and irrigation system. This will require reliable forecasting techniques and mathematical models for simulating water flow in rivers and distribution of water to irrigated areas.

Problems and Needs

Egypt faces a growing food gap with increases in consumption outpacing increases in agricultural production. Egypt currently imports approximately 50 percent of its food needs. As the country approaches the year 2000 it must find ways to meet its expanding food needs.

One alternative to help in meeting food needs, would be to improve water use efficiency in the agricultural sector. The Egyptian irrigation system appears to be a simple riverside diversion system, but the system becomes extremely complex with its overwhelming size. To operate such a complex system, and to

identify operating scenarios whereby water savings and increased food production can be realized, it is necessary to develop computer models.

Proposed Organizations

Under PSM it is proposed a Central Administration for Water Resources and Uses be established in the Ministry of Public Works and Water Resources.

The Central Administration would carry on the work of WPG and function as a DSU for the Ministry on issues relating to water planning.

The DSU would consist of three technical centers. These are the Water Resource Center, the Water Information and Computer Center, and the Water Resources Uses Center. The organizational concept has been approved by a Ministerial Decree but the details of the organizational structure and staffing requirements have not been approved. This workplan presents detailed information on the organization and staffing requirements.

Expatriate Staff

The two members of the expatriate staff will be general experts in the two major areas of required expertise--hydrology and hydraulics.

A hydrologic engineer with experience operations research and project planning will provide technical support on the hydrologic models that are extensions of the existing models and on the development of new models for the Water Resource DSU.

The distribution of the Nile waters and the modeling of the hydro-dynamics of the canal systems will require the assistance of a hydraulic engineer.

The hydraulic engineer has been designated as Senior Adviser and will be responsible to coordinate project activities with USAID, USBR, and the Project Director.

Training

Training will be of a non-degree nature and will take place outside Egypt as well as inside. The short courses/seminars and on-the-job training will be given at either a USBR facility, another U.S. government agency, or an equipment supplier.

Training will be required in hydrologic forecasting, hydrologic modeling, and reservoir risk analysis, plus a number of other areas.

Budget

The project budget totals \$3.63 million with \$0.55 million for commodity purchases, \$1.55 million on expatriate assistance, \$0.45 million in consultant services, \$0.35 million for training, and \$0.73 million for contingency and overhead. The major commodity purchases will be for computers to support model development and the DSU.

Temporary Assignments

In addition to the resident expatriate advisors previously presented, a large portion of the technical assistance will be provided through temporary duty assignments. For modeling, computer development, and some training the assistance will come from the USBR Denver office.

Consultants

Technical services of local private and university consultants will be required to assist in: 1) updating the Project Information System (PIS); 2) development and printing of a monograph depicting the Egyptian experience in model development; and 3) further development of computer models.

Also it is envisioned that an international expert in dynamic programming techniques applicable to operation of large reservoirs will be required to assist in developing High Aswan Dam operation policies. A second international expert is needed to assist with the calibration of the Agro-Economic model.

Chapter 1

Introduction

The Planning Studies and Models (PSM) component of the Irrigation Management System (IMS) Project is a continuation of a joint International Bank for Regional Development (IBRD)/United Nations Development Project (UNDP) project which was initiated in 1981. The IBRD/UNDP Project was to prepare a Master Water Plan and establish a Water Planning Group (WPG) within the Ministry of Irrigation. The Master Water Plan was completed in 1987 and a number of computer models which were developed by IBRD/UNDP were left in a near-operational state.

The USAID PSM component was formulated to fully develop the computer models and to develop a Decision Support Unit organization within the Ministry which could carry on the work of the WPG.

This plan of study outlines the organizational structure, funding, staffing, training, and agency responsibilities to develop, staff, train, and make operational a state-of-the-art Decision Support Unit in the Ministry of Public Works and Water Resources (MPWWR).

OBJECTIVE

The primary objective of this project is to help identify the most effective and efficient plans and operation policies for the Egyptian water resources and irrigation system via reliable scientific techniques and mathematical models.

Within this broad objective six goals have been identified:

1. Preparation of a data information system for MPWWR including an inventory of all data required for planning purposes.
2. Fully develop tools that may be used to determine the most efficient plan and operating policy for water distribution and drainage water reuse.
3. Fully develop tools that may be used to determine the best long-term utilization policies for the Egyptian water resources through conjunctive use of Lake Nasser with downstream groundwater.
4. Improving the capabilities of forecasting inflow to Lake Nasser.
5. Promotion of cropping pattern and land reclamation strategic planning.

6. Assist in the development of MPWWR staff to successfully carry on in the attainment of goals 1-5.

SUMMARY OF WORK

The work to be accomplished under the PSM component can be summarized into seven major areas. The completion of these seven areas of work will assure the achievement of the six PSM objectives. The seven areas are not only related to computer model development, but also relate to the important tasks of developing a staff and an organization that can use the models to their best advantage. The seven areas of work can be summarized as follows:

1. Development of a Decision Support Unit (DSU) in the Planning Sector.
2. Complete and make operational the High Aswan Dam computer models.
3. Complete and make operational the Agro-Economic Model.
4. Complete and make operational the Planning Distribution Model.
5. Investigate the use of the Utah Command Models or provide alternative unsteady state hydraulic analysis tools.
6. Develop statistically-based forecasting techniques to predict inflow to Lake Nasser.
7. Prepare a monograph of the six other items of work that can serve as documentation for future work in other countries in this type of activity.

AGENCY RESPONSIBILITY

Ministry of Public Works and Water Resources (MPWWR)

MPWWR will provide the Project Director and the local staff for the PSM component. PWWR will provide basic engineering and technical assistance for the PSM component with assistance by the U.S. Bureau of Reclamation (USBR) and consultants. The Project Director will serve in the lead role and as primary focal point for the study. The Project Director will also participate in the selection of local and international consultants and requests for TDY assignments.

MPWWR will be responsible for acquiring import duty waivers on commodities purchased outside Egypt and will provide office space for the Project, expatriate, and TDY staff involved in the execution of the Project component.

U.S. Agency for International Development (USAID)

USAID will provide funding for the Project. Funding will be provided to USBR through a Participating Agency Service Agreement (PASA), and the remainder will be disbursed through direct supplemental funding (Local Currency Fund) to MPWWR.

USAID will review and approve workplans, reports, procurement actions, personnel actions, study tours, training needs, and TDY assignments.

U.S. Bureau of Reclamation (USBR)

Under a PASA with USAID, USBR will assist USAID and MPWWR to implement the PSM component. USBR shall provide or arrange for technical assistance, training, commodities, and local support primarily for the PSM component of the IMS project. USBR shall provide continuous assistance, through two resident employees located in Cairo, to the Planning Sector of MPWWR. These personnel will serve as advisers in assisting in major planning studies and operational scenarios using the existing models, further upgrading of the models, and development of other new and complimentary tools and mathematical models. In addition USBR will provide technical assistance through TDY assignments, which would most probably come from the Denver office. The two resident employees located in Cairo will develop Requests for Technical Proposals for selected work tasks and participate in the selection of local and international consultants. They will also identify the need for TDY assignments of USBR personnel.

APPENDIX B

WORKSHOP PARTICIPANTS

Appendix B

Workshop Participants
ISPAN Start-up Workshop
June 25-29, 1989

USAID PARTICIPANTS

<u>NAME</u>	<u>JOB TITLE</u>
Ms. Kathy Alison	Facilitator (ISPAN)
Mr. Ed Stains	Director, USAID/AGR
Mr. John Anania	Project Officer, USAID/AGR/ILD
Mr. Richard Ives	Washington Coordinator (USBR)
Mr. Albert Graves	Senior Advisor (USBR)
Mr. James Riley	Advisor (USBR)

TECHNICAL PARTICIPANTS

Dr. Salah Shalash	First Undersecretary, Head of Planning Sector
Eng. Ali Seif	Undersecretary of State for Planning Sector
Eng. Mohamed Metawae	General Director for Water Resources Development
Dr. Bayoumi Attia	Project Director (PSM)
Eng. Hanan Abdel Kader	Civil Engineer (Computer Dept.)
Eng. Taha Abul Dahab	Head, Steering Committee (MPWWR)
Eng. Yehia Abdel Aziz	General Director, Technical Office, Head of Irrigation Administration (MPWWR)

ADMINISTRATIVE PARTICIPANTS

Mr. Osman Soliman	Head Administration Section
Mrs. Violet Rizkallah	Secretary
Mrs. Magda Fahmy	Secretary
Mr. Safwat Toma Barsoum	Accountant

APPENDIX C

SUGGESTED GUIDELINES FOR PANEL PRESENTATION

Appendix C

Suggested Guidelines for Panel Presentation

Please take between five and ten minutes to present your views on the following questions. After your presentations, the group will develop a list of specific questions they have about the project for you to respond to. This is your opportunity to express your hopes and vision of the project.

1. Please discuss what you think the Mission of the Planning Studies and Models Project is.
2. Describe your vision and hope for the future of the project.
3. If you were in an ideal situation, how would the project look in the future?

