

CONCEPT PAPER
AMENDMENT TO THE IRRIGATION MANAGEMENT SYSTEMS PROJEC
(263-0132)

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Attachment #1 - Irrigation Management Systems Project-
Physical Status of ten Sub-Project Activities

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Amendment to the Irrigation Management Systems Project
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I. Introduction

The USAID/Cairo Agricultural Directorate is responsible for assisting the GOE to identify and remove constraints to agriculture production. The Directorate has carried out a series of studies over the past 18 months to identify the major constraints to agricultural production, both water and non water. The specific constraints in the irrigation sector have been identified and the effectiveness of USAID's approach to date has been evaluated by carrying out three separate project evaluations, a training needs assessment of the Ministry of Irrigation (MOI), and a comprehensive overall irrigation sector review.

The agricultural production over the past 10 years has remained essentially stagnant, and real growth from 1980-84 has been negative. Recent analyses clearly indicate that the reason for this is that the policy environment has remained virtually unchanged for over a decade and is not conducive to improving agriculture production.

The current policy structure, founded in the egalitarian aspirations of the 1952 revolution, maintains a centrally planned, state controlled environment which strips farmers of incentives for increasing economically productive investments. The government system dictates cropping patterns, use of inputs, and availability of transport. Many farmers are forced to grow crops which do not maximize financial returns. The government sets farm gate and retail prices on many inputs and outputs, and mandates the end use of a large number of agricultural products, including levels of exports.

Until this stifling policy structure is modified, significant increases in agricultural production will not be achieved. As has been clearly demonstrated by USAID/GOE projects and horticultural production projects, both of which operate under less restrictive market conditions, Egyptian farmers will aggressively respond to an incentive based policy environment. Technical studies indicate that if market forces were allowed to operate, farmers would make investments and utilize existing technology, resulting in increases in revenue of over 50 percent.

The purpose of this paper is to lay the foundation for preparing a Project Paper Amendment for the Irrigation Management Systems (IMS) Project expanding it to assist the Ministry of Irrigation improve its effectiveness in implementing its program. In addition the amendment will be used to justify the obligation required for FY 87.

The continuation and expansion of the IMS project will assist the MOI in preparing the water delivery system to respond to the needs of the farmers to allow increased production to come about. This Project, in conjunction with the other ongoing or proposed USAID agriculture projects, indicates USAID's willingness to significantly increase its support to the overall agriculture sector as the needed agriculture policy changes are put in place. The constraints in the irrigation sector that this paper and the IMS project address can not be treated in isolation from the non water constraints. That is, policy changes within the overall agricultural sector will affect the effectiveness of all of our agriculture and irrigation projects.

II. Problems Statement

The agricultural production in Egypt needs to be increased to reduce food importation and increase the export of agricultural products in those areas where Egypt has a comparative advantage. The technology is in hand to move Egypt out of its current heavy dependence on food imports. However, as the proper policies and non water related technologies are put in place, water and the root zone environment (drainage, salinity, timely irrigations) in their current condition will prevent attainment of maximum production levels. As such water, which is a limited resource in Egypt, and its management are the ultimate limiting factors to agriculture production in Egypt.

Egypt is almost totally dependent on inflows from the Nile River fed by precipitation outside the borders of Egypt. Egypt's share, set by international agreements, is 55 billion cubic meters per year which represents about 95 percent of Egypt's total water resources. In the past, water has essentially been taken for granted without adequate planning until shortages begin to occur. Since the construction of the High Aswan Dam, Egypt has not faced serious water shortages. However, as Egypt's water requirements increase over the coming years, there is no viable alternative to significantly increase the net water supplies available to Egypt other than to improve current water use efficiencies with the goal of eliminating waste. Egypt urgently needs to develop and implement a long-range program to better manage their limited water resources based on the needs and the conditions in the Nile watershed. This urgency stems from:

- (1) The apparent lack of conservation measures with regard to the use of the water resources behind the Aswan High Dam during the recent African drought;
- (2) Estimates that show that there will be insufficient water to sustain Egypt's projected population by the year 2000 unless drastic conservation and management improvements are put in place during the next few years;
- (3) Trends of increased salinization and water logging with corresponding drops in agricultural production;
- (4) Abnormal water losses from new canals that serve reclaimed lands; and
- (5) Problems of coordination between water managers and users.

