

QUARTERLY REPORT

January 1, 1982 to March 31, 1982

EGYPT WATER USE AND MANAGEMENT PROJECT

Submitted By

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Cairo, Egypt**

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**Contract No.
AID/NE-C-1351 (Egypt)
Project No. 263-017**

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I. PROJECT STATUS IN EGYPT

INTRODUCTION

A joint meeting of the Egyptian based Advisory Committee and the Colorado State University based Policy and Coordinating Committee met in Cairo in January. The meeting was opened by His Excellency Samaha, Minister of Irrigation. The first day of the meeting was devoted to a general discussion of Project progress and plans for the future. A procedure for publishing and distributing Project papers was presented and approved. The Joint Committee then traveled to the field spending one day at each of the three field sites. A final rap-up session was conducted. His Excellency Samaha explained the program of the Ministry of Irrigation for improving agricultural production in Egypt. Dr. Donald Brown, AID Mission Director, summarized AID's program in Egypt. This was followed by a summary of recommendations by Ministry of Irrigation Committees regarding on-farm water management research. A draft copy of the proceedings of the meeting is awaiting approval by the Minister of Irrigation before being released.

Emphasis was given, during the past quarter, to revising the work plans of task groups and field teams. Considering that the contract with USAID ends June 30, 1983, followed by one year for phase out, it is important to conclude analyses and reporting of all Project results to date. There is a tendency for research workers to want additional data before making generalizations and recommendations. However, it is believed to be the role of Project management to provide decision-makers and policy-makers with results even though they may be tentative. With this in mind, each task group was requested to submit

revised work plans to June 30, 1983. Where appropriate, field teams were also requested to modify work plans. These reports are due in the Directors' offices on April 8. They will be carefully reviewed by the Project Directors. After appropriate interaction with staff members, action will be taken to support the approved plans.

A problem identification report was completed for the El Minya site. Dr. Royal Brooks, former Technical Director, spent one-month in Egypt analyzing data and writing the report. This report is being prepared as a Project Technical Report and will be available next quarter.

The construction of the Hammami pipeline has fallen behind schedule due to delays in procuring materials and appropriate construction equipment. The contracting firm has agreed to provide a specific work schedule and time frame on April 25. It is now estimated that completion of the construction will be in September, 1982. Project Directors and officials from the construction company have agreed to meet once each week to evaluate progress until the construction is completed.

Farmer organization work is continuing at Mesqa 10 for improved management of the raised mesqa. Mesqa 10 is at the end of Beni Magdul Branch Canal. Beni Magdoul Branch Canal is designed for 24-hours per day irrigation. It has a capacity to deliver one-half litre per second per feddan. Mesqa 10 is designed to operate 12-hours per day and has capacity to carry one liter per second per feddan. Since the farmers prefer to irrigate during day-light hours, there is a tendency for the branch canal to carry insufficient water during those hours. The farmers at Mesqa 10 also desire to operate the pump during the day-light hours and often find that there is too little water in the Beni Magdoul Canal forcing them to suspend pumping operations. Resolution

of this problem during the summer growing season will be attempted by

- (a) keeping the Beni Magdul Branch Canal clear of sediment and debris,
- (b) installation of gates and scheduling on all upstream mesqas, (c) scheduling water among farmers along Mesqa 10 and (d) encouraging night irrigation.

The Kafr El Sheikh team continues to be strongly oriented to developing farmer organizations and improving irrigation efficiency through redesigning the on-farm irrigation system to be consistent with infiltration rates, available flow rates, and design depth of water applied. The results of this work are extremely encouraging. Drains and canals have been cleaned through cooperative efforts of local farmers which strongly supports the role of farmer organizations in Egypt's irrigated agriculture. Improved farm irrigation design and land leveling has resulted in increased yields per feddan and higher irrigation efficiency. Ken Litwiller arrived in Kafr El Sheikh late in March and will be replacing Tom Ley who will be returning to the United States early in May.

The Minya team has continued to emphasize mesqa renovation. This work is proving to be much more difficult than originally anticipated. There is a very short period of time between summer and winter crops and during the canal closure period in January for doing mesqa renovation. The machines available for this work are not entirely satisfactory and may need modification. Soil for mesqa renovation cannot easily be transported because of lack of roads. The alternative of taking the soil from the fields requires long-range planning and coordination with farmers. Through newspaper advertisements, tenders have been requested for modifying Abyuha Canal. It is anticipated that contracts will be made in April and construction will begin early in May. The Minya team has developed a complete plan for mesqa renovation. Emphasis will be given to Mesqas 5, 7, 9, 11 and 13. Farmers seem to

be enthusiastic about gaining access roads by eliminating alternate mesqas, land leveling and establishing long-runs.

Plans are under way to hold a conference, probably in May 1983, to summarize and report the generalizations and recommendations which can be drawn from the Project's work. The Project staff is being encouraged to emphasize analysis of existing data and experience. In addition, TDY requests during the next year will emphasize analysis and report writing.

Project personnel met with a number of visitors during the past quarter. President Reagan's agricultural team responsible for developing a report on Strategy for Agricultural Development visited the Project. The role of water management in agricultural development was emphasized. Dr. Jim Oxley, Administrative Assistant for International Agricultural Programs, Colorado State University, visited Project sites and met with a number of Project personnel. Dr. Dillard Gates, Director of International Programs at Oregon State University, visited Project sites and discussed potential cooperation between EWUP and the Yemem Agricultural Systems Project. Several potential contractors for the Irrigation Management Systems Project visited the Directors and staff personnel.

Task Group 7 - Soil Fertility, has been terminated. All the work of this task group has been completed. Task Group 9 - Pest and Disease Control, has likewise been terminated. The final report of this task group is with the Technical Editor and should be available during the next quarter.

A detailed report of pilot programs and task groups follows.

MANSOURIA

The pilot programs of Mansouria include the elevation of Mesqa 10, forming a lined concrete structure and construction of a buried pipeline replacing the El Hammami pipeline. The objectives of these structures are basically to:

1. Deliver proper quantities of water to all farmers served by the system.
2. Reduce the conveyance losses which now occur.
3. Deliver water to farmers with sufficient head to allow for faster irrigations by gravity.
4. Eliminate the need for lifting water.

I. Accomplishments and Future Plans for the El Hammami Pipeline Pilot Program are as follows:

- A. Although construction has been slow, the following number of pipes have been laid:

<u>Location</u>	<u>Pipeline No.</u>	<u>No. of Pipes</u>	<u>Diameter in cm</u>	<u>Pipe Length m</u>
El Remal Drain	2	229	60	4/5
El Shimi Br.	2	168	60	4/5
El Hammami Canal	1	27	50	5

Construction now is going on several pump stands. Those are numbers III, IV, and V on the attached map. Problems have occurred in water delivery to farmers during construction. This has had deleterious effects on EWUP-farmers relationships. Several meetings were held with the contractor to push the work on and to resolve problems.