What role would the planning studies and models group play in the Egyptian irrigation sector?

What contributions would this group make to the sector?

4. What do you see as the most important priorities of the project?
Where should the main focus be (i.e., development of research papers, evaluation of models, training of staff, planning studies)?
5. (Bayoumi) How does this project fit into IMS and MPWWR?
6. (John) How does the project fit into USAID's Irrigation Portfolio?
7. (Al) How does it fit into USBR's mission?
8. What do you think will be the biggest challenge in getting this project implemented?

APPENDIX D

PLANNING STUDIES AND MODELS--DETAILED WORK TASKS

CHAPTER XI

Planning Studies and Models Detailed Work Tasks

This chapter provides a detailed explanation of the various tasks that are needed for the further development and use of the models described in the previous chapter.

Project Coordination (10)

For a project to be successful there will be a continual need for coordination and management. The WPG will provide a Project Director to oversee the day-to-day work efforts. He will have the prime responsibility for the project and will be aided by two full-time advisors from USBR. In addition a Washington based coordinator will assist in providing contacts and coordinating any required work and equipment needs from the United States.

Project Framework Preparation(100)

This plan of study sets forth broad guidelines under which the study will be conducted. These guidelines are expected to become more specific as each task is undertaken. The plan of study will be a tool for monitoring the progress of the study and will be revised as needed.

Assessment of Equipment and Personnel Needs(110)

An assessment has been made of the needs for computer equipment, computer software, automobiles, boats, office supplies and any other items which will be needed to ensure successful completion of the project. In addition an assessment was made of the present staff of the WPG and the need for technical and secretarial assistance to USBR Advisors for the project. Long term projections for continual support of model implementation has been identified.

Technical Assistance Procurement (200)

An assessment has been made of the need for local and international experts. Requests for Technical Proposals (RFTP) will be initiated at a future date.

Preparation of MPWWR Information System (300)

Evaluation of Existing Data Base and Identify the Required Directions of Expansion (310)

The data information system should meet the needs of the WPG and the various other departments within the Ministry of Public Works and Water Resources. The present system will be evaluated by the WPG and USBR and recommendations made for future design of the system, to facilitate interaction between departments within the MPWWR and the WPG. The data should be informative and easily accessed. The system should be user friendly and flexible to allow easy transfer of information from one department to another.

Data Base and Retrieval System Design(320)

Through interaction between the WPG, USBR, and the various departments in the MPWWR a decision shall be made on types of data needed and the design of the data information system. It is anticipated that an assessment will be made of the need for a Geographic Information System for modeling the relationships between land units and the irrigation structure lying within them or serving them. System design must be compatible with the computer support system.

Data Collection and Entry(330)

This task will focus on updating missing information in the Project Information System. Examples of information include canal commands, cropping pattern, administrative districts, monthly flow records for canals and drains, monthly values of consumptive water requirements, municipal and industrial demands, canal efficiencies, effective rainfall and groundwater contributions. The extent of missing information will be determined in task 310.

Deduction of Missing Data Via Appropriate Statistical Techniques and Experienced Assumptions (340)

Hydrologic studies are highly data-dependent , and the steps required to prepare data for analysis are an important part of the study. Some information may be available at appropriate locations. Others may need to be correlated. Some of the missing data can be extrapolated from available data in similar months/periods in other years/locations. Statistical procedures are available to carry out this task . For other missing data; judgement may be needed , a technique developed to determine missing information, and /or a data collection procedure implemented.

Establishment of an Information System for Recent and On-going Studies within MPWWR (350)

The present Project Information System should be expanded to include information from recently completed studies and those that are underway with the MPWWR. This will create a library of the various studies. This will allow better dissemination of information and coordination of projects. The first phase of this task will be to identify the type of system that will be most beneficial to all. If constructed properly a person could enter certain key words and obtain a list of reports on that particular subject.

Preparation of the Information System Maintenance Procedure (360)

In order for the information system to remain a useful tool it will need to be updated with not only current, but also accurate information. Recommendations will be made on a maintenance procedure. It would appear that recommendations could include; (1) appropriate funds to be set aside, (2) a department charged with overall responsibilities, and (3) appropriate forms and reporting procedures for the various departments.

Documentation of the MPWWR Information System (370)

Proper documentation is essential for the success of the information system. A user manual will be prepared to describe the various types of information available and instructions for accessing this information.

Promotion of Water Distribution Plans (400)

Study and Analysis of the Current Distribution Plans, Actual Operating Policies and Associated Problems (410)

The WPG and Reclamation will evaluate the present distribution plans, operating policies, and associated problems to further determine areas where improvements can be made and possible solutions identified. A more refined description of tasks that come under the task "Promotion of Water Distribution Plans" will be prepared.

Identification of Possible Areas Where Computer-Aided Decision Making is Crucial (420)

Based on results of task 410, areas where improvements in certain aspects of the existing computer programming models will be assessed and recommendations made. These recommendations will

be in addition to those already identified.

Determination of Critical Parameters Associated with Distribution Problem via Field Measurements and Water Balance Calibration (430)

All computer programs must be able to duplicate the real world situation with a reasonable degree of accuracy in order to be useful. The usual case is for some parameters to be more critical than others. This task will assess what are the critical parameters in modeling and distributing the flows of the Nile River below Aswan Dam. It is expected that through field measurements these parameters will be identifiable.

Development of an Optimal Distribution Model (PDM) (440)

A. Modification of the existing PDM Model concept (441):

The WPG and Reclamation will assess the PDM and identify areas where improvements can be made. Two areas which have already been identified include; land reclamation and rehabilitation of irrigation structures.

Land reclamation - the model can be used to determine how the irrigation system will be affected when attempting to deliver water to proposed new land areas. Bottlenecks, additional capacity requirements, and new facility requirements will be identified.

Rehabilitation of irrigation structures- One of the key programs of the MPWWR is the Regional Irrigation Improvement Project. This project is designed to remodel canal commands and rehabilitate structures and improve the irrigation system. Location of problems can focus on problem structures or canal reaches. The model will also have to be calibrated after each canal command is improved to model actual field conditions.

B. Consideration of conjunctive use of irrigation water with drainage water (442):

Reuse of drainage water is becoming more and more important for improving overall water use efficiencies in Egypt , because development of the water conservation projects in the Upper Nile basin in Sudan are being delayed. Furthermore, reuse of drainage water is much less expensive than development of the water supply projects in Sudan. The Drainage Research Institute, with the help of the Dutch government, is making a drainage reuse study. They are preparing a model for analyzing flow distribution and water quality. The WPG will coordinate with the Drainage Research Institute and utilize the PDM as needed to evaluate the ideal location for reuse of drainage water, its transport and exchange

opportunities with fresh water. The model will evaluate the irrigation system's reaction to the various drainage reuse projects.

C. More refinement in model time and disaggregation (443);

Considering the future of water resources management in Egypt, it appears that the scope of the PDM will be considerably broadened as additional factors are considered in deciding optimal allocations. For example, future cropping patterns and flow routing will consider water losses; contributions to and from groundwater; distribution of shortages in water supply to minimize the socio-economic impacts of drought; salt balance in root zone; water quality parameters, etc. A viable approach in developing broad-scope models, will be to use elements of PDM as the core and build models around it. The time and space horizon of the model will be refined.

D. Incorporation of multilevel optimization techniques to achieve global optimum for the overall large scale irrigation system (444):

As presently structured the model is not able to achieve an overall optimum. Once the model is able to consider smaller systems within the irrigation system an optimum policy for that system can be achieved. The next step would be to develop optimization techniques to consider the various subsystems optimal policies, and then develop an overall global optimum for the large scale irrigation system.

Comparative Study of the Distribution Process Under Current Operation with the Model Based Operation (450)

Following completion of the above PDM tasks the results will be compared with current operation of the Nile River below Aswan Dam. It is expected that improvements in the computer model will demonstrate that improvements in water use efficiencies can be achieved through use of the PDM improvements.

Technical Report Preparation and Model Documentation (460)

It will be necessary to provide proper documentation of the modeling improvement effort. The results will be presented with documentation of development of the model, a complete description of the model, and instructions on how to use.

Implementation of the Optimal Planning Distribution Model (470)

A. Coordination with concerned authorities and departments of MPWWR (471):

Following completion of computer modeling efforts and the

reports, coordination meetings will be held with appropriate departments within the MPWWR. Presentations will be prepared in advance to show the benefits of the improved computer models.

B. End user training (472):

A training seminar will be presented by those involved in developing the model. Potential trainees include staff from WPG and appropriate departments within the MPWWR.

C. Providing technical assistance to concerned staff during starting phase (473):

The WPG, Reclamation, and consultants will be available to provide assistance in the startup phase for implementation of the model.

D. Documenting the experience gained from real implementation (474):

A brief report will be prepared on the experience and positive benefits attributed to implementation of the models for operation of the Nile River below Aswan Dam.

Operation Water Distribution Improvement (500)

Further Development of the Existing Operation Model (510)

The WPG and Reclamation will assess the model to determine the need and opportunities for further development beyond those presently identified and which are presented here.