The constraints in the irrigation sector that affect agricultural production and the availability of water for non agricultural purposes are complex and multi-faceted, ranging from the need to improve the MOI's ability of accurately predicting runoff from the watershed in advance to allocation and distribution (system management) of the water resources, to on-farm water management and all aspects in between. Removal of these constraints requires the use of advanced management and technical techniques and requires full coordination between agencies, specifically between the Ministry of Agriculture and the Ministries of Irrigation and Reclamation. An analysis of the sector showed that MOI lacks sufficient trained personnel needed to develop a multi-disciplined approach of identifying and solving problems throughout the system. It appears that special attention needs to be given to the end user at the farm level, including obtaining the input of the farmers themselves in planning for future improvements.

III. Current Project

A. Overview

In July of 1981 the MOI, on behalf of the Government of Egypt (GOE), requested USAID assistance in rehabilitating the irrigation system on the old lands and strengthening their capacity to plan, design, operate, and maintain the irrigation network. To assist the GOE in this effort, USAID, with the assistance of MOI, developed the IMS Project Paper in 1981, proposing a total AID expenditure of \$112 million of which \$92 million was proposed for structural replacement (SR) to remove a backlog of old non

functioning structures in the irrigation delivery system. In that year the project was authorized at \$42 million, although the concept of the larger program was accepted. Supplemental funding beyond the initial obligation was conditioned on successful MOI management in eliminating the SR backlog in five selected Directorates. Based on the first two years of implementation, evaluation of the SR sub-project, and confirmed economic viability, a project paper amendment was prepared in 1983, authorized in June 1984, and a grant agreement signed in August 1984. The SR component was increased to \$93 million and expanded country wide (19 Directorates), and three additional sub-projects were added, bringing the total authorization to \$139.5 million and setting the PACD to July 31, 1987.

Since the beginning of the project the SR sub-project has been evaluated each year to confirm its viability and an overall mid-term evaluation was carried out for the IMS Project in September 1985. The evaluations suggested that minor improvements be made to the project and a detailed study be made of the MOI's total training needs. The recommendations from the evaluations were accepted by the MOI and are being incorporated into the project, and the training study has been completed.

Physical Status

The IMS project consists of 10 sub-projects administered by six Ministry of Irrigation (MOI) Project Directors and involves two US consulting firms (10 resident staff) and one US contractor (one resident staff member). Several of the activities include association with the IBRD, FAO and UNDP. The project has activities in all nineteen irrigation directorates that cover the six million feddans of irrigated land (old lands) in Egypt. Contracts for the various project components use both Host Country and direct USAID funding and the training and procurement activities involve all of the above organizations. Attachment 1 provides a brief description and status of each of the ten sub-project activities.

In brief, the ten IMS sub-project activities provide: support to the Project Preparation Department (PPD) to establish a planning unit within MOI; support for a feasibility study of the North Zifta Irrigation Project which has now been completed; support for installing 11,000 irrigation water control structures and bridges

under Structural Replacement; development of an Operation and Maintenance model for the Gharbia Directorate; development of a Training and Manpower Development Unit within the MOI; establishment of the Nile River Irrigation Data Collection system under the Telemetry sub-project to collect data at 260 measuring points throughout the distribution system for improving the management of the water resources; assistance to initiate the Regional Irrigation Improvement Program (RIIP) in two areas of the country; assistance to the Water Research Center (WRC) to continue adapting research and provide support to the RIIP; miscellaneous commodity and equipment procurement to support the IMS project; and miscellaneous consulting services to assist MOI in a broad range of activities, both managerial and technical.

C. Financial Status

Of the authorized level of \$139.5 million, \$93 million have been obligated to date. The following table provides a breakdown of the \$93 million as of 31 March 1986.

	<u>Obligations</u>	<u>Earmarks</u>	<u>Commitments</u>	<u>Expenditures</u>
Consulting Services	23.2	14.0	13.5	4.0
Construction Costs	54.4	42.3	42.3	32.8
Commodities	10.5	7.7	4.4	1.7
Training	2.5	1.5	1.5	0.5
Miscellaneous	<u>2.4</u>	<u>0.9</u>	<u>0.9</u>	<u>0.5</u>
T O T A L	93.0	66.4	62.2	39.5
Obligation Pipeline		26.6	30.4	53.5
Difference between pipelines			3.8	23.1

The last obligation (\$20 million) was made December 31, 1985. This obligation was based on the results of a "Special Report - Compliance with Section 611 of FA 1961, as Amended" - Prepared December 5, 1985. That report reviewed the technical and economic feasibility of the project and re-certified the Section 611 requirements. Of the above the total pipeline of 26.6 will be committed by the end of FY 86 for construction contracts in late FY 86 and early FY 87 and for consultive services currently being negotiated.