- B. On-farm water management data are being collected on several sites. This will continue in the next quarter.
- C. The farm record data are being maintained on many sites in the area and will continue. Several new crop enterprise cost studies have been completed with others following the next quarter.
- D. Selected water budget data are being collected. This will continue. Water quality data are also being collected for T.G. #10.
- E. A conveyance loss test on El Hammami Canal was conducted 10 days after annual closure with a lower-than-normal water table. Additional tests will be carried out at a later date when the water table is in its normal condition.
- F. The survey determining the land area and farmers served by the present saqias and pumps in the area is completed. New maps showing these data will be developed during the month of April.
- G. A crop survey for both Beni Magdul and El Hammami winter crops, 1981-1982, was completed.
- H. Preparation in terms of data collection are being made to help in a water management plan for the entire pipeline system. These data include some of the above-mentioned items.

HAMAML AREA

1:5000

Rimal dr

Pipeline 2

Kate Hakim dr

Farm 4

Farm 3

Gamous dr

Farm 1

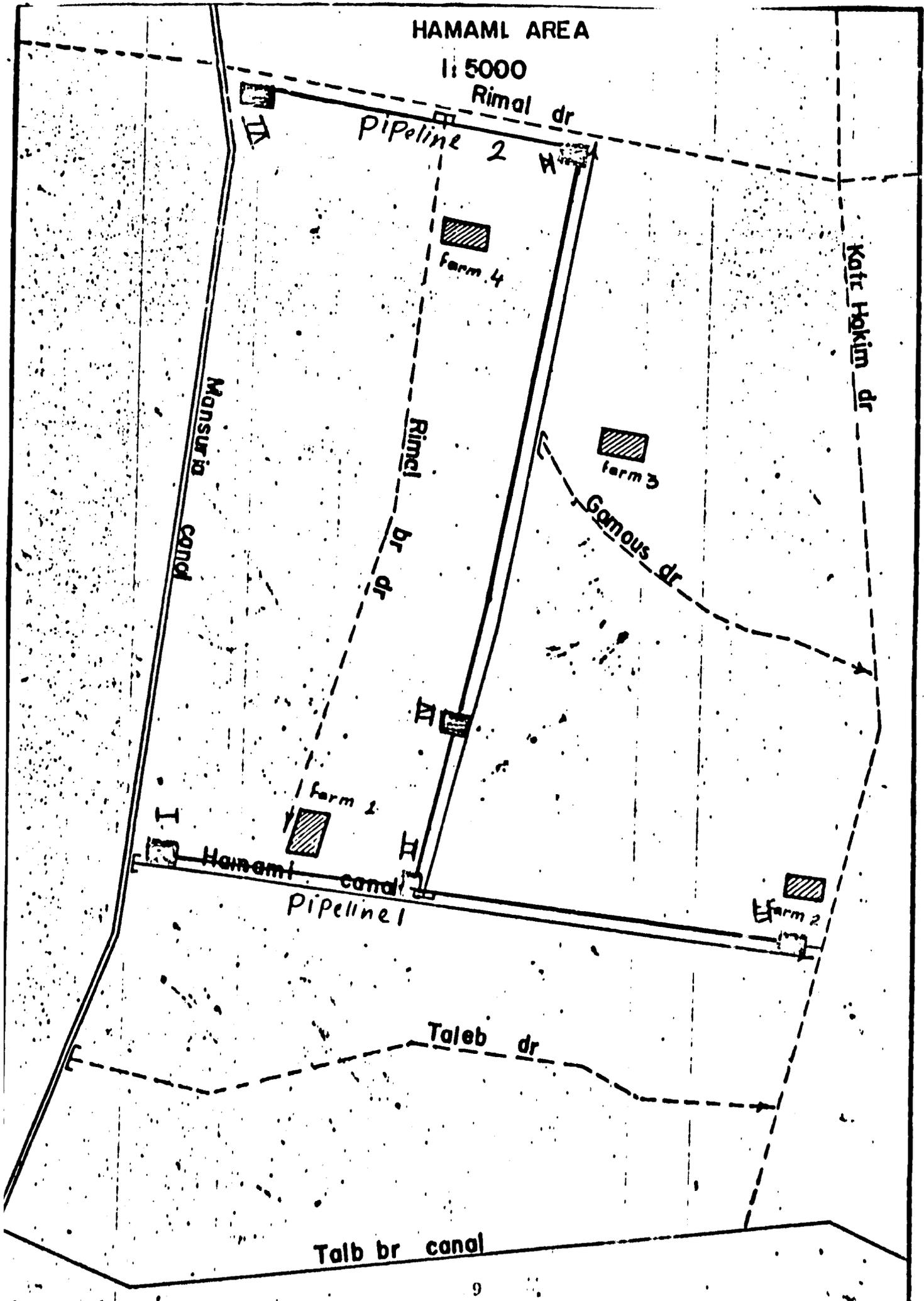
Hamaml canal

Pipeline 1

Farm 2

Taleb dr

Talb br canal



II. Accomplishments and Future Plans for Beni Magdul, Mesqa 10, Pilot

Programs are as follows:

- A. A larger discharge pump has been obtained and some of the leaking gates have been repaired. Other gates will be repaired in the next quarter.
- B. OFWM data continues to be collected.
- C. The survey documenting of the farmers' previous irrigation schedule is nearly complete and, hopefully, will be reported with other baseline data from Mesqa 10 soon.
- D. Problems have occurred in obtaining sufficient water in Beni Magdul Canal in order to operate the Mesqa 10 pump. The main reason for this problem is the lack of cleaning the Beni Magdul Canal and the need of an irrigation schedule for the different mesqas. The canal cleaning started late in March. As a result of insufficient water to operate the pump, farmers still use the old mesqa. This factor has slowed down the progress of the functioning of the Farmers Water Users Association which will promote an equitable irrigation schedule. Preliminary studies of the water shortage problem indicate that scheduling of all mesqa openings along the entire Beni Magdul Canal, including Mesqa 10, will be required to insure enough water for operating the new mesqa properly and on a dependable basis. In order to develop a system of irrigation scheduling along the entire Beni Magdul Canal, much time will be required, especially by the sociologists, to develop appropriate farmer organizations. This work will be pushed as rapidly as possible in the following months.

III. Special Studies

- A. The water budget is being continued in the Beni Magdul area.
Full details are reported by the water budget task group.
- B. The cropping sequence studies are continuing in both areas.
- C. OFWM reports on berseem, corn and wheat will be coming soon.

IV. Training Status

Nine of eleven professional staff members are enrolled in higher studies of various Cairo universities. They devote two days per week to these studies.