A. Modifying the model objective from just hydraulic routing to deciding optimal release policies (511);

The purpose of the model is to specify releases at High Aswan Dam so that water wastage, through excessive releases to the sea or prolific consumptive use at various demand locations is reduced. To increase the utility of the model a routine for optimal release policies will be incorporated.

B. Enlarging the scope of the model by considering lower canal orders(512):

As presently structured the model only computes releases for high order canals (those that have a larger service area). It is expected that greater efficiency in modeling releases can be achieved by considering smaller canals and their diversion requirements.

C. Model calibration and test of validation (513):

The model is a one-dimensional, subcritical, unsteady flow routing model. One of the most difficult tasks in unsteady flow modeling is to collect necessary field data on channel geometry, hydraulic properties, and natural gains and losses in various reaches. Procedures will need to be developed and a test section identified to test the validity of the model.

D. Model implementation and coordination with the main system management telemetry project(514):

The telemetry project measures water levels at key locations on the Nile River below Aswan Dam using a meteor burst communications link between Aswan Dam and Cairo. Data from this project will be coordinated with the validations of the operational distribution model.

E. Documentation of implementation experience (515):

A brief report will be prepared on the experience and positive benefits attributed to implementation of the Operational Distribution Model.

Review and Evaluation of Different Utah Command Models (520)

Utah State University has developed a series of models which can be used for detailed study of all aspects of water demands and their optimal allocation in a specific canal command. These models are developed on micro-computers and have been used successfully in many countries. These models may be useful as complementary tools to the Planning Distribution and Flow Distribution Models that have been developed by the WPG.

Selection of the most Relevant Models for Egyptian Environment Application (530)

The WPG and Reclamation will discuss the various Utah command models and models developed by the WPG. Those that best meet the needs of the Egyptian environment will be further tested. It is likely that various components of the models can be integrated to achieve the desired results.

Models Calibration and Validation Tests (540)

Using available field data along with an appropriate test sections the results of the computer model will be compared with real world conditions.

Models Implementacion and Calibration with Concerned Authorities (550)

Following completion of computer modeling efforts coordination meetings will be held with appropriate departments within the MPWWR . Presentations will be prepared in advance to show the benefits of the improved computer models.

Preparation of Technical Report Documenting the Models and Implementation Experience (560)

It will be necessary to provide proper documentation of the modeling improvement effect. The results will be presented with documentation of development of the model , a complete description of the model, and instructions on how to use. In addition a brief report will be prepared on the experience and positive benefits attributed to implementation of the models for operation of the Nile River below Aswan Dam.

Improving the Capabilities of Statistically Based Forecasting Procedures for Predicting Inflow to Lake Nasser (600)

The extent to which a reservoir yields the anticipated benefits is highly dependent on the accuracy of streamflow projections. Reliable forecasts of inflow to Lake Nasser is particularly importance to Egypt and more so now as several consecutive years of drought has been experienced.

Evaluation of Current Statistically Based Forecasting Techniques used by MPWWR (610)

An assessment will be made by the WPG and USBR concerning current forecasting procedures and their relative accuracy. Strengths and weaknesses of the present forecasting procedures will be arrayed for discussion purposes and decision making.

Exploring New Directions for Statistically Based Forecasting Procedures Improvement (620)

Following completion of above tasks it is expected that consultation will be held with experts in the field of streamflow forecasting from rainfall events. New directions will probably depend to a large extent on the frequency of needed forecasts, the facilities and data available , and the hydrologic characteristics of the basin.

New Statistically Based Forecasting Development and Test for Validation (630)

New forecasting techniques must eventually prove to be reliable. Predicted flows and their confidence limits should be calculated and evaluation made of their reliability. Using observed streamflow data the validity of the techniques can be tested.

Development of a Decision Support System for Assessment of Long Term Water Use Strategies (640)

The present forecasting model gives various probabilities of a predicted streamflow based on randomly generated stochastic streamflow sequences and selects the most likely event. The model needs to be able to accept "what if" type questions of a certain streamflow to predict reservoir yield. This type of decision support for assessing long term water use strategies would be very important to the MPWWR.

Models Documentation and Report Preparation(650)

Following completion of improving the capabilities of the statistically based forecasting model it will be necessary to prepare adequate documentation. The report will describe development of the model, important aspects of the model, and instructions on its use.

Improvement of Simulation Models (700)

Numerous simulation models have been developed for deriving operating policies for water releases from Lake Nasser. This task will assess each of these in terms of improvement, development of others where needed, and integrating models into a unified simulation model for the whole Nile River Basin.

Upper Nile Model Evaluation and Refinement (710)

This model calculates the inflow to Lake Nasser through simulation of the operation of upstream reservoirs. It also simulates the impact of future upstream regulation from projects such as the Jonglei Canal. An assessment will be made of the model concerning its present utility and identifying areas where improvements can be made, particularly in view of any impending upstream development which has not been incorporated into the model.

Lake Nasser Simulation Model Evaluation and Refinement (720)

The model simulates the operation of the High Aswan Dam reservoir (Lake Nasser) using monthly time periods. As presently constructed some concern have been expressed about the

correctness of the power equation. This will be evaluated as well as the reservoir rule curves.

Plateau Lakes and Nile Reservoir Simulation Models Development (730)

As construction on upstream projects to reduce evaporation are completed, the operation of the Plateau Lakes (Victoria, Kyoga, and Albert) becomes increasingly important. New models will have to be developed or components added to the existing models to consider their impact on available streamflow at Lake Nasser.

Integration of Different Simulation Models into a Unified Whole Nile Basin Simulation Model (740)

The various possibilities for operating the High Aswan Dam will be studied in detail to identify the maximum benefit to Egypt. This will require a simulation model of the whole Nile River basin. The Lake Nasser Simulation Model, the Upper Nile model and the model to be developed for the Plateau Lakes system will provide the necessary components of the whole system.

Report Preparation for Models Documentation (750)

Following completion of development of the various models a report will be written that documents the model results, important tasks on development of the models, and instructions for use of the models.

Promotion of High Aswan Dam Operation Policies (800)

Models developed to date by the WPG on the operation of the High Aswan Dam have been successfully implemented. However, to enhance the benefits of using these models other areas have been identified where the models could be further developed.

Further Development of Steady State Dynamic Program (810)

A. Incorporation of risk assessment in the model (811):

So far, the operating rules being used for the High Aswan Dam, have not been subjected to a formal risk analysis to quantify the risk of excessive releases leading to downstream degradation, or shortfalls in meeting the demands for irrigation and other water use. This task would use synthetic inflow data

and dynamic programming to derive operating rules with acceptable levels of risk.

B. Consideration of conjunctive use of Lake Nasser with downstream groundwater storage (812):

The feasibility of using the Nile Valley Alluvium conjunctively with Lake Nasser storage to increase the reliable yield of the overall system will be explored. It is currently estimated that 2.2 BCM are being extracted from the Nile Valley and Delta and this amount could be increased to 5.0 BCM to balance the current recharge from the irrigation system.

C. Consideration of conjunctive use of Lake Nasser, the Plateau Lakes and other basin reservoirs(813):

Until now, the way in which the Plateau Lakes (Victoria, Kyoga, and Albert) have been regulated has been of relatively little importance to Egypt because of the massive evaporation losses in the Sudd region. However, the completion of both phases of the Jonglei Canal Project may allow the benefit of the conjunctive use of the Plateau Lakes with Lake Nasser storage to be realized.

D. Model documentation and report preparation (814):

Following completion of the modeling efforts a report will be prepared to document the results and provide instructions on how to use the models.

Further Development of the above Closed Loop Operation Model of the Aswan High Dam to Cope with the New Versions of the Multilead Forecasting and Dynamic Programming Model (820)

It is expected that new versions of the multilead forecasting model and dynamic programming model will necessitate revisions in the adaptive closed loop operation model for the Aswan High Dam (Lake Nasser).

Comparative Study of the Current Operation Rules with Model Based Rules (830)

A comparison will be made between current operation rules and those derived with computer modeling. It is expected that improvement in operation and greater efficiency in water use can be achieved through the modeling efforts.

Preparation of a Comparative Study Report (840)

A brief report will be prepared to document the comparative study. It will highlight the current operation rules and those derived through the modeling efforts. The report will not

attempt to provide documentation of the models.

Implementation of High Dam Models and Actual Operation (850)

A. Coordination with concerned authorities and models demonstration (851):

Coordination meetings will be held with appropriate departments in the MPWWR. Presentation will be prepared in advance. The objective will be to emphasize with results of the study that improvements in water use efficiencies can be gained through use of the computer models.

B. End user training (852):

A training seminar will be given to those in the WPG of the MPWWR on the use of the models. The seminar will be presented by those that developed the models which would include personnel from the WPG, USBR, and consultants.

C. Providing technical assistance during starting phases (853):

It will be necessary to develop a procedure on longer range plans for the implementation of the models through technical assistance. The program for this will be developed in the later stages of the project, but ideas should be sought early in the study to allow adequate time for implementation.