The USAID contribution to the IMS project consists of approximately 30 percent foreign exchange and 70 percent local currency. As the economics and currency requirements have been based on an exchange rate of 0.83, a revised financial plan will be prepared as part of the amendment exercise to account for the prevailing exchange rates and form the basis for re-computing the economics of the project.

IV. Proposed Solution

A. Experienced to Date

In addition to the IMS project described in Section III above, USAID was involved in the Egypt Water Use and Management Project (EWUP) that was initiated in 1976 and ended in December of 1984. The EWUP project, with a \$13 million USAID input, was designed as an adaptive research project to develop appropriate irrigated agricultural packages of technical and non-technical approaches for improving production and increasing the overall social and economic well being of the small farmer farming the old alluvial lands within the Nile River Valley and the Delta. The results of the EWUP project were used during the design of the later components of the IMS project and will have an effect on the current proposed amendment.

These two AID projects (EWUP and IMS) have had a positive impact on the way the MOI conducts its business. The EWUP project resulted in the MOI developing a proposal, subsequently approved by the GOE, for the National Irrigation Improvement Program to be implemented over the next two decades. In addition, the USAID projects have resulted in changing attitudes of key irrigation officials to move away from the traditional approach of irrigation improvement which did not include inputs at the farm level or from the farmers.

themselves to an approach of involving farmers in the planning process. It also resulted in developing many improved planning, design, operation, and quality control procedures being used throughout the MOI and country. Experience to date has demonstrated that the Ministry has confidence in the expertise and assistance provided by AID and will change their technical and managerial approaches based on recommendations demonstrated to be effective.

B. Constraint to be Overcome

The major objective for the water sector is to improve efficiency of the water use. The current overall efficiency of water use below the Aswan High Dam is approximately 54 percent. A four percent increase in the overall efficiency amounts to approximately 2.4 billion cubic meters or more than the total water currently used for municipal and industrial purposes throughout the country. With the proper programs in place, it is not unrealistic to be able to improve the overall water efficiency in Egypt by two percent per year over the next 10 to 15 years. USAID has the technical, managerial and financial means to assist the MOI in developing a program to remove all major physical and managerial constraints required to increase water use efficiencies.

Major constraints in the irrigation sector fall into the categories of physical, managerial and policy. Specific constraints include policies that create dis-incentives to improved water use and agricultural production, inadequate funding to implement improvements, social factors that make acceptance of new ideas slow, inadequate staffing and incentives within the MOI, and managerial impediments.

Removal of the physical and managerial constraints within the irrigation system is not enough. To make the proposed irrigation program entirely effective with a resultant impact on agricultural production and the national economy, indications are that the current agricultural pricing and subsidy policies must be revised through the GOE and Ministry of Agriculture (MOA). The movement towards world market prices would have two major effects on the irrigation system operation: (1) provide increased incentives and financial resources to make needed improvements in the private and communal portions of the irrigation system and (2) lead the way for the MOI to establish water use charges which should result in improved on-farm water use efficiencies.

To make the proposed changes effective within the irrigation sector, management and administration constraints must be tackled. Those include the ability of the MOI to obtain and retain highly qualified individuals to plan and manage the system through appropriate salary benefit packages and per diem commensurate with actual travel costs in Egypt and the ability of the MOI to institutionalize changes. These changes will require considerable effort and time, but are feasible with an additional effort by AID and GOE.

By providing sufficient increased financial and technical support to the irrigated agriculture sector, USAID should have sufficient leverage to help induce the needed policy changes in the above mentioned areas.

C. Alternatives

Egypt currently imports approximately 50 percent of its food needs which amounts to 3.8 billion dollars per year in foreign exchange. As Egypt approaches the year 2000, based on its current population growth rate, there appears to be only two main alternatives. One would be to improve water use efficiency to save sufficient water to meet the municipal, industrial and agricultural needs of the country. This alternative is to take the combination of measures necessary to gradually increase water use and delivery efficiencies, especially in the agricultural sector.