ADMINISTRATIVE
MANSOURIA FIELD STAFF

PROFESSIONAL

Dr. Mona El Kady	Team Leader	Bill Braunworth	Assistant Team Leader
Eng. Eldon Hanson	(one-half time)	Moheb Semaika (one-third time)	Agronomist
Wadie Fahim	Engineer	El Shinnawy A. Atty	Economist
Mohamed Naguib	Sociology	Ahmed Tahoon	Agronomist
Sabah Mahmoud	Agronomist	Farouk Abdel Al	Sociologist
Gamal Fawzy	Economist	Mahmoud Khedr	Agronomist
Tarik Abdel Rahman	Agronomist	Tarif Zeiton	Engineer

NON-PROFESSIONAL

Badry Mahmoud	S. Tech.	Hamdy El Said	S. Tech.
Ibrahim Husein	S. Tech.	Gamal Ahmed	S. Tech.
Rokaya Abdel Mowla	Secretary	Ibrahim Abdou	S. Tech.
El Said Kamal	S. Tech.	Ibrahim Zakaria	S. Tech.
Moustafa Mahmoud	S. Tech.	Said Rezk	S. Tech.
Mohamed Abdel Hamid	S. Tech.	Badalaa Abdel Moneim	S. Tech.
El Said Hamed	S. Tech.	Ibrahim Abdel Fattah	S. Tech.
Mohamed Farrag	S. Tech.	Mohamed El Dash	S. Tech.
Mohamed Shaaban	J. Tech.	Ismail El Shimi	J. Tech.
Abdel Rahman Eid	J. Tech.	Abdel Rehim Mohamed	J. Tech.
Shawky El Awad	J. Tech. Lab.	Abdel Maaboud Ibrahim	J. Tech.
Selim El Tantawy	J. Tech.	Farahat El Ashkar	J. Tech. Lab.

Fathy Abouel Nasr	J. Tech. Lab.	Hamed Aly Tahoon	J. Tech. Lab.
Ahmed Ragab	J. Tech. Lab.	El Shimi Ismail	J. Tech. Lab.

DRIVERS

Yehya Abdel Sallam

El Said Elwy

Rashad Abou Bakr

Abdel Mohsen Abdel Halim

Salah Sadek

Nagy Hassan

KAFR EL SHEIKH

I. Summary of Progress

During the first quarter of 1982, work at Kafr El Sheikh site was focused on these activities:

- A. Detailed data analysis and formulation of a comprehensive summary report on the 1981 summer season on-farm pilot program.
- B. Continuation of the 1981-82 winter season on-farm pilot program.
- C. Farmer organization for mesqa cleaning and other activities during the winter closure period.
- D. Planning and implementation of 1982 summer season on-farm pilot program (cotton crop).
- E. Special activities and studies.

These are discussed in more detail below:

- A. A comprehensive summary report of the 1981 summer season on-farm pilot program was completed and submitted to the EWUP main office for preparation and distribution as an EWUP draft working paper at the end of the quarter. Generally, the results of the program were very good. Mean cotton fiber yield on pilot farms was 16% greater than that measured on non-pilot farms. An average depth of 76 cm was applied with an average water application efficiency of 76% on the cotton pilot farms. Mean rice grain and straw yield were 27% and 28% greater, respectively, on pilot farms than those measured on non-pilot farms. Average total application to rice on the pilot farms was 179 cm. Mean corn grain yield was 52% greater on pilot farms than that measured on non-pilot farms. An average depth of 84 cm was applied with a mean water application

efficiency of 74% to corn pilot farms. Economic analyses indicate significant improvements in the mean net farm income for each of the main summer crops: cotton, rice and maize on the pilot farms. Two sociological surveys to determine farmer opinion and reaction to the program indicated general satisfaction. Farmers perceived greater control of irrigation water; savings in water, time and labor during irrigation and improvement to their farm as direct benefits of the program. Detailed analyses supporting these results are available in the K.S. office.

- B. The winter season (1981-82) on-farm pilot work progressed on schedule and according to work plans. Routine measurements and routine contacts are made to evaluate the work being done. These include irrigation measurements, daily water table measurements and monitoring of crop growth and farm management on four farms in the Hammad and Manshia pilot areas. Water measurements are made on sites not associated with the pilot work for economic analysis. All of the previous farm sites which have received attention from the team in terms of advice to farmers and monitoring the stability of changes introduced in the K.S. pilot program.
- C. Farmers were once again organized on Hammad, Manshia, and Om'Sen Mesqas to do cleaning and maintenance of those meskas through their own efforts. The program was very successful in terms of farmer participation. Surveys of before and after-cleaning mesqa cross sections were made to evaluate farmer ability to change the cross section by hand maintenance (i.e., return the cross section to the design section). The K.S. team also arranged with K.S.

Irrigation Dept. for mechanical cleaning of Gadalla Dr., Om'Sen Dr., Manshia Dr. and the first 500 m of Hammad Mesqa. This work was completed with K.S. team members assisting in the supervision of the job.

- D. Farms to be planted to cotton were selected for the 1982 summer season on-farm pilot program. In Manshia, the only cotton farms this season were inaccessible to K.S. farm machinery. Two new farms just outside the Manshia pilot area were chosen. They irrigate by 2 saqias from Dakalt Canal. The total area is about 5 feddans. This area was land leveled to dead level. Long furrows (beds) with lengths between 65 m and 110 m were constructed. The cotton will be planted by the dry method on these farms early in the second quarter of 1982. In Hammad area, 2 saqia units were chosen. One is a new one near the head of Hammad and is about 3.7 fed. The other sakia unit has been involved in EWUP on-farm pilot work before (rice and corn, 1981 summer season). The total area is about 6 feddans. Both sites were land leveled to dead level. Long furrows (beds) of lengths between 100 m and 120 m will be constructed. The farmer will plant the cotton by the dry method. A significant length of plastic sheeting (approximately 1.8 m wide) was again donated to EWUP/K.S. by the Medical Containers Manufacturing Co. of Cairo. This company seemed to be impressed with photos and data on the use of the sheeting by the K.S. team to reduce on-farm conveyance

losses in K.S. For the cotton farms and other (rice, corn) farms of the 1982 summer season program, the K.S. team will again design and construct new marwas and line them with this plastic. This can have a significant effect on improving on-farm water management.

E. Special activities and studies

- K.S. Water Budget activities are proceeding well with routine data collection on schedule. Much was done during the winter closure period to maintain the equipment and recorders used for water budget measurements. Recently, 7 deep core samples around the perimeter (and interior) of the water budget area have been completed. They show the same general soil profile characteristics: a saturated sand or sandy clay between 3.5 and 5.0 m which is overlain by a 0.5 m-thick heavy black clay which is very tight and structureless, which is overlain by a heavy, dark brown clay to the surface. K.S. Water Budget personnel are assisting as much as possible with the formulation of the 1981 Om'Sen Water Budget; a preliminary report is due during the 2nd quarter of 1982.
- Delivery System Study: The designs of the mesqa inlet headworks and a preliminary budget of costs were completed and submitted to the main office. The questionnaire to determine farmer opinion on this proposal was delayed slightly, but were begun by the end of this quarter. Results of the survey are expected by the end of the 2nd quarter of 1982.
- A day-long seminar prepared by the K.S. team on their experiences with land leveling was conducted on February 22, 1982 for extension trainees of the Ag. Mechanization Project.

A slide show illustrating the development process used by the K.S. team in its On-Farm Pilot Program was prepared. This set of slides will be further developed for project use.