D. Documenting the experience gained from real implementation (854):

A brief report will be prepared to document the experience and benefits from implementation of the model.

Agro-Economic Planning Policies Promotion (900)

Calibrate the Agro-Economic Model, Reduce the Number of Assumed Factors and Improve its Capabilities (910)

Consultant assistance has already been sought to; assist in analyzing results, reduce the number of assumed factors, and improve the model's capabilities as an agricultural policy tool.

Integrate the Model with the Planning Distribution Model for Maximum National Benefit (920)

The Planning Distribution Model, as presently structured, calculates flows to meet a specific set of water requirements. It does not consider the allocation and distribution of water to agricultural crops which will return the greatest economic

benefit. By integrating the two models release policies which maximize economic benefit can be developed.

Comparative Study of Current Agriculture Planning Procedures and the Model Based Ones (930)

A comparison will be made of agricultural planning as it presently exists within the MPWWR and the results of the computer based ones. It is expected to show that with the models greater efficiency in water use can be achieved and also a number of scenarios can be developed for different "what if" conditions as it relates to allocating water for various crops.

Encourage Implementation for Agriculture and Land Reclamation Planning through Coordination with Concerned Authorities (940)

The goal is to encourage personnel in the Departments of Agriculture, Land Reclamation and Planning of the MPPWR, to use the model as a tool in examining alternative agricultural and new land reclamation policy scenarios, and thus assist them in their five year planning process.

Report Preparation and Model Documentation (950)

Following completion of the Agro-Economic studies a detailed report will be prepared. This report will fully document the calibration of the model, integration with the Planning Distribution Model, comparison of agriculture planning procedures and model based ones, and a discussion on aspects of implementing the use of the models. A separate report will be developed as a users manual for the model.

Integration between Forecasting Models, High Aswan Dam Operation Models, the Optimal Planning Distribution Model and the Agro-Economic Model for Strategy Planning (1000)

The WPG has developed mechanisms for some models to be integrated. An assessment will be made of the feasibility, as well as practicability, of total integration of the various computer models associated with predicting inflow to Lake Nasser, the operation of the High Aswan Dam complex, and the distribution of Nile River waters to the irrigated sectors from the High Aswan Dam to the Mediterranean Sea.

Monograph (1100)

The modeling work carried out by the WPG is reaching the point where the total integrated effort needs to be fully documented and where useful lessons can be offered to the managers of other major river based irrigation systems. The WPG has developed a set of modular models in a system context for some of the models. The ability to partition management decisions into relatively discrete problems related to releases from the High Dam, distribution to canal commands, and canal and farm levels decisions, has allowed a corresponding simplification of the modeling effort. As the program nears completion in 1991, provisions should be made for a monograph to fully document the development, design, and operation of the integrated set of models.

Final Report Preparation (1200)

A final report will be prepared to document the Planning Studies and Models Component of the Irrigation Management Systems Program. It will not focus on the details of the various models but rather on the overall program. It will address each of the major tasks identified in this plan of study to give a brief description and the results. It will focus on presenting procedures and mechanisms to enhance the successful implementation of the models.

Figures 2 through 10 shows schematically the starting and ending dates for the Project Activities for the Planning Studies and Models Component.

APPENDIX E

GROUP RECOMMENDATIONS ON KEY PROJECT ISSUES

Appendix E

Group Recommendations on Key Project Issues

Issue 1: The Role of the Planning Studies and Models Component within the Ministry of Public Works and Water Resources

- a. What is the role of the Planning Studies and Models Project within the Ministry of Public Works and Water Resources?

To help decision makers in analyzing and resolving problems associated with Egypt's water resources.

- b. What is the primary objective of the project?

To improve the efficiency and productivity of Egypt's water resources.

Other objectives of the project include the following:

To provide alternative operational policies through utilization of the models.

To develop the Decision Support Unit (DSU).

To develop the Project Information System (PIS).

To improve and develop computer models.

To establish credibility (links) with high level decision makers in the Ministry.

To define research needs for the Water Research Center (WRC) and the Agriculture Research Center (ARC).

- c. How will the Project interact with the other IMS components?

Through special IMS coordinating committee meetings. The PSM project will provide updates to the committee on a quarterly basis.

- d. How will the Project interact with other Ministry offices that play a role in the planning and distribution of irrigation water?

Through task assignments by the IMS coordinating committee

Through formation of working group to carry out tasks

- e. When will this interaction begin?

At a special IMS coordinating committee meeting in August to raise the question of coordination. Eng. Aziz will follow up.

- f. How will the other IMS components and the Ministry know what the PSM project can do for them?

Through an orientation about PSM at the August IMS coordinating committee meeting. Dr. Bayoumi will make a presentation at the meeting.

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- g. How will the PSM project be coordinated with the new Monitoring, Forecasting and Simulation (MFS) project?

The MFS project is currently within PSM (local currency fund)

The issue of future coordination may need Ministry input.

The Main Systems Management, PSM, MFS, and Survey and Mapping components need special coordination and direct linkages because of their closely tied objectives.

Issue 2: Staffing requirements for the project

- a. How many more staff will be needed to work on the project?

Seven (7) additional well-qualified civil engineers are required so that each model will have at least 2 engineers assigned and familiar with each model. This will be a total of 12 engineers.

- b. Who is responsible for this staffing?

The Project Director, Dr. Bayoumi.

USAID and the Ministry will meet to develop a strategy for dealing with carry-over staff from the WB/UNDP project and how to resolve the staffing needs of the PSM project. The first meeting will be July 5 at 8:30 a.m. in Giza. Attendees will be John Anania, Ed Stains, Dr. Bayoumi, Mr. Metawee, and Jim Riley.

- c. To whom do the Egyptian engineers report?

Dr. Bayoumi

- d. How should work be assigned to the Egyptian engineers working on the PSM project?

Work will be assigned by the project director (Dr. Bayoumi) or his designate and the USBR PASA project advisers after discussions with the project director. These discussions will take place at the weekly staff meetings.

- e. What is the relationship between the local engineers and the PASA advisers?

The local staff should be able to work directly with the PASA advisers on assigned models or other approved activities and studies.

- f. What kind of training will be provided for the Egyptian staff and how can this be coordinated with the workload?

It was suggested that the training plan developed and submitted by Mr. Scheaffer (TDY) be accepted and submitted to USAID for approval, and that technical training proceed as suggested in the report. Dr. Bayoumi will complete his review on the report and submit to USAID by July 9.

It was also suggested that there may be other training needs, including management skills and administrative skills that should also be covered in the training plan. It was agreed that an addendum be developed outlining these needs for non-technical and management training and that this report be submitted to USAID for approval by September 15.

In order to coordinate the workload with training requirements, the group recommended that two local engineers be assigned to each model (see question a above)

- g. As the project gets started, are there special tasks that the Egyptian engineers should be performing to prepare themselves for the work ahead?

The engineers should become familiar with the models, as well as the needs of the project.

New engineers will need orientation time to become familiar with the models, project, and administrative requirements of their positions.

Dr. Hatem, a local Egyptian consultant who developed the user-friendly models under the UNDP project, will conduct a needs assessment, make recommendations, and set up a training programme for the Ministry engineers. It was agreed that this assessment should begin in August.

- h. What role will local Egyptian consultant groups play in the project?

This has not been decided yet. However, their involvement should be either minimized or designed so that the local Ministry staff receive training in the work that the local consultants are providing.

How will local consultants be selected?

By the project director, Dr. Bayoumi, through a competitive bid process and action memoranda.

- i. How should the Egyptian PSM staff interact with both the U.S. and Egyptian consultants who will be providing services the project

PSM staff will be expected to make time available to work with consultants. The local staff will also help provide data for the consultants, prior to their arrival for TDY.

PSM staff will be involved from the very beginning of any planned consultancy and will be allowed to travel to the consultants office (in the U.S. or Egypt) when necessary to continue work and training on the models.

Issue 3: Procurement

- a. How will computer equipment and vehicles be procured?
1. The decision is made to procure an item by PSM Office.
 2. Action memorandum is signed by Dr. Bayoumi and USAID.
 3. Request is sent to USBR/Washington (Ives) by Al Graves.
 4. Requisition is preparedcompetitive bid.
- b. Who approves the specifications?
1. Al/Jim and TDY gather specification information
 2. Approved with action memorandum (Dr. Bayoumi/USAID)
 3. Further refinement of specifications is done in U.S. based on what is available.
- c. How long will the procurement take after signing the action memorandum?
- It depends on the type of equipment (vehicles take much longer-- perhaps up to 9 months; computers 3-4 months); also depends on cost procurement action.
- d. What other procurement issues need to be worked out?
- USBR/Washington is waiting for information on decision to procure additional (PC) computers and vehicles - must ask Dr. Bayoumi/Al Graves about status.
- e. Is special approval necessary from the Ministry or USAID for the purchase of computers or vehicles?
- Yes; General Osman will obtain the general requirements for importation of vehicles.
- | | |
|------------|-------------------------------------|
| 4 cylinder | Minister decree only |
| 6 cylinder | Prime Minister Decree (most likely) |

General Osman will begin process to obtain decree needed once cylinders/engine are known. Other information (serial number, model and chassis numbers, year of production, and price) will be provided by USBR/Washington as soon as possible so paperwork can be completed. Vehicles will be shipped in the name of the project.