Without improving water use efficiency and accompanying agricultural production, the GOE would have to undertake an alternative of building its industrial base sufficiently high enough to generate sufficient foreign exchange to cover the costs of importing the additional required food and fiber for the country.

V. Relationship of the Project to:

A. CDSS and Sector Strategies

The current IMS Project and the proposed components, as listed in Section VI of this report, are in conformity with the sectorial and macro economics interest, as outlined in the USAID action plan. That is, "providing provisions for basic infrastructure and services needed for Egypt's development, particularly related to industry and agriculture; improving GOE's capability to design, implement, operate and maintain

said developments; and improving GOE's capability to undertake technical research and analysis." The current IMS Project and the proposed expansion will also provide substantial resources to be utilized in private sector channels through local construction contracts for irrigation structures and canals, improvements through consultant services, and commodity procurement.

The expansion of the IMS project will move USAID into a more advantageous position for instituting needed policy reforms in irrigation. Our position has improved considerably over the last 18 months as the MOI developed confidence in the ability of USAID to respond to their needs and as demonstrated by MOI's acceptance of our numerous suggestions for improving their operation. If this position can now be strengthened by increasing our support of their Chapter III investment funding from our current level of approximately seven percent to 25 percent per year, the ability to escalate policy changes will be enhanced. In addition, when we deal with the agriculture sector as a whole and include our other agricultural projects, the ability of coming to terms with the broader policy issues with the MOA and MPIC also improves.

B. GOE Plans and Priorities:

The proposed additional support to the irrigation sector is in conformity with the GOE plans and priorities, as discussed in the "Strategies for Irrigation Development" Report and was derived from the preliminary five-year plan being developed by the GOE. In the irrigation sector this translates to improving the overall water use efficiency in the country by improving the capability to manage the river and canal system, the technical capability, and making the irrigation delivery system compatible to the needs of the individual farmers.

Over the past seven years the Chapter III funds for the MOI have ranged between LE 183 to 291 million per year (averaging LE 240 million) with a slightly increasing trend. It is also noted that although the Chapter III budgets have not increased significantly, the Chapter II budget over the same time frame increased over 100 percent due to the recognition of the need to provide improved operation and maintenance of the overall irrigation system.

C. Other Donor activities:

At the present time there are several donors that have projects and programs in the irrigation sector. Although the level of funding is quite minimal, with the exception of the World Bank, their programs provide an important complementary effort to that of the USAID's current and proposed program. Their total funding support to MOI's Chapter III requirements has been approximately four percent on an annual basis and that level of effort is expected to continue. There has been good coordination between donors regarding the support to the MOI. This coordination has resulted in a set of programs and projects that do not duplicate each other and fit into the overall long-term needs of the GOE. Regular meetings were held between the other donors and USAID during the development of the next plan period of the UNDP-WB program cycle and during the overall irrigation sector review sponsored by USAID. As a result the activities proposed in this paper and the activities of the other main donors described below are in harmony:

1. Canadian Bilateral Development Assistance Program - The Canadian Government is assisting the MOI and MOA with the implementation of the "Integrated Soil and Water Improvement Project" by providing \$1.8 million in grant funds for technical assistance and studies. This small project is on one of 12 areas that MOI has selected for the Regional Irrigation Improvement Program and complements the AID effort on three additional RIIP areas.

2. United Nations Development Program - The UNDP has provided \$3.65 million support to the MOI's Water Plan Group since 1977. The Water Plan Group (WPG) is staffed and equipped to carry out a wide range of planning and implementation activities regarding the utilization of the water resources of Egypt. This group has been working in cooperation with AID and developed the information and documentation required for USAID to financially support the Telemetry sub-project and the Sonic Flow measuring activity under the Irrigation Management Systems project. The WPG has published a wide range of water resources planning reports that analyze the current and future water resources of the country and identify some of the areas for needed support shown in Section VI of this report.

The UNDP signed an agreement with MOI on March 19, 1986 to provide \$1.65 million of technical assistance to develop feasibility reports and preliminary designs for eight of the RIIP areas. This project is an outgrowth of the USAID EWUP activity and will be coordinated with the current USAID RIIP program by having the same project director and joint project review meetings between USAID, UNDP, MOI and the consultants.