- A study of a special system employed on 2 large farms in Abo Raia was initiated. These farms pump water from Dakalt Canal into elevated marwas for distribution to the farm areas (about 30 fed. each). The farmers at each site constructed the systems themselves and organized the operation of the system. The K.S. team is studying these systems and will prepare a summary report concerning the history and operation of the systems and the possible implications for future EWUP work in Abo Raia.
- Reports prepared by the K.S. team during the 1st quarter, 1982 (submitted for distribution as EWUP draft working papers):
 1. Report of Summer Season 1981 On-Farm Pilot Program.
 2. Results of Auger Hole Tests to Determine Hydraulic Conductivity.
 3. On-Farm Conveyance Losses on Abo Raia Farms, Karf El Sheikh. This report describes the significant problem of high losses measured in K.S. farm conveyance systems (Marwas) in terms of seepage, steady state and transient losses. It is a preliminary report. A detailed technical report is expected later.

II. Work Plans for the Next Two Quarters

- A. Routine work will continue for the 1981-82 winter season on-farm pilot program. Crop yields will be measured at season's end. Data will be analyzed and a summary report prepared and completed in the

3rd quarter of 1982.

- B. The 1982 summer season on-farm pilot work will be fully implemented for the cotton farms and routine measurements started. Sites for rice and maize will be selected and the program fully implemented on those sites.
- C. Routine data collection will continue for the water budget. A preliminary report on the 1981 Om'Sen water budget is expected.
- D. The farmer survey for the delivery system study will continue and a summary of the results is expected by the 3rd quarter of 1982.

III. Personnel Activities

A. EMUP KAFR EL SHEIKH PERSONNEL (as of March 31 1982)

Kamal Ezz El Din (Eng.)	Team Leader
Thomas W. Ley (Eng.)	Assistant Team Leader

(Professional Staff)

1. Eng. Abdel Fattah Metawie (Water Budget)
2. Eng. Safaa Fahmy
3. Agr. Magdy Mohamed Awad⁻
4. Soc. Ahmed El Said El Attar (Hammad Group)
5. Eco. Magdy Badawi²
6. Agr. Ahmed Ismail³

1 - Farm Machinery

2 - Vehicles

3 - On training leave

1. Eng. Saad Hussein Zaki
2. Agr. Mahmoud Mohamed Said
3. Agr. Mohamed Ibrahim Meleha (El Manshia Group)
4. Eco. Sobhi Ahmed Elewa
5. Soc. Sohair Kamal Yousef
6. Eng. Amany El Kayal³
7. Eco. Mohamed Ragy Darwish³

(Technicians)

1. Mohamed Ahmed Badr
 2. Mohamed Omer Abdel Megeed
 3. Kamal Mohamed Abo Omer
 4. Helal Mohamed Hussein (Hammad)
 5. Abdel Aziz Osman El Yamany
 6. El Said Abdel Salam El Barbari
-
1. Moheb Abdel Samad El Sawey
 2. El Said Abdel Haiy Abdel Hamid
 3. Ahmed Abdel Hamid Ali
 4. Alaa Fatoh Ibrahim
 5. Fikry Abdel Halim Zaid
-
1. Ramadan Gazal
 2. Abdel Hamid Atia (W.B.)

(Laborers)

1. Ibrahim Said Ahmed (Hammad)
2. Saber Ahmed Ismail (W.B.)
3. Abdel Raouf Mazal (Manshia)

(Lab.)

1. Atef Hamed Said Ahmed (Technician)
2. Mohamed Mostafa Omer (Laborer)

(K.S. Office)

1. Mohamed Abo Omer (Administrative Assistant)
2. Nadia Mahmoud Arafa (Secretary)
3. Ahmed Mostafa Baraka (Laborer)

(Equipment and Cars)

1. Abdel Hamid Said (Technician)
2. Asel Ahmed Abdel Aziz (Driver)
3. Ibrahim Soltan (Driver)
4. Mohsen Abdel Razek Saad (Driver)
5. Atia Mostafa Abdo (Driver of Tractor)

(Training Center)

1. Osman Abdel Rasool (Laborer)
2. El Said Ahmed El Felawi (Guard)
3. Mohamed Mahmoud El Mashaly (Guard)

(K.S. Office Store)

1. Mostafa Bassuini El Gamal (Guard)

(Field Office Store)

1. Ibrahim Ibrahim El Tanahy (Guard)

B. Training Status

1. Engineer Amany El Kayal is continuing a Master's degree program at Utah State University under the Peace Fellowship program.
2. Agronomist Ahmed Ismail is continuing long-term academic training at Colorado State University.
3. Economist Ragy Darwish returned to Bari, Institute of Bari, Italy to complete a Master's degree (December 1981).

C. Changes

1. Mr. Tom Loy will return to the U.S. and Mr. Ken Litwiller will replace him as Asst. Team Leader during the 2nd quarter, 1982.
2. Eng. Safaa Fahmy joined the team in February 1982.
Eng. Metawie was appointed full time to the water budget at that time.

Attached to this K.S. quarterly report is a memo to the Directors concerning the stability of K.S. work on farms in Abo Raia. The study was made by Dr. Tinsley and Eng. Metawie (see appendix).

It should be noted that long basins (or actually basins of all shapes and sizes) have been used by farmers for all the basin crops. The K.S. team efforts have been directed at teaching farmers to "re-size" these large basins to be more in accordance with available flow rate and soil infiltration characteristics. Farmers should achieve better results

if their basins are divided into strips of a width to fit the design conditions. For the row crops, EWUP/K.S. efforts have been based on changing the short basins with furrows to long (dead-level) furrows.

The fact that the "new" systems in K.S. do not suffer from excess recession times after irrigation is not so much due to "better infiltration rates" as to the irrigation design work being done which is based on a volume balance to determine how much to apply and how to apply it (over what length of run, width of strip, etc. given the infiltration rate, available flow rate and design depth). For example, the width of strips, the length of run and flow rates are adjusted to meet given design depths and infiltration rates.

EL MINYA

A. Abueha Canal:

1. We held meetings with the two directors and discussed the design of Abueha Canal, new alignment, especially in the five bends and the crooked reaches.
2. We decided the locations of pitching, determined the vent pipe sizes for all the mesqas along the canal, iron gates, and the construction needed for every vent.
3. We prepared the contract and the estimated cost of the modification construction work on Abueha Canal.
4. We expect that the construction work will start at the beginning of May 1982 and finish before the end of October 1982.
5. The Minya General Director of Irrigation gave his order for fabricating an iron gate for Abueha Canal inlet instead of the wooden blocks.

B. Mesqa 26:

1. The cleaning and maintenance of mesqa 26 during the past winter closure was performed by the farmers themselves.
2. The routine for scheduling irrigation and cleaning and maintenance have become routinized in the farmers' schedule and organized by the mesqa leadership.
3. The responsibility of the Project is only for working the pumping machine.