Issue 4: Information on how the PASA works

a. How does the PASA work?

The PASA is a contract between USAID/USBR

The roles are defined as follows:

USAID:

- 1. Approves or disapproves action memorandum**
- 2. Monitors progress of work, based on workplan**

MPWWR:

- 1. Signs action memorandum indicating approval**
- 2. Directs the path of the project**
- 3. Provides local staff to do work and to be trained**

USBR:

- 1. Implements action memoranda**
- 2. With approved action memoranda, implements action (procurement, training, travel)**
- 3. Provides advice**

b. How often should the project staff meet with the Ministry Project Director? With the USAID project officer? Who else should be involved in these meetings?

Meetings will be held weekly and two meetings are held monthly.

The USAID project officer will attend each monthly meeting and occasional weekly meetings. Additional participation is spelled out in project management agreement matrices (see chapter 3, section 3.2.1.)

c. The PASA team may need to interact with others in the Ministry around the evaluation of the models. How can these meetings be set up? When will the PASA team and local Ministry engineers travel to the field to review the irrigation system in Egypt and the applications of the models?

Meetings can be set up by the USBR advisers with consultation of project director. The project director becomes an adviser in this context by directing advisers.

Travel outside of Cairo will begin when the per diem issue is resolved for local staff. This issue is on the agenda for meeting with Eng. Mazen. Eng. Aziz will discuss the issue with the IMS coordinating committee.

Jim Riley and the local staff, along with Dr. Bayoumi, will develop local travel plan by July 19.

- d. What is the role of USBR's home office in Washington? What kind of support does this office provide and what can't this office provide?

The Washington office provides back-stopping for the project. Al Graves sends action memoranda to Washington for implementation. The action memos are retransmitted to Denver to the appropriate office (i.e., procurement, Hydrology, etc.).

All USBR support activities are in Denver and the USBR Washington office must use those support offices.

Invitational travel initiated by USER must be scheduled at least two months in advance to allow the processing of documents and transmittal of money to the participants.

- e. There are certain outputs required in the PASA. How will these outputs be monitored and evaluated? If there is no approval for work to proceed on a particular item, i.e., training plan or computer procurement or TDYs, what action can be taken to make the necessary changes and get the approvals so that work can proceed? Who should follow up on these issues?

The outputs of the PASA cannot be implemented without the approval of the Ministry project director (Dr. Baycumi) and USAID project officer (John Anania). Implementation will be monitored through an IMS evaluation process by USAID.

Any problems and concerns with action memos will be discussed at the weekly meetings and with the project officer if necessary.

Al Graves will seek assistance and commitment from USBR in Denver this summer (July) for adequate and appropriate staff to support the evaluation and modification of the models.

Pending action memos will be discussed at each Monday meeting.

PSM will endeavor to utilize local consultants as much as possible in lieu of USBR TDY or international consultants. The consultant

group available through Cairo University and other local consultants will be used. Training of local staff will be included in the contracts with local consultants.

The Planning Sector Chairman would like a copy of minutes on weekly meetings. The minutes are understood to be very brief.

Issue 5: Selection and approval of short-term consultants (TDYs)

- a. How will the scopes of work for short-term consultants (TDYs) be developed and approved?

Scopes of work (SOWs) will be developed from the existing workplan. Additional scopes of work will be developed as needed during the consultant's work in Egypt.

- The resident advisors develop the original SOW
- The SOW is approved by the Project Director, Dr. Bayoumi, through an action memorandum which is forwarded to USAID for approval, and then to USBR/Washington for implementation or to the local consultant community for bids.

- b. Who approves the scopes of work and specialists who will do the work?

- The Project Director and USAID approve SOW and action memorandum.

USBR selects a bureau employee or consultant to perform the SOW.

In the future, USBR will send information on 2-3 possible candidates to the Project Director and Resident Advisers for final selection.

- c. How will consultants/specialists be identified? Who will work with TDY consultants when they are in Egypt?

Consultants are identified from Washington through a telephone call to USBR's Denver office.

Advertisements are used to identify candidates if no USBR staff is available or the requirements cannot be met within USBR.

Solicitation (less than \$20,000 U.S.)

Egyptian staff/resident advisors will work with the consultants when they are in Egypt.

- d. To whom will the consultants report, brief, and debrief on their work?

Consultants will report to the Project Director, Dr. Bayoumi, or his designee during the TDY.

The consultants will brief the Project Director and Resident Advisers at regularly scheduled meetings during the TDY.

- e. Will a Ministry counterpart be assigned to each consultant who works on the project?

Yes. Egyptian counterparts will be assigned to work with consultants, and will provide support before and follow up after the consultant's work in Egypt.

- f. Who should receive a copy of the consultant's final report?

The Project Director, PSM Staff, resident advisers, and USAID should receive the draft version of the final report for review and approval.

Planning Sector Head should receive the final version with comments from the advisers.

- g. Who follows up on any recommendations made in the report?

The Egyptian staff counterpart in consultation with Project Director and the resident advisers will provide follow-up as needed.

The consultant's scope of work will include an item requiring that the final report include specific recommendations on next steps and follow-up that will be needed. This information will be used by the project to continue work on that specific task.

Issue 6: Evaluation and modification of computer models

- a. What is the status of the user-friendly computer models that were developed under Phase 3 of the UNDP Project?

The Lake Nasser Simulation, Forecasting, Steady State Dynamic, Closed Loop Dynamic and PDM have been converted to user-friendly models. The last three models need improvements. The first two are working well.

The follow-up that is needed to get these models distributed includes:

1. Identify the demand for distribution of models at the Ministry and in the directorates.
2. Develop a training plan and a follow-up plan to provide continuing support to those who have received the models and a plan for commodity purchases (computers).
3. Modify/revise the existing contract with the local consultant, Dr. Hatem, who did the original conversion to user-friendly models. (There are no more funds available under the existing contract, which was part of the UNDP project.) The new contract should include a scope of work that provides for more training on the use of the models, as well as maintenance, etc.
4. Action memorandum to USAID including scope of work and budget for new contract with Dr. Hatem.
5. Implement and monitor

This activity should be added to the project workplan.

The person responsible for getting this activity started is Dr. Bayoumi.

- b. Have any of the user-friendly models been distributed to the directorates? If not, will they be?

None of the models have been distributed to the directorates. Before this can be done, the directorates need computer hardware, training, and fully operational models.

Who is responsible for training others in the use of the models?

The planning sector and USBR advisers are responsible for training, including site and field training (see previous question for more details).

- c. How will these models be evaluated and modified? Who will be involved in the evaluation process? Will the directorates and other offices in MPWWR be involved in the evaluation and modifications of the models?

Local, USBR/Denver and other consultants will be involved in the evaluation and modification of the models, in close coordination with the local planning sector (PSM) staff.

The current status on the evaluation and modification of models is as follows:

1. The request for technical proposals (RFTP) and the terms of reference (TOR) have been developed for the Dynamic Programming Model and the Project Information System. The TOR will include an assignment to interview end-users about the need for these models and systems and what they should include.

The Dynamic Programming Model will probably be done by outside consultants.

The Project Information System will be done by local Egyptian consultants with USBR input.

2. A list of data requirements have been identified for the Lake Nasser Simulation Model for use by USBR in Denver, in preparation for the review and modification of the model.

3. The scopes of work and procedures need to be done for the following:

- PDM - will be handled by a local consultant
- Forecasting Model - USBR will take lead
- Agro-Economic Model - MPWWR/MOA linkage needs to be worked out.
- Operational Distribution Model

In order to complete the SOWs and RFTPs for number 3, additional discussions will be held in September between Dr. Bayoumi, Al Graves, Jim Riley, and John Anania.

This group will develop the core RFTP with as much Technical Information as possible. This will be sent to Denver for the additional contractual details that are needed and then the RFTP will be advertised.

If USBR will be doing the work directly, the scopes of work will be sent to Denver the office where Bureau staff will begin the evaluation process.

Will the directorates and other offices in MPWWR be involved in the evaluation and modification of the models?

They should be involved and meetings should be set up.

Perhaps demonstration of models

Project Director should set up meetings.

- d. Will any planning studies be done under the project? If so, who will identify the studies and who will carry them out? How will this work be coordinated with the modification of the existing models?

The group suggested that the Menafia area or similar problem area be used as a case study for incorporating conjunctive use of groundwater and surface water. (This is task 812 in the workplan).

Because conducting planning studies is so resource-intensive (people, time, and money), high authorities within the Ministry should identify and rank, in order of priority, the studies that should be undertaken by the planning sector. Then high authorities should appoint an implementation committee.