3. The Bank Group - The IBRD and IDA have supported a large drainage program in Egypt since 1970. Agreements totaling \$178 million with the completion of underground drains covering 3.1 million feddans by 1986 have been implemented. The Bank plans to continue its support for the drainage sector program and is supporting some of the pump rehabilitation activities of the MOI.
4. Other Donors - The British Government, through the General Authority for Rehabilitation Projects and Agricultural Development of the Ministry of Reclamation, is providing technical assistance for new lands development. The Japanese AID Program includes several New Lands developments at Katara, Adleya and El Hassaneya. The Governments of Italy and Taiwan are providing technical assistance for the construction of the Rosetta Barrage and the shore protection activities, respectively. Again these activities complement the overall needs of the irrigation sector.

VI. Project Components

A IMS Project Committee meeting was held on May 12, 1986 to discuss the recently completed and AID/W funded Water Management Synthesis II Project Report No. 41 entitled "Strategies for Irrigation Development in Egypt" and an initial draft of this concept paper. As a result of that meeting and discussions with MOI a plan has been developed to improve and expand the existing Irrigation Management Systems (IMS) Project (263-0132). The final shape of the Project and the precise funding levels of individual components will be developed during the design stage. During that process a comprehensive economic analysis will be carried out on each of the project components, including some of the other activities specified in the strategy paper to assure that the items selected have a high economic rating in relation to the other activities being carried out by the Ministry of Irrigation. Based on our current level of knowledge the following two sections describe the anticipated shape of the Project over the next five years.

A. Current Irrigation Management Systems Project:

The current IMS project has a PACD of July 31, 1987 and the individual components along with their status are described in Attachment I. Four of the existing projects: North Zifta Feasibility Study, Commodity Procurement, Training and Manpower Development, and Telemetry will be essentially completed by the PACD. The following six sub-projects would be continued:

1. Project Preparation Department (PPD) - The main objective of this sub-project is to fully institutionalize a unit within the MOI that can carry out feasibility studies of various irrigation projects to the standards required by international donor organizations. Although this sub-project has been successful to date, it is estimated that a time extension of 18 months will be required to ensure that the goal is fully met, and the unit can proceed without outside technical assistance. Additional funding requirements of approximately one million dollars will be derived from savings of other sub-projects.
2. Structure Replacement Sub-project (SR) - The SR program is proceeding well and has been evaluated each year to confirm its viability. In the early years there were some delays in issuing contracts at the beginning of each construction season due to delays in obligations resulting in an overall delay in the project implementation rate. It is estimated that this sub-project will need to be extended approximately one year to complete the program of installing approximately 11 thousand structures. No additional funding will be required for this sub-project and, if the currently negotiated revised exchange rate goes into effect in the near future, the resulting savings from this sub-project will be utilized to complete funding of the remaining sub-projects, as discussed in this section.
3. Regional Irrigation Improvement Sub-project (RIIP) - This project recently became fully operational providing technical assistance to the MOI for their RIIP program. Initiation of the activity was delayed due to unexpected delays obtaining AID/W approvals and consultant selection. An extension of approximately two years will be needed to meet the original objectives and to have an overlap with the proposed infrastructure support program outlined in the next section of this report. Some additional technical assistance may be required, depending on the scope of the proposed Regional Irrigation Improvement Program.

4. Water Research Center (WRC) - This sub-project was also recently initiated with the assistance of the same consultant as that to the RIIP activity. Its life will also need to be extended two years to coincide with that of RIIP. The WRC is providing adaptive research activities and advice to the Ministry on the implementation of the overall RIIP program. Some additional funding will be required for this activity contingent on finalizing WRC's long-range workplans and the savings from the SR sub-project.
5. Gharbia O&M - This activity will be staffed and equipped by the PACD. However, if successful, this activity would be expanded to extend over the remaining irrigation Directorates within the country to improve their ability to properly operate and maintain the irrigation system. The additional funding requirements of approximately nine million dollars would be derived from savings on the SR sub-project.
6. Miscellaneous Consulting services - This activity provides a contingency fund to provide short-term technical assistance (foreign and local) to assist the Ministry in examining specific issues that come up from time to time. This activity would be extended to coincide with the new PACD of the project. No additional funding is required.