C. Mesqa 7:

1. We held a meeting with the farmers on mesqa 7 to cooperate with the Project to complete the construction of the banks of the lower part of the mesqa.
2. Transferring the soil for constructing the banks was too expensive. So we concentrated our work on plowing the actual banks and about two meters in the adjacent land which were not cultivated. We collected the soil by the scraper and by hand to construct the banks.
3. We determined the center line as an extension of the upper part of the mesqa and also determined the bank level.
4. By the effort of the Soc. discipline and Minya team, the farmers excavated the mesqa according to the designed cross section, the boundary and the center line.
5. The result of improving the mesqa was:
 - a. Increase the discharge to 65-85 liters/sec.
 - b. Raise the head of water along the mesqa.
 - c. Use of a canvas dam instead of a mud dam.
 - d. Decrease the time of irrigation.
6. We made a control at the inlet of the mesqa to be closed at night and after irrigation by installing a temporary gate until we install the permanent gate.

D. Eliminating Mesqa 9:

1. We started to complete the land leveling to the land which actually irrigates from mesqa 9 to irrigate in the future from mesqa 7 and mesqa 11 such that we complete all the area during harvesting time of winter crop 1982.

2. We arranged with the farmers on the mesqa to plow their lands by the Project tractors after harvesting. In return, they agreed to transfer soil by themselves to fill the mesqa and construct the road from Abueha Canal to the belt.

E. Mesqa 11:

1. We prepared a plan for improving the mesqa and raising the banks at the beginning of harvesting of that winter crop in 1982.
2. Leadership survey on the mesqa has been completed.

F. Special Activities:

1. We started to prepare a work plan for improving some mesqas before June 1983 and complete all the mesqas in a long run plan.
2. We started to survey the leadership of all the mesqas to be completed before the construction of Abueha Canal. We will install a gate at the inlet of every mesqa to control the water in the mesqas.
3. We continue to do our routine work:
 - a. Taking water samples for (wells, canal, drain) every month.
 - b. Water budget.
 - c. Recording observation wells.
 - d. Measuring the water applied to the selected farms.
 - e. Taking soil samples before and after irrigation.
 - f. Land leveling over the area where mesqas are being improved.
 - g. Spray zinc sulphate on selected farms and different crops.

G. Plans for Next Quarter:

1. Complete the construction of Abueha Canal according to the new design.
2. Eliminate mesqa 9 and construct a road.
3. Improving mesqa 11 by constructing the banks.
4. Complete most of survey of the leadership on all the mesqas.

H. Names and Contributions of Professional Staff During Past Quarter:

1. Minya Field Staff:

Abdel Raouf Ahmed Abdel Nahim Tim Gates (half-time)	Water budget, water management, field trials, Abueha alignment and design, survey for land leveling.
Mohamed Awad Salah Saleh	Agronomy practices, soil samples, spraying zinc sulphate for wheat and broad bean, spray insecticides for potatoes.
Abdalla Saber	Organization of the farmers on all the mesqas and choosing the leadership before Abueha construction.
Nabil Farrag	Farm records, farm plans, economic evaluation.
Dr. Erwin Nielsen	Shares in Abueha alignment and design, land leveling.

2. Main Office Discipline Leaders and TDY Assistance:

Eng. Abdel Hamid Eng. Ahmed Maher Eng. Mohamed Helal Eng. Eldon Hanson	Studying Abueha Canal design, studying all the mesqas design, planning of Abueha Canal construction and evaluation of water budget.
Dr. Ahmed Taher Dr. Abdel Naim Dr. Hamed Saleh Dr. Richard Tinsley Mr. Moheb Semaika	Analyzing the data collected for the winter and summer crop for the agronomy practices during 1979-81. Plan for summer season 1982.
Dr. Assia El Falaky	Analyzing the water samples for wells, canal, drain and Ibrahim El Dahef well.

Mr. Farouk Abdel Al
Mr. Gamal Ayad
Mr. Dave Martella

Economic evaluation of crops, and
mesqa 7 and plans for farm management
with the farmers for the whole area.

Dr. Mohamed Sallam
Dr. Jim Layton

Work to establish the local farmer
organization for the whole area on
Abueha Canal and all mesqas.

I. Training Status for Minya Professional Staff During Past Quarter:

Eng. Esmat Wafik: Academic training at Colorado State University.

Eng. Elia Sorial: Academic training at Colorado State University.

TASK GROUP 1 - ON-FARM WATER MANAGEMENT

Objectives

1. The development of criteria for the proper frequency and amount of irrigation and the development of an acceptable procedure for implementing the criteria in the pilot areas.
2. Determination of the impact of various on-farm water management practices on soil properties, water table, and crop production.
3. Determination of the cost and benefits associated with the changes in mesqa delivery systems for selected mesqas.
4. Analysis of sociological changes brought about by the various changes in mesqa delivery systems and on-farm water management practices.
5. Evaluation of long-furrows and/or borders compared to conventional small basins.

Work Completed During the Quarter:

1. Report titled "Irrigation Efficiencies at Mansouria" was completed by Sterling Davis. Davis pointed out that if irrigation efficiency is greater than 100 percent (i.e., more water stored in the root zone during irrigation than was applied to the field), there are three probable causes: (1) Error in the water measurement or the calculation; (2) Error in the soil moisture measurement or the calculation; or (3) Water coming into the root zone from the side or bottom. Item 3 is not considered a likely cause and attention was devoted to 1 and 2.

Some of the water measurements are not accurate. Some of the flumes have not been level and excessive submergence of the flumes

has occurred at times. A more serious problem associated with the water measurement is the recording of irrigation starting and/or ending times, especially, when this occurs fore and after EWUP working hours.

While some mistakes are occurring in water measurement, the main cause of the irrigation efficiencies exceeding 100 percent is caused by taking soil samples below the water table.

A list of recommended procedures for obtaining better data is included in the report.

2. A report on "On-Farm Water Management Trials at Abueha, Winter Season 1980-81" was completed by John Wolfe. The two study mesqas which were located closer to the canal delivered irrigation water by gravity, whereas, those further toward the canal tail-end delivered irrigation water partly by gravity and partly through lifting. Increased distance from the water source did not seem to influence the size of irrigation stream used, the total amount of water applied or the application efficiency obtained.

Application efficiencies for both gravity irrigation and irrigation by lifting were high and did not seem to depend on size of stream or time spent for irrigation. The application efficiencies and crop yields were approximately the same on farms with long runs as on other farms measured. This suggests that farmers are not managing long runs and larger flows effectively.

A complete set of tensiometer readings were obtained at one of the wheat study sites. These showed that the wheat crop at this site was adequately irrigated and was not subject to moisture stress.

3. A report on "Problem Identification Report for El Minya" was completed by Royal Brooks. Brooks concluded that farms located closer to the head-end of the Abueha Canal or of any mesqa are not more favorably situated than others with respect to head available or size of stream available. Application efficiency was not found to be dependent on head available, size of stream, or time spent irrigating. Relatively high average application efficiencies have been obtained by farmers when irrigating by gravity as well as by lifting. The average irrigation intervals practiced by farmers, and the resulting average quantities of soil moisture replaced at each irrigation appears satisfactory for the crops and soils involved.