Follow-up

The Head of the Planning Sector, Dr. Salash, will ask the various departments in the Ministry to identify and describe their planning problems and needs in the areas of water distribution and use. This information will be kept in project files to be worked on when time permits.

If a request comes from the Ministry to conduct a study, agreement should be reached that some work on the evaluation of the models cannot be done while the study is being done.

Appendix F

Evaluation Results

Following are the results of the eleven completed evaluation forms from the Planning Studies and Models Workshop

A. Workshop Goals

The goals of the workshop are listed below. The number listed indicates how the participants felt about goal achievement. The scale is from 1 (low, goal not achieved) to 5 (high, goal achieved very well)

1. To exchange current project information that is essential for the remainder of the project. (4.18)
2. To agree on and commitment to project goals and activities. (4.45)
3. To provide an opportunity for the project team to become better acquainted. (4.73)
4. To agree on the management roles and responsibilities of MPWWR, USBR, and USAID. (4.36)
5. To agree on procedures for managing the project. (3.91)
6. To improve the ability of the group to work together as a team. (3.91)
7. To discuss and develop strategies for the most important issues that are affecting the project. (4.27)
8. To refine the workplan for the next year of the project. (2.70)

B. Opinions and Feedback

Participants were asked to answer the following questions as thoughtfully as possible. The answers will be used to help facilitators plan other similar workshops in the future and also indicate areas of concern that participants feel should be addressed in follow-up activities.

1. What do you think has been the primary benefit of the workshop?
 - identification of all the problems and their solutions
 - to get people working on the project to share their expectations of how they can do the job successfully.
 - clarification of project goals

- overcoming of all difficulties
- to set a stake from which progress (or lack of it) can be measured
- acquaintance with the project team
- exchange project ideas and information
- resolve some problems and conflict
- clarified the role of PSM, USBR, AID
- getting agreements on key issues and a commitment to address the issues. Also a better understanding of project issues/objectives
- achieve agreement on and commitment to project goals and activities
- getting to know the various individuals
- to help in project improvement and development
- to bring all (I think) of the issues constraining implementation out into the open.

2. What workshop activities could have been done better?
(Numbers in parenthesis indicate number of same/similar responses)

- no response/nothing (4)
- Workplan for the project (3)
- The involvement of more staff would have helped, but not your (facilitator's) problem
- Management expectations
- All activities were covered adequately, but we may have miscalculated on the amount of time required to discuss the issues
- perhaps a slightly larger room. (The view however was outstanding)

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

(Numbers in parenthesis indicate same/similar responses)

- no (5)
- discussing the project work plan in detail to check the feasibility of carrying it out properly in the period specified for the project.
- other issues will be flushed out in follow-up sessions, now that regular meetings will be held.
- system of reporting needs further discussions
- getting the project director to take responsibility and lead for the study. We should have quarterly meetings with Mr. Ed Steins and all participants to introduce accountability factor.
- this workshop covered and solved every issue dealing with the project activity.
- Don't know. Follow-up on the agreements in a few months will provide an indication as to whether all issues were brought out.

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

- is of high standard
- I think they are o.k., but only if they are applied
- very good (3)
- I am very satisfied and pleased by the workshop. Many thanks to Kathy
- Excellent, but hotel could have done a better job informing participants of room charges. Each participant paid a different rate.
- workshop arrangements and accommodation are excellent
- very good, but if possible arrange a luncheon or dinner where all could attend together for at least one occasion.
- thank-you

- excellent

5. What final comments do you have for the workshop facilitator on her performance?

- nothing (2)
- Think the facilitator's performance was great and she always managed to direct discussions right to the point, she had a good way of analyzing the problems that arose and coming up with the right questions that can clarify the subject by answering them. In brief, she's done a great job.
- well-organized and professional. Kept an unwieldy group reasonably on time and on track. It is unfortunate we couldn't cut into the underlying issues, but they will come out eventually.
- active and clear and disciplined
- more than excellent
- outstanding job
- the workshop facilitator's performance is excellent
- Kathy, you did a very good job on the issues
- also thank-you

APPENDIX G

**AGREEMENTS REACHED AT THE
PLANNING STUDIES AND MODELS
START-UP WORKSHOP**

Appendix G

Agreements Reached at the Planning Studies and Models Start-up Workshop

Alexandria, Egypt
June 26-28, 1989

WHAT	WHO	WHEN
1. IMS special session on PSM	Eng. Aziz Dr. Bayoumi to give orientation	August
2. Discussion on PSM staff requirements and UNDP staff	Dr. Bayoumi Jim Riley Ed Stains John Anania Metawee	July 5
3. Schaeffer Training Plan submitted to USAID	Dr. Bayoumi	July 9
Additional non-technical training report submitted to USAID	Dr. Bayoumi	Sept. 15
4. Identification of local staff's on-the-job training needs	Dr. Hatem	August
5. Ministry Decree on vehicles	Gen. Osman	ASAP, upon receipt of vehicle type and size
6. USBR to provide CVs on potential TDYs to Ministry for final selection	Dick Ives	from now on
7. Authorization for USBR advisers to have access to Giza office	Dr. Bayoumi	August
8. Status of proposal which will authorize longer access hours for local staff assigned to advisers	Eng Aziz	mid-July decision is expected

- | | | |
|--|---|--|
| 9. Weekly staff meetings to be held with Dr. Bayoumi or his designate | advisers
technical staff
Dr. Bayoumi
AID occasionally
Aly Seif occasionally | every Monday at 8:30 a.m. |
| 10. Monthly meeting | Dr. Bayoumi
senior adviser (Graves)
administrative rep.
AID (Anania)
Ministry monitoring office | Last Tuesday of every month 8:30 a.m. |
| 11. Review of Workplan, revision through 1990 | Dr. Bayoumi
advisers
technical staff
AID | Sept. and annually thereafter. ISPAN will facilitate. |
| 12. Technical Report Format | Dr. Bayoumi
Jim Riley | July 3 |
| 13. Quarterly Reports-focus on tasks & accomplishments of workplan & problems encountered | advisers
Dr. Bayoumi
Submitted to AID & Ministry monitoring office | Due Sept. 30 and last day of every quarter thereafter. |
| 14. Level of staff requirement for USBR advisers. Action memos will be used to hire staff. | Al Graves | Mid-August |
| 15. Schedule of visits to local facilities | Jim Riley
technical staff
Dr. Bayoumi | July 19 |
| 16. Distribution of user-friendly computer models | Dr. Bayoumi
advisers | Planning to begin in Sept. |
| 17. Develop plan of how to evaluate models (RFTP/USBR/local consultants) | Dr. Bayoumi
advisers
AID | September |
| Discuss USBR capabilities and interest in evaluating different models | Al Graves | July |
| 18. Per diem for local staff | IMS coordinating group
Eng. Aziz | will be discussed at July IMS meeting |

19. TDY reports should contain follow-up recommendations and required next steps. This should be spelled out in the consultant scopes of work.
20. Check out regulations on use of project vehicles by project staff (U.S. & Egyptian) John Anania June 29
21. Coordination and organization of Main System Management, Planning Studies and Models, Survey & Mapping, and Monitoring, Forecasting and Simulation projects John Anania will be discussed at IMS coordinating committee meeting
22. PSM Newsletter at decision workplan workshop in Sept.
23. Request Ministry Depts. to identify water modelling problems. Dr. Salesh
24. Luncheon at Ed Stains' to review progress made on workshop agreements. Ed Stains Dr. Bayoumi advisers John Anania Week of August 20

APPENDIX H

**DESCRIPTION OF PROJECT
FROM PROJECT PAPER**

Appendix H

Description of Project from Project Paper

1. Planning Studies and Model Development

a. Background

In October 1977, a Master Water Plan project for Water Resources Development and Use (MWP) in Egypt was set up within the Ministry of Irrigation (MOI), assisted by the United Nations Development Program (UNDP), with the International Bank for Reconstruction and Development (IBRD) as the executing agency. The scope of the MWP project is broad, with criteria for evaluating the effectiveness of alternative plans ranging from water efficiency to social and environmental effectiveness. The MWP project has been assigned to the Water Planning Group (WPG) of the newly established Planning Sector within the MOI. The WPG has placed considerable emphasis on the development of a set of reliable tools (mathematical models), and procedures that can be used for the investigation of the planning options, facing policy and decision makers. These tools include a computerized Project Information System (PIS), and two groups of mathematical models. One group of models concerns the Nile River water supply system and involves the relationship of the Upper Nile Basin, Lake Nasser and the operation of the Aswan Dam complex. The other group of models concerns water demands in the service area from the Aswan Dam to the Mediterranean Sea.

The Project Information System (PIS) was established on the project's HP 3000/30 computer, to store and process data for serving three purposes: 1) preparation of an inventory of the physical components of the irrigation and drainage system; 2) calibration and application of the planning distribution model, including the computation of command area water balances; and 3) calibration and application of the agro-economic model.