B. Additional Project Components for FY 87 through FY 91

These components will require an additional authorization of funds beyond the current level of \$139.5 million. The indicative funding levels for the six proposed sub-project activities totaling \$200 million are showed in Table 1. The current Project Paper's goals and purpose do not change. The Amendment will be written showing the additional activities and their funding levels with final authorization contingent on the Mission being satisfied that the agricultural policy environment has improved to the point where this project can be fully effective. It is anticipated that the Mission will make this decision later this fall.

The additional components were selected based on an analysis to determine those elements that would have the highest impact on improving the MOI and its operation, that would require a minimum of USAID staff input, have a high level of foreign exchange requirement, and have a high rate of return. The additional components consist of three activities that provide crucial support to the overall MOI program, two that move into implementation of critical projects relating to the channel maintenance program and the management of the main system, and a sixth element which is support for the cost associated with implementing the RIIP which is rapidly becoming the core program for the MOI and its top priority item in the next Five-Year Plan. Although the first five items would be fully funded (USAID component + MOI component), the sixth item (RIIP) will be only be partially funded to initiate the infrastructure changes required to improve the irrigation system from the main barrages down to the farm gate. The RIIP and its follow-on National Irrigation Improvement Program are estimated to cost over LE 3 billion up to the year 2000. Depending on the availability of USAID funds for the irrigation sector, RIIP can be expanded to any reasonable level. The following is a brief discussion of each of the proposed additional sub-projects:

1. Main System Management - This activity would build upon the current telemetry sub-project and provide full monitoring and operation of one major canal command area. The project would consist of installing a comprehensive set of data collection platforms throughout the canal command, installation of a combination of mechanically controlled and self-regulating irrigation structures, computer software, and technical assistance. This activity would cost a total of \$14 million (78% foreign exchange). The objective of the project will be to demonstrate the effectiveness of providing full control over the main system to reduce operation losses, and make the system more responsive to the daily needs of the farmers.
2. Channel Maintenance Program (Phase I) - The Project Preparation Department (under the current IMS project) and the World Bank have developed a comprehensive proposal for improving the maintenance of earthen channels, including weed

control, with an overall investment requirement of approximately LE 490 million over the next seven years. Phase I would set the program up in one Directorate or major canal command to demonstrate its effectiveness on improving the system performance. The total AID funding would be approximately \$25 million (80% foreign exchange) to convert the existing system from the old mechanical drag line system, which is not satisfactory for the current canal regimes, to a system of weed harvesting equipment designed for the conditions in Egypt. The World Bank and AID have been working together to review the channel maintenance needs of Egypt and review the weed harvesting equipment manufactured in the United States and its adaptability to conditions here in Egypt. Once this program is established the balance of funding required will most likely be provided through the World Bank.

3. Survey Equipment and Mapping - This activity will provide approximately \$16 million (50% foreign exchange) support to the Survey Authority within the MOI. The objective of this sub-project is to upgrade the Survey Authorities' ability to provide comprehensive and accurate ground survey mapping on a timely basis required for the RIIP and other project activities being carried out by the MOI. The funding will be primarily utilized for new equipment, software and training.
4. National Irrigation Training Institute(NITI) - This sub-project will provide the initial funding required to develop and implement a training center for the MOI. This activity is an outgrowth of the current IMS Training and Manpower Development sub-project and will expand it into a national effort by providing training facilities, equipment, technical assistance, and institutional changes. The institute will have the responsibility for all training (in-country and foreign) within the Ministry. Current training activities are carried on an ad hoc basis as needed by the various technical and administrative departments. The NITI will develop training programs for all levels, carry out or oversee all training within Egypt utilizing other available training centers and university facilities, and arrange for and coordinate all overseas training.

5. Planning Studies and Model Development - This sub-project will provide approximately 7 million dollars (70% foreign exchange) to the Planning Sector of the MOI to provide technical assistance and software to continue expanding their capability to develop and make operational various models to improve the operation of the overall water delivery system. This activity will be coordinated with the UNDP effort which has been providing support in the same area.
6. Regional Irrigation Improvement Program (RIIP) - A tentative figure of \$120 million (25% foreign exchange) has been provided to initiate the infrastructure required in the overall RIIP for which technical assistance is already being provided through the current IMS project and through a UNDP project. The funding will be utilized for structural improvements such as water control structures, monitoring structures, canal lining, canal crossings, canal excavation and/or realignment, demonstration land leveling, a farmer organizational effort, and training. This item is of the highest priority within the MOI and will form the basis for all future irrigation improvements over the coming two decades. A basic thrust is to remodel the system to make it responsive to the needs of the farmers to assure that water is available in the quantities required to support increased production. This activity will also provide some funding for the MOA and be fully coordinated with their extension program.