Plans for Next Quarter:

Water use efficiencies and water table positions will continue to be evaluated.

An evaluation of the existing data on long-furrow and/or basin irrigation and small basin irrigation will be completed by Maher, Hanson, and Martella.

A draft on the criteria for determining irrigation frequency and requirements will be completed by Hanson, Saleh, and Nadia.

The collection of data for the sociological evaluation of EWUP on-farm water management practices will continue.

Future Work Needing Assistance from TDY Personnel will be:

1. Refinements of the criteria for determining irrigation frequency and requirements (John Wolfe or Bill Franklin).
2. Evaluation of long-furrow and/or basins as compared to small basin irrigation (Wayne Clyme or John Wolfe).
3. Evaluation of the criteria for determining irrigation frequency and requirements (John Wolfe or Royal Brooks).

Personnel Presently Assigned to the Task Group:

Maher, Martella, Hanson, Taher, Assia, Saleh, Farouk, Sallam, and Nadia.

TASK GROUP 2 - WATER DISTRIBUTION SYSTEMS

Objectives:

1. Prepare and evaluate procedures for designing gravity distribution systems through canals and mesqas. Along with hydraulic principles consider aspects of minimum and maximum stream sizes required at the field inlet, and delivery by continuous flow, rotation, and demand schedules for peak demands and period of reduced demands.
2. Organize and evaluate operation and scheduling procedures for the El Hammami pipeline.
3. Describe how farmers are organized around their present distribution systems and analyze how different types of farmer organizations may be established in response to changes in those distribution systems.
4. Measure and evaluate seepage losses in the El Hammami Canal and in improved mesqas (lined and/or elevated) and other selected mesqas. Evaluate the effect of the improvements on seepage losses.
5. Using data obtained in seepage tests, evaluate the aspects of mesqa maintenance with respect to the efficiency of water delivery.

Activities During the Quarter:

1. Abueha Canal: Final cross sections for the canal were drawn and plans and specifications were written. The tender was issued for contractors to submit bids.

Mesqa 7 was reconstructed throughout the lower half. Problems due to excessive seepage have developed which will require compaction of the banks.

2. Beni Magdul and Mesqa 10: Due to problems in having sufficient flow rate in Beni Magdul Canal to permit sustained pumping in Mesqa 10, cleaning of Beni Magdul commenced during the last week in the quarter to remove weeds and sediment. During the winter, road and sewer construction activities near the canal caused a considerable amount of soil and rocks to be thrown into the canal.
3. El Hammami Pipeline: Approximately thirty-five percent of the pipeline was completed by March 31. In planning for the operation of the pipeline, a program has been worked to assemble the following information:
 - a. The maximum allowable discharge of each mesqa which will be served by the pipeline.
 - b. A survey of crops.
 - c. Irrigation frequencies of crops included in the crop survey.
4. El Hammami Canal: Dams were installed in the canal during the final week before the January closure of the Mansouria Canal. A three hour seepage test by the ponding method was completed on January 14. The rate of seepage in liters per second per 100 meters of canal was 1.02 liters per second during the first hour, and 0.77 liters per second during the third hour. These low rates are attributed to a relatively high water table which was only 10 to 12 cm below the water surface in the canal during the test.
5. Other Activities:
 - a. A plan was made for Kafr El Sheikh to enlarge inlets and add gates to individual mesqas. The plan was rejected by the Directors and is currently being reviewed and revised.

can work on study of El Hammami area to document present organizational patterns.

- c. Completed mesqas cleaning program for Kafr El Sheikh.
- d. Set up farmer organization for Mesqa 10.
- e. Mapping of existing land ownership patterns for El Hammami (start for farmer org. work).
- f. Continued organization work for Abueha site.

Plans for Next Quarter and the Future:

1. Abueha Canal: The computer program which was developed for the canal will be run, using the dimension for the final cross sections included in the tender, to make a final check for the size of turn-outs that will be required and constructed for each mesqa. The construction will commence May 1, 1982 and the completion date is estimated to be September 1, 1982.

Mesqa 9 will be replaced with a road and land leveling will be accomplished to permit the land adjacent to Mesqa 9 to be irrigated from Mesqas 7 and 11.

2. Beni Magdul and Mesqa 10: Cleaning of Beni Magdul Canal will be completed during the first week of April.

Hydraulic aspects of the canal and connecting mesqas will be reviewed to determine the course of action that may be required in the future to overcome the possibility of a shortage of water for sustained pumping into elevated Mesqa 10.

3. El Hammami Pipeline: The assembly of mesqa capacities, and the crop survey will be completed early in the quarter with a summary

of irrigation frequencies required by crops. With this information, initial plans will be made and operation alternatives will be studied for efficient utilizations of the pipeline.

Construction of the pipeline will continue and the Petrojet company will be worked with to have the systems finished by July 31, 1982.

Future Work with TDY Personnel:

Analyze the hydraulics of the canal or pipeline mesqas and vents operating as an integrated system to determine if certain proposed irrigation schedules are possible or practical. Also help establish the needed criteria and controls for operating the system (W. O. Ree).

Personnel Presently Assigned to Task Group 2:

Gamal Ayad, Eldon Hanson, Ahmed Maher, Tim Gates, Dick Tinsley, and Jim Layton.

TASK GROUP 3 - FARMER ORGANIZATION

Objectives

1. To define the purpose and nature of a farmer organization.
2. To examine the existing organizational capabilities of the farmers.
3. To develop and analyze strategies for the implementation of specific farmer organizations.
4. To analyze the procedures and administrative structure encompassing the farmer organizations at the specific field sites.

Work Completed During the Quarter:

The tasks of Task Group 3 involve three major forms of activity: (1) the actual development and sustaining of various farm organizations, (2) the documentation of this process, and (3) the documentation of the existing situation of which the organization is part. Activity 1 is designed to accomplish objective 3 while activity 2 is designed to complete objective 4. Activity 3 is matched with objectives 1 and 2.

Developing and Sustaining Farmer Organization

- (1) Minya - Meska 26

During this quarter the administration of the scheduling, and the cleaning and maintenance of the meska was performed by the farmers themselves. Project personnel informed the meska leadership of the on-period times, and the scheduling format was set up by the meska leadership. The routine for scheduling irrigation and the cleaning and maintenance program have become routinized in the farmers' schedule.

(2) Minya-Abyuha Canal

The leadership sample chosen last quarter has been informed that work on the canal will commence. Further discussions with the farmers will proceed in coordination with the physical work schedule.

(3) Minya-Unite Area 4A

A farmer organization has been established on Meska 7, but there has been no scheduling pattern set up by EWUP.

Leadership survey on Meska 11 has been completed. And work on establishing a Farmer Organization on the Meska will commence next quarter.

(4) Mansuriya-Meska 10

The farmers have had an organizational framework established and periodic meetings with the leadership, and others, have been held. The organization will be contacted concerning the number of problems associated with the new meska.

(5) Mansuriya-El Hammami

The ownership map is being completed. From this, the selection of the area leadership will begin next quarter.