The PIS consists of three main categories of data; the agro-economic data of the agricultural sector of Egypt; the canal system data, and the drainage system data. Each of these categories is referenced to a different set of geographical areas. The agro-economic data were drawn from administrative districts which are the building blocks of the Egyptian Governorates. The canal data are stored according to the 50 canal commands, 19 group canal commands and seven Nile reaches. The drainage data are filed according to 152 drain command areas, 113 group commands, and six terminal components.

The geographic boundaries for these three categories of data subdivisions do not coincide. All boundaries were mapped and planimeted, and coefficients were developed to record the extent to which areas overlapped each other.

(1) Upper Nile, Lake Nasser-Models

This group of models concerns inflow simulation and prediction to Lake Nasser, and operating rules of the High Aswan Dam. Following is a short description of the models:

--The Upper Nile Model

This model is operational and consists of six subsystems of the Nile River Basin upstream of the HAD. Two approaches were used to formulate models of the various reaches of the six subsystems. Straight forward linear regression techniques were employed for all cases in which flow records were not continuous, while the constrained linear systems approach was used when long continuous data was available. This model covers the River Nile system from the Lake Albert outlet to Lake Nasser. The prime objective of this model is to provide a tool for the evaluation of the impact of Upper Nile conservation projects such as Jonglei I on inflows to Lake Nasser.

--Operation of the High Aswan Dam

There are four models that have been developed for improving the High Aswan Dam operation. These models are operational but require refinement before they can be used to set overall operation policy. They include a "Steady State Stochastic Dynamic Program" that uses transitional probabilities derived from historic inflow data to establish optimal operating rules (long term performance) for the High Aswan Dam; an "Adaptive Closed Loop Operation Model of the High Aswan Dam," that operates on a real time basis and deals with short term performance using the results of the steady state dynamic programming as boundary conditions, and refines the obtained policy based on real time forecasts of reservoir inflows and their limit of confidence; the "Lake Nasser Simulation Model," which is a simple monthly water balance model which determines the hydrologic performance of the lake when subjected to either historic or synthetic inflows, a given demand pattern, and when operated in accordance with a specified policy; and a "Multi-Lead Forecasting Model" which is based on multivariate step-wise regression approach, to forecast the monthly natural streamflows at various key locations of the River Nile basin, and to generate multi-lead forecasts at Aswan by aggregating recursively the forecasting of the up-stream key locations.

(2) Service Area Models

This group of models concerns the service area between the High Aswan Dam and the Mediterranean Sea. Once fully developed, they will model the water delivery system, the economic agricultural sector and the water balance of the entire irrigation system. Following is a brief description of these models.

--Agro-Economic Model

This model is a large scale sectoral model for quantitatively evaluating alternative water allocation schedules to agriculture in terms of their impacts on cropping patterns, domestic consumption, foreign trade and employment. It will also be able to test the impacts of changes in agricultural policies on aggregate national economic parameters, analyze the investment in new land reclamation projects, and rank projects economically. The model is in the early stages of operation and testing.

--Planning Distribution Model

This model is still being developed and calibrated, and consists of two submodels. The first submodel uses observed flow data and cropped areas to carry out water balance calculations for the specified 50 canal command areas of Egypt. It also computes water demands and return flows at each major diversion point in the irrigation and drainage network. The second submodel, called the distribution model, is used to compute flows in major canals based on the calculated demands and other constraints in the irrigation system. The model will be useful in testing various water demand scenarios.

--Flow Distribution Model

This model is a real time operating tool to provide computer assistance in the decision making process for operating the Lower Nile River irrigation system. The first generation of this model will be calibrated by July 1987 under the "Nile River Irrigation Data Collection System" (Main System Management-Telemetry Project).

It will provide a numerical model to simulate unsteady flow in the lower Nile and in first order canals; compute gate position at key locations in the distribution system in response to releases at Aswan and to prescribed irrigation deliveries at various stations along the system; allow engineers to study the actual operating and response characteristics of the complete system; and by using the model in a trial and error mode, various operating scenerios may be studied in order to find the most favorable mode of operation.

--National Water Balance Program

This program is fully operational and computes annual national gross water balances over any period of years selected. Input data includes water requirements over time for irrigation, municipal, industrial, power and navigation; beginning and ending years; annual loss rate of agricultural land for the first and last year; annual rate of new land reclamation; irrigation efficiencies for the first and final year; evaporation rate from the river and canals; crop intensity for the first and last year; crop consumptive use for the first year for Old and New lands; amount of Old Lands in the first year; and total supply. The program computes for each year, of the period selected, the demands and losses, and compares these to the total supply to show water remaining or water shortage.

b. Objectives

The primary objectives for the development and use of the models described above, and those to be supported under the Project Amendment, are improved operation of the High Aswan Dam/Lake Nasser complex and improved operation of the water delivery system from the Dam to the Mediterranean Sea. The descriptions of the models in the next section show how they are intended to contribute to improved operations.

c. Proposed Activities

The Ministry's program in the future consists of three basic elements--further implementation of existing models into the operations, planning and decision making process; improving and expanding existing models; and supplementing the existing array of models with additional ones that emphasize efficiency.

The Ministry has not yet incorporated the appropriate models into the routine management of the irrigation system and the Aswan Dam Complex. Each of the models discussed below will be fully developed and calibrated and available for operational use by MOI as a result of this Project. The MOI will provide to USAID on an annual basis a comparative analysis of the entire irrigation system operation under (1) current operational procedures and (2) with the use of the models. An outline and basic substance of the report to be submitted to USAID will be worked out during Project implementation.

(1) The High Aswan Dam (HAD) Models

Studies conducted to date by the WPG on the operation of the HAD, have comprised different models, as has been described before. The success of these models is measured by the fact that they have been successfully implemented and that the Egyptian personnel are now proficient in their use. However, to enhance the benefits of using these models, the following three areas have been identified where the models could be further developed:

a--Risk evaluation of operating rules of HAD.

b--Conjunctive-use of Lake Nasser with downstream groundwater storage.

c--Conjunctive-use of over-year storage potential of Lake Nasser and the Plateau Lakes.

So far, the operating rules being used for the HAD, have not been subjected to a formal risk analysis to quantify the risk of excessive releases leading to downstream degradation, or shortfalls in meeting the demands for irrigation and other water uses. The proposed studies given in (a) and (b) above, would carry out such a risk analysis using synthetic inflow data (generated in Phase I of MWP Project), and would employ dynamic programming to derive operating rules with acceptable levels of risk if necessary. The possibility of using the Nile Valley Alluvium conjunctively with Lake Nasser storage to increase the reliable yield of the overall system would also be explored.

The proposed study (c) represents the ultimate goal for Egypt in exploiting the Nile waters most efficiently. Until now, the way in which Plateau Lakes have been regulated has been of relatively little importance to Egypt because of the massive evaporation losses in the Sudd region. However, the completion of both phases of the Jonglei canal project may allow the benefits of the conjunctive use of the Plateau Lakes with Lake Nasser storage to be realized.

The various possibilities for operating the HAD would be studied in detail within the proposed study (c), to identify those of maximum benefit to Egypt. This will require a simulation model of the whole River Nile basin.

The Lake Nasser simulation model, the Upper Nile model and the model of the Plateau Lakes system, developed as part of the Hydrological survey of Lakes Victoria, Kyoga and Albert, will provide the necessary components of the total system.

(2) Agro-Economic Model

In 1986 this model is being introduced to key managers and staff in the Ministries of Agriculture, Land Reclamation and Planning by the Water Planning Group and IBPD personnel. This introduction includes a training program for technical staff from these agencies for operating the model. The goal is to encourage personnel in these agencies to use the model as a tool in examining alternative agricultural and new land reclamation policy scenarios, and thus assist them in the five year planning process. The Water Planning Group will continue to use the model to evaluate effects on water requirements from different agricultural programs and new land reclamation projects. Consultant's assistance through the UNDP will be provided to assist in analyzing results, reduce the number of assumed factors, and improve the model's capabilities as an agricultural policy tool.

(3) Planning distribution Model

This model is one of the most important and useful planning tools that MOI has developed. However, to date it has not been utilized because of lack of sufficient and accurate data for calibration of the model. The Development Research and Technological Planning Center, University of Cairo is under contract with the Water Planning Group to calibrate this model using data being collected from the Directorates. When the NRIDCS (Main Systems Management-Telemetry Project) is in place, considerable and more accurate data will be available for use in the model. Furthermore, the UNDP is providing, in 1987 and 1988, assistance for establishing a channel measurement work unit to collect discharge, channel geometry, and seepage loss data to be used in model calibration.

As more accurate data becomes available, the number of assumptions will be reduced, and operation experience gained from the basic model will require additional development and calibration. The further development of the model may include three additional activities as explained below

New land reclamation-The model can be used to determine how the irrigation system will be affected when attempting to deliver water to proposed new land areas. Bottlenecks, additional capacity requirements, and new facility requirements will be identified.