VII. Financial Requirements

Table 1 provides a breakdown of the additional funding requirements for the project. The funding requirements have been estimated at 1984 prices. It was assumed that AID's overall share would be approximately 75 percent of the total MOI Chapter III investment costs for each activity, including 100 percent of the foreign exchange needs.

The IMS project has been supporting approximately seven percent of the MOI's annual Chapter III budget. This proposed project will increase that level to \$50 million per year or approximately 25 percent of their annual Chapter III budget.

The additional components will be implemented during FY 87 (last year of the current project) and extend through FY 91. As such, the current PACD will be extended to a total of four years.

Table 1

Irrigation Management Systems
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ADDITIONAL COMPONENTS
(USAID funding levels through FY91 in \$million)

	<u>FE</u>	<u>LC</u>	<u>Total</u>
1. Main System Management (Phase II Telemetry)	\$11	\$ 3	\$14
2. Channel Maintenance Program (Phase I)	20	5	25
3. Survey Equipment - Mapping	8	8	16
4. National Irrigation Training	15	3	18
5. Planning Studies & Models	<u>5</u>	<u>2</u>	<u>7</u>
Sub Total	59	21	80
6. Regional Irrigation Improvement Program	30	90	120
T O T A L S	<u>89</u>	<u>111</u>	<u>200</u>

1/ LE 1.35 to \$1.00

Irrigation Management Systems Project
Physical Status of the ten Sub-Project Activities

1. Project Preparation Department (PPD)

The objective of this sub-project was to establish, within the MOI, an experienced unit capable of formulating natural resources development project plans and carrying out economic analysis to a level acceptable to the international funding community.

The Department has been established, staffed, and has completed project plans in five areas. These include: analysis of the feasibility of a drainage program in over one million feddans; evaluation of 50 existing large pumping plants with a plan for renovation and replacement; development of channel maintenance procedures and equipment requirements; and the carrying out of a shore protection feasibility study. Work is underway on a program to develop and update shadow prices to be used in feasibility reports, development of plans to reduce operation losses when the irrigation canals are closed in the winter for annual maintenance, and carry out a full economical evaluation of Esna Barrage.

Technical assistance is being provided in the areas where additional effort is needed; these include: the area of professional growth and training to assure the sound development, understanding and implementation of planning principles, operating procedures, and policies.

A team of specialists from Harza Engineering Company are assisting the MOI through a Host Country Contract. The IBRD is funding two of Harza's long-term economic specialists.

2. North Zifta Redesign Feasibility Study

The objective of this sub-project was to prepare a feasibility study for the redesign of the North Zifta Irrigation District, covering 40,000 feddans. It was intended that the methodology used to develop the plan could be eventually replicable in other Irrigation Districts in Egypt.

This activity has been successfully completed, the report was distributed in March 1986, and the report will be reviewed by USAID in April.

3. Structure Replacement (SR)

The objective of this sub-project is to upgrade the planning, design and construction procedures within the MOI. A secondary, but equally important, objective is to replace 11,000 thousand nonfunctional irrigation water control structures and bridges associated with the irrigation delivery system.

The first phase replaced approximately 3000 structures in five Delta Directorates. The second phase, currently underway, consists of replacing 8000 structures over a three-year period in the remaining 15 Directorates located in the Nile Delta and Valley.

In December 1984, an in-depth evaluation was carried out on Phase I of the SR sub-project. The recommendations of the evaluation team included: Intensifying monitoring, upgrading specifications, and additional training. These recommendations, mutually approved by MOI and USAID, have been incorporated into the second phase of the project. This activity will require an extension beyond the current PACD but can be completed within the current budget.

One American and one Egyptian engineer from Harza Engineering Company are assisting the Project Director with the training and quality control on this sub-project. Contracting for the construction of the individual structures is being carried out between MOI and local private contractors.

4. Operation and Maintenance For Gharbia Directorate

The objective of this sub-project is to plan and implement a preventative maintenance system for the public canal and drainage system in the Gharbia Directorate. This includes developing maintenance procedures; establishing and equipping the Directorate, Inspectorates, and District level workshops; defining the institutional structure and staffing requirements; and establishing adequate O&M budgets for this Directorate.