(6) Kafr El Sheikh

The farmer organizations set up along the Om Sen, Manshia, and Hamad meskas helped in successfully cleaning their respective meskas.

Documentation of Farmer Organization Work

The documentation of the organizational work will follow the six major procedural steps in organizing farmers: (1) identifying the local leadership, (2) contacting that leadership, (3) contacting the farmers, (4) establishing the organization, (5) sustaining the organization, (6) evaluating the organization. All documentation will result from interviews and observation studies.

- (1) Accumulated leadership studies (complete for Mesqa 10, Mansuriya; Mesqa 26, Mesqa 7, Mesqa 11 (Minya); Om Sen Canal, Hamed Canal, Manshia Canal (KES).
- (2) Contacting leadership (same as 1 except for Mesqa 11. Also contacted Abyuha Canal Leadership).
- (3) Contacting farmers (same as 1 except for Mesqa 11).
- (4) Establishing the organization
 - Creating the structure of the organization (complete Mesqa 26, Mesqa 7, Om Sen, Hamed, Manshia, Mesqa 10)
 - Naming the personnel for the organization (complete Mesqa 26, Mesqa 7, Om Sen, Hamed, Manshia, Mesqa 10).

- Establishing working procedures for the organization (complete Mesqa 26, Mesqa 10, Om Sen, Hamed, Manshia)
- (5) Sustaining the organization
- EWUP interaction (in process for all areas). Documenting how EWUP works with the farmers in the particular organizations.
- (6) Evaluating the organization (to be accomplished in future).
- Achieving its stated goals. (Initial evaluation of Mesqa 26 completed).
 - Performance under the existing structure. (Initial evaluation of mesqa 26 completed).
 - Performance under the existing procedures. (Initial evaluation of Mesqa 26 completed).

Documentation of the Existing Situation

Efforts for this topic are focused on looking at how the farmers presently work together for particular practices and how other organizations (i.e., the Cooperative and MOI) affect the farmers' activities.

(1) Minya

- Completion of tenure map for Abyuha Canal.
- Updated tenure maps for Mesqas 26, 7, and 11.

(2) Mansuriya

- Completed the tenure map for Mesqa 10 and finishing the work for the Hammami Area.

- Study for Hammami on the existing irrigation patterns being started.
- Examining how the farmers are adjusting to the new structure on mesqa 10.

(3) Kafr El Sheikh

- Completed the tenure map for Om Sen, Hamed, and Manshia Areas.
- Documenting how the farmers along the Shahaina branch use their raised mesqa.

Work Now Being Accomplished and Future Plans:

The tasks being worked on now and for the next quarter will follow the past quarter's work. Present organizations established will be studied as to how they are sustained and evaluated, while other organizations which need to be established will be created. Again, documentation of these organizational efforts from the outline previously presented will be of top priority.

Developing and Sustaining Farmer Organization

(1) Minya

- Work to make Mesqa 26 and Mesqa 7 organizations more functional.
- Work on developing farmer organizations on all mesqas in Abyuha.
- Initiate work on establishing a canal-wide organization this fall.

(2) Mansuriya

- Work to make mesqa 10 scheduling a viable program through farmer cooperation. This depends on the situation of mesqa 10.
- Work to develop farmer organization for the Hammami pipeline.

(3) Kafr El Sheikh

- Begin evaluative study on the farmer perceptions of the delivery system program.

Documentation of Farmer Organization Work

- Work on completing the outline for establishing farmer organizations.

Documentation of Existing Situation

- Continue to develop a program to obtain data on criteria necessary for the establishment and the sustaining of farmer organizations.

Administration:

The names of the personnel presently assigned to Task Group 3 are as follows:

Mohamed Sallam - Coordinator, Jim Laytin, Farouk Abdel Al, and Eldon Hanson.

There has been no IDY support this past quarter. The next scheduled IDY to work with this task group will be Dr. Frank Santopolo for this summer, and Dr. George Radosevich sometime this fall.

TASK GROUP 4 - FARM MANAGEMENT AND PLANNING

Objectives:

Farm Management and planning task group objectives are to evaluate alternative farming systems on Egyptian farms, to evaluate current agronomic practices as contrasted to recommended practices, and to evaluate the farmers' ability to implement improved agronomic practices.

Activities Completed During the Quarter:

Completed farm record analysis for the year 1979-80, Project Technical Report No. 23. The analysis shows the average net farm income per feddan of the farm record keeper for 1979-80 in Abyuha, El Hammami Beni Magdul and Abu Raya to be L.E. 309.7, L.E. 411.6, L.E. 748.4, L.E. 254.7. The ratio of gross crop income to cash crop expenses was greater than 2.5 in all areas.

Completed work on 1980-81 farm record summary and analysis for the selected study cases at the project sites. The analysis, although preliminary, shows the average net farm income per feddan of the farm record keeper for 1980-81 in Abyuha, El Hammami, Beni Magdul, and Abu Raya to be L.E. 248.9, L.E. 495, L.E. 753.4, L.E. 307.9. The ratio of gross crop income to cash crop expenses remains favorable, although somewhat lower than previous year having a value greater than 1.6 in all the areas.

Completed work on initial evaluation of crop calendars in El Hammami area using 1980-81 Farm Record Data. The analysis illustrated the highly intensive cropping pattern with large number of inter-cropped combination

that occupied the land for extended periods up to an entire calendar year. This resulted in very limited opportunity time for mechanization which was concentrated in summer months with heaviest concentration in September.

Work in Progress:

Working on crop calendar, average inputs and outputs per feddan for main crops at the three sites.

Working on farm management survey tabulation for Mesqa 10, El Hammami Canal at Mansuriya site, and Mesqa 7 at Abyuha site.

Working on irrigation practices in farming systems using 1979-80/1980-81 farm record data.

Working on Technical Report summarizing EWUP Zn studies to conclude this work.

Plans for Next Quarter:

Continue to keep farm record books with the selected farmers to evaluate the alternative farming systems on Egyptian farms.

Prepare Draft Working Paper (DWP) on irrigation practices in farming systems.

Complete the DWP on crop calendar analysis for each site for farm record year ending October 31, 1982.

Complete the DWP on accessibility of farm land for tractors and on opportunity time.

Complete Technical Report on zinc studies.

Names of Personnel Presently Assigned to the Task Group

Farouk, Tinsley, Sallam, Elwy, Martella, and Naim.

TASK GROUP 5 - THE WATER BUDGET

Objectives:

The objectives of the water budget work for the remainder of the project are as follows:

1. To continue to collect complete water budget data (surface inflow and outflow, precipitation, weather station data for evaporation and evapotranspiration, water table elevations, specific yield, hydraulic conductivity, water quality, surface outflow) at each of the project sites.
2. To conduct regular periodic analysis of water budget data for each site with subsequent reports of results.
3. To produce an annual water budget report for each site.
4. To produce a final comprehensive report of the water budget work.

Activities and Progress this Quarter:

Monitored and assisted with routine data collection at each of the project sites.

Completed data analysis for 1981 water budget for Om Sen.

Completed analysis of several months of Beni Magdul inflow data for 1981.