Drainage Reuse-Reuse of drainage water is becoming more and more important for improving overall water use efficiencies in Egypt, because development of the water conservation projects in the Upper Nile basin in Sudan are being delayed. Furthermore, reuse of drainage water is much less expensive than development of the water supply projects in Sudan. The Drainage Research Institute with the help of the Dutch government is making a drainage reuse study. They are preparing a model for analyzing flow distribution and water quality. The Water Planning Group will coordinate with the Drainage Research Institute and utilize the Planning Distribution Model as needed to evaluate the ideal location for reuse of drainage water, its transport and exchange opportunities with fresh water. The model will evaluate the irrigation system's reaction to the various drainage reuse projects.

Rehabilitation Program-One of the key programs of the MOI is the RIIP, designed to remodel canal commands and rehabilitate structures and improve the irrigation system. Location of problems may be identified and their magnitudes can be estimated so that the rehabilitation program can focus on problem structures or canal reaches. The model will also have to be calibrated after each canal command is improved to model actual field conditions. This activity would occur throughout the RIIP and NIIP areas.

(4) Unit Command Model

Utah State University has developed a series of models which can be used for detailed study of all aspects of water demands and their optimal allocation in a specific canal command. These models are developed on micro-computers and have been used successfully in many countries. A demonstration of the uses of these models was carried out in July 1986, at the Cairo Water Research Center. The models can be used as complementary tools to the Planning Distribution and Flow Distribution models that have been developed by the WPG.

(5) Estimation of Runoff using Satellite Imagery

The Ministry would also like to investigate the feasibility of a complementary process for predicting the timing, duration and quantity of runoff from the upper Nile watershed. The process is one developed by the U.S. National Oceanographic and Atmospheric Administration (NOAA) and consists of using satellite photographic imagery of cloud cover and buildup over the watershed to estimate precipitation quantities and duration. The data developed by this process would be used in a model similar to the Sacramento mathematical model developed by the U.S. Weather Service. This type model has not yet been developed for the Upper Nile Basin. If this system proved satisfactory it can provide another means to estimate inflow to Lake Nasser and complement and act as a check for the Multi Lead Forecasting model. The estimated period of development of this process and the mathematical model to fit Ministry needs is three to five years with costs ranging from three to ten million dollars.

Prior to making a decision on whether to embark on such a large program a feasibility study to better define the incremental costs and benefits from improving MOI's runoff prediction capabilities will be undertaken.

(6) Monograph

The modeling work carried out by the Water Planning Group and supported by UNDP/USAID is reaching the point where the total integrated effort needs to be fully documented and where useful lessons can be offered to the managers of other major river based irrigation systems. The WPG has developed a set of modular models in a systems context. The ability to partition management decisions into relatively discrete problems related to releases from the High Dam, distribution to canal commands, and canal and farm level decisions, has allowed a corresponding simplification of the modeling effort. Tackling the several problems within the same systems concept has allowed key outputs to be fed between models. Not all the lessons are in; but sufficient experience has occurred to be of value to other agencies faced with similar river systems. As this USAID/UNDP program nears its end in 1991, provisions should be made for a monograph to fully document the development, design, and operation of the integrated set of models. It is assumed that an academic publisher can be found who will publish the manuscript without charge.

d. USAID Support

MOI is currently entering the crucial phase of implementing the various models that have been developed with the assistance of the UNDP. As the UNDP funding is being severely restricted, USAID has been requested to assist in this final stage of model development and to assure that the models become fully operational and are utilized in the GOE's decision making process. The required support for each individual modeling activity was described above, both UNDP and USAID supported.

The UNDP will provide assistance in 1987 and 1988 on the Agro Economic Model, the Planning Distribution Model and the High Aswan Dam Operating Models. The assistance includes:

- Menu driven, user friendly versions of these models.
- Improved user and program documentation, including Users Manuals and example problems.
- Training workshops in the use of the models.
- Transfer of all models and the Water Planning Group's Data Base to the IBM AT microcomputer.

To assist in the implementation of the UNDP effort, the MOI has issued Tender Document No. 1/1987 to obtain Egyptian Consultants to work on the High Aswan Dam and the Planning Distribution Models. The contract will be for 16 months to upgrade to a user friendly mode, install, and implement the two sets of models on the IBM-PC computer.

USAID will assist in the UNDP effort and support the remaining models which focus on the service area and will be used to improve the management and distribution of water below the High Aswan Dam. Both USAID and the UNDP will be supporting work on the Planning Distribution Model. USAID support for a new mathematical model to estimate River Nile runoff using satellite imagery would be limited to carrying out a feasibility study to better define the incremental costs and benefits from improving MOI's runoff prediction capabilities. In addition, USAID will provide support to the channel measurement work unit during 1989 and 1990 after its initial establishment with UNDP assistance.

USAID will provide a total of \$5.4 million to support TA, training, commodities, and local support. 128 person months of technical assistance including two resident System Engineers will be provided for three years beginning in mid FY67 to assist in all activities and coordinate additional TDY assistance as required. This support will include 75 person months of nondegree training, commodities, and local support. Table F1 provides the phasing of activities and Tables F2 and F3 show the proposed financial support by USAID and GOE.

Table F1.

Phasing of Technical Assistance Requirements

Activity	1987	1988	1989	1990	1991	No. of person months
<u>1-HAD MODELS</u>						
a. Risk evaluation of operating rules*	3	7				10
b. Conjunctive use of D.S. groundwater storage**		5	10	8		23
c. Conjunctive use of overyear potential storage*			10	6		16
<u>2-Planning Distribution Model</u>						
a. New land reclamation*	3	9				12
b. Drainage reuse*		3	10			13
c. Rehabilitation*			9			9
<u>3-Utah Canal Command Models*</u>		7	7	7		21
<u>4-Runoff Estimation Using Satellite Imagery**</u>		6				6
<u>5-Monograph*</u>					7	7
<u>6-Miscellaneous</u>	2	3	3	3		11
Total	8	40	49	24	7	128

* To be accomplished by two Hydrologist-Systems Engineers from mid 1987 to mid 1990--see Annex L for Scope of Work.

** To be accomplished by contract or TDY assistance.

PLANNING STUDIES AND AIDLES

Projected Expenditures and Obligations - USAID Funds (000's)

Table F 2

Category	Through FY 06		FY 07		FY 08		FY 09		FY 90		FY 91		Totals		Grand Total
	O/FI	O/L/C	O/FI	O/L/C	O/FI	O/L/C	O/FI	O/L/C	O/FI	O/L/C	O/FI	O/L/C	O/FI	O/L/C	
1 Consulting Services															
Resident (Long term)	0	0	10	0	397	0	417	0	252	0	0	0	1076	0	1076
Non Resident	0	0	0	0	232	0	336	0	430	0	203	0	1209	0	1209
Sub Total	0	0	10	0	629	0	753	0	690	0	203	0	2285	0	2285
2 Training															
Non Degree	0	0	30	0	110	0	116	0	122	0	139	0	517	0	517
Degree (MS, PhD, etc)													0	0	0
Local Training													0	0	0
Sub Total	0	0	30	0	110	0	116	0	122	0	139	0	517	0	517
3 Construction															
Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 Commodities															
Prof & Dfc Equipment	0	0	74	0	88	0	290	0	304	0	255	0	1011	0	1011
Discharge Equipment							200		242				442	0	442
Sub Total	0	0	74	0	88	0	490	0	546	0	255	0	1453	0	1453
5 Local Services															
Administration				50		100		120		160		160		570	370
Local Experts								160		100		200		510	340
Sub Total	0	0	0	50	0	100	0	280	0	260	0	360	0	1110	1110
6 Other															
Invitational Travel															
Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combined Annual Totals	0	0	114	50	827	100	1359	200	1350	320	597	360	4255	1110	5365
Consulative Totals	0	0	114	50	941	150	2390	430	3650	750	1255	1110			
Project Obligations	0	2500	1665	1200	0	0	5365								

TABLE F 2

TABLE F 3

PLANNING STUDIES AND MODELS

		Projected Expenditures - GOE Funds (000's)						Table F 3
Category	Thru FY86	FY 87	FY 88	FY 89	FY 90	FY 91	Total	
	\$ L/C	\$ L/C	\$ L/C	\$ L/C	\$ L/C	\$ L/C	\$ L/C	
1 Consulting Services								
Resident (Long term)							0	
Non Resident							0	
Sub Total	0	0	0	0	0	0	0	
2 Training								
Non Degree	0	0	0	0	0	0	0	
Degree (MS, PhD, etc)							0	
Local Training							0	
Sub Total	0	0	0	0	0	0	0	
3 Construction								
	0	0	0	0	0	0	0	
Sub Total	0	0	0	0	0	0	0	
4 Commodities								
							0	
							0	
							0	
							0	
							0	
Sub Total	0	0	0	0	0	0	0	
5 Personnel								
Salaries		80	94	110	126	150	562	
Incentives		30	35	41	48	56	210	
Travel & Misc.		6	7	8	9	10	40	
Sub Total	0	116	136	159	185	216	812	
6 Other								
Sub Total	0	0	0	0	0	0	0	
Combined Annual Totals	0	116	136	159	185	216	812	
Cumulative Totals	0	116	252	411	596	812		