An Operation and Maintenance plan acceptable to USAID has recently been developed by the Project Director. The MOI is currently reviewing the plan and, once it is approved, will establish the budgets for implementation. Based on a satisfactory outcome of this project, the O&M planning procedures could be replicated in the other Directorates.

5. Training and Manpower Development

The objective of this sub-project was to establish, within the MOI, a unit capable of fostering professional development and providing the ongoing training necessary to maintain a capable professional staff for implementing the IMS project.

The initial unit has been established and is administering an on-going training program. Over 200-person months of training have been completed in the United States and over 1000 persons have received training in Egypt. The training in Egypt has focused on practical short-term courses of two to eight weeks for technicians and professionals with subject matters ranging from management to concrete design.

MOI and USAID are considering, based on the success being demonstrated by the TMD, establishment of a national training institute. A report was recently finalized that recommended this unit be expanded into a national irrigation training institute to provide the total training needs of the MOI.

6. Telemetry System

The objective of this sub-project, also known as the Nile River Irrigation Data Collection System, is to collect data critical to the operation of the distribution system and transmit it to central locations at Cairo and Aswan. The project will provide approximately 260 measuring devices and automatic data processing necessary for analysis and display of data for decision makers.

An agreement was reached on July 10, 1985 between MOI and the RET Corporation (a small business firm headquartered in Springfield, Virginia) to supply and install the necessary equipment, develop the software, train MOI staff, and make the system operational by July 9, 1987. RET has established its office in Cairo, has completed site surveys of the 260 locations, and has received some of the initial hardware orders.

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The telemetry system is being implemented through the Water Planning Group originally established with assistance from the UNDP. The UNDP has an IBRD employee detailed from the U.S. Bureau of Reclamation who assists with implementation of this USAID funded component. The IMS project is providing short-term assistance through a PASA from the U.S. Bureau of Reclamation. In addition, the Danish Government is providing a computer specialist for two years to work with the telemetry system team.

7. Regional Irrigation Improvement Program (RIIP)

The objective of this sub-project is to establish and field test a pilot organization for providing technical assistance, construction assistance, economic analysis, on farm development, and user involvement utilizing the results of the recently completed Egypt Water Use and Management Project.

The activity includes upgrading and integrating irrigation with the non water inputs of agricultural production. The RIIP organization, once tested and accepted, will be the basis for MOI to implement a national improvement program throughout the country.

On May 13, 1985 a USAID direct contract was signed with the Consortium for International Development (CID), with Colorado State University as the lead University, to serve this sub-project and the Water Research Center sub-project. The resident team arrived in Egypt in September 1985.

This activity is being closely coordinated with the UNDP who will be providing technical assistance for eight additional RIIP areas in the near future.

8. Water Research Center (WRC)

The objective of this sub-project is to provide technical and commodity support to the MOI for its water management research activities. The project will support adaptive research for those elements of the recently completed Egyptian Water Use and Management Project that showed promise for further development of appropriate technologies to improve the water use efficiencies and agricultural production in Egypt.

The CID team is also supporting this activity and detailed work plans, including training and procurement, are being developed to cover the next two years.

9 Commodity and Equipment Procurement

This sub-project was provided to procure commodities and equipment not directly related to technical components of the project.

Procurements are underway or completed for water control gates, radio systems, and reference materials. Procurements are planned for workshop equipment, additional reference materials, office equipment, flow measuring equipment, and other miscellaneous items.

10. Consultant Services

This component provides miscellaneous short term consultant services to the MOI for a broad range of activities both managerial and technical.

Consultant services have recently been provided to review of the stability of the Nile River barrages and to assess the overall MOI training needs. Other forms of consultant services will be provided as needed.

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AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20503

JUN 27 1986

MEMORANDUM

DATE : June 25, 1986

TO : See Distribution

FROM : ANE/TR/ARD, Gary W. Bittner ^{sub}

SUBJECT: Project Review Committee (PRC) Meeting for the Concept Paper to Amend Egypt's Irrigation Management Systems Project

Please plan to attend subject PRC meeting at 10:00 a.m. in Room 4440A on July 10, 1986. The Egypt Mission intends to amend the Irrigation Management Systems Project and would like our input on the attached concept paper. For your information, I have also attached a document titled Strategies For Irrigation Development in Egypt. This document provides some of the justifications for subject concept paper.

Attachments: a/s

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