Collected several deep core soil samples at Om Sen for analysis of aquifer properties.

Surveyed the extent of surface drainage in the Beni Magdul area.

Plans for Next Quarter:

Continue to monitor and improve data collection at each of the project sites.

Prepare an implementation plan for determining the nature and degree of deep percolation in the Beni Magdul and Abyuha areas.

Complete preliminary report of 1981 water budget for Om Sen.

Begin analysis of 1981 data for Abyuha.

Suggested Modifications Including Additional Resources Needed for Implementing Long Range Plans:

A major effort needs to be made to better describe the groundwater flows. TDY assistance will be needed to complete this work. Formal requests for this assistance are being prepared.

Names and Contributions of Professional Staff During this Quarter:

Main Office Professional Staff:

M. Helal - engineering, computer programming, management

Mahmoud Ibrahim - engineering

Azza Nasr - in U.S. for training

Moheb Semaika - crop survey, crop consumptive use

T. K. Gates - engineering, management

Main Office Support Staff:

Iman Saber - computer storage technician

Laurette Gouel - Computer storage technician (part-time)

Field Professional Staff:

Ahmed Abdel Nahim - water budget coordination, Abyuha

Wadie Fahim - water budget coordination, Mansoriya

Abdel Fattah Metawie - water budget coordination, Om Sen

TDY:

W. O. Ree (March 15-June 15) - engineering

Personnel Presently Assigned

M. Helal, T. K. Gates, Mahmoud, Azza, Semaika

TASK GROUP 6 - LAND LEVELING

Objectives:

1. Collect and analyze all information on land leveling done by EWUP in the three work areas. Distinguish between land leveling (operations which involve considerable movement of soil or changing the original slope of the land) and land planning which is mainly for smoothing the land or for seedbed preparation
2. Summarize the previous land leveling activities of the farmer, and evaluate his acceptance of new standards and practices.
3. Analyze the costs of precision land leveling.
4. Assess the impact of leveling on farm water management.
5. Establish training for farmers and other people who wish to improve their own land leveling skills.

Activities During the Quarter:

Land leveling and/or planning was accomplished at team sites as follows:

<u>Area</u>	<u>Dead Level Feddans</u>	<u>Planning Feddans</u>
El Minya	4	15
Kafr el-Sheikh*	15*	—

* Four feddans were leveled with laser beam equipment through cooperation with the EMCIP organization.

A preliminary review of irrigation trials at Abyuha with long-runs on leveled land shows that farmers and technicians need training in obtaining high irrigation efficiencies with relatively large irrigation

streams that should favor uniform distribution of water. Draft Working Paper No. 81 describes some results of on-farm irrigation trials at Abyuha in 1980-81. At one site which had been dead leveled with a run of 133 meters the following efficiencies were measured with irrigation streams shown below: (see Table 1, page 8 of DWP No. 81).

<u>Irrigation Date</u>	<u>q liters/second</u>	<u>Irrigation Efficiency Percent</u>
Dec. 6	25	57
Dec. 29	18	75
Feb. 10	11.2	75
Mar. 10	11.2	91
Mar. 29	23.4	53
Apr. 13	23	78

The smaller streams resulted in the highest efficiencies. This is opposite to expected results in as much as the field was dead level with borders that prevented run-off.

Tractors were repaired at the three team sites and equipment was adjusted to be in good order for land leveling.

Plans for Next Quarter and the Future:

At El Minya 20 feddans are expected to be dead leveled in unit 4.

At Kafr el-Sheikh, irrigation measurements will be made on the land leveled this quarter.

Tom Ley has been contacted about a TDY assignment to work on the EWUP final report concerning the impact of land leveling on farm water management. He will be available from October 4 to November 22, 1982. A request for his TDY assignment will be submitted through the engineering discipline leader.

Personnel Presently Assigned to the Task Group

Bayoumi, Hanson, Gamal, and Sallam

TASK GROUP 8 - SOIL CHARACTERIZATION

Objectives:

1. To determine what soil management techniques are needed for best use of soil and improving water management.
2. To develop water management recommendations based on soil characteristics.

Accomplishments:

1. The work plan was discussed, reviewed and agreed upon by Task Group members.
2. Data needed for the internal memorandum on the different proposed subjects in our new revised plan are in the collecting phase.
3. Plans for needed field work were discussed with field staff.

Plans for Next Quarter:

1. Two internal memoranda will be finalized which are:
 - a. Problems of irrigating vertisols in Egypt.
 - b. Root penetration studies.
2. Following up the work concerning other activities.
3. Data collection on bulk density-soil-moisture relationships.

Personnel Presently Assigned to Task Group:

Taher, Tinsley, Assia, Naim, Semaika

TASK GROUP 11 - IRRIGATION ADVISORY SERVICE

The Irrigation Advisory Service (IAS), Task Group 11, has focused on two major areas of analysis in order to examine the existing situation in terms of establishing such a service. First, there is the need to document how EWUP presents its different pilot programs to the farmers with the purpose of describing how a possible prototype to an IAS may actually perform. Next, an examination of the organizational environment into which the IAS must implement its objectives needs to be delineated. From these two areas of analysis, the objectives of the task group have been created and the work activities have been designed.

Objectives:

1. Make explicit provisions for providing the technical advice and assistance to farmers and farm organizations served by the pilot studies which will at least:
 - Provide technical advice and assistance to the individual farmer on irrigation practices and systems by cooperating with the existing extension service, village cooperative, and farmer organization.
 - Provide technical advice and assistance to the farmer organizations, which will be needed if the farmer organizations are to be successful, on expected water requirement, irrigation scheduling, maintenance of meskas and drains, etc.
 - Establish the responsibility for specifying the nature of and the person responsible for providing the technical assistance for each study.

2. Develop criteria and procedures for establishing a country-wide IAS.
 - To define what should be the purpose and parameters of an IAS.
 - To delineate how an IAS is to be organized in terms of its personnel, administrative structure, procedures and programs.
 - To examine how the IAS is to be integrated into the existing institutional structure; i.e., what role will this service play in terms of other organizations.
 - To examine the preparatory and training aspects of the staff members for this advisory service.

Tasks Completed:

For this past quarter the work on the Irrigation Advisory Service has focused on developing the conceptual underpinnings for analyzing such a service, and developing working procedures to demonstrate how such a service may operate. The activities performed this last quarter are:

- Evaluation of the various types of on-farm activities performed by EWUP in terms of adoption of innovations. (Kafr El Sheikh and Minya)
- Delineation of criteria to be used in examining how innovations are diffused to a specific type of receiver group.
- Initiation of specific work plans pertaining to the development of extension meetings for the farmers of the Kafr El Sheikh site.

- Delineation of criteria to be used in examining the organizational parameters influencing the operation of the Irrigation Advisory Service.

Tasks Being Worked on Now and Future Plan:

The tasks being worked on now and for the next quarter will be an extension of last quarter's work. Documentation of how EWUP implements its pilot projects will continue with the emphasis on interaction with the farmers. The conceptual delineation of criteria for both the innovation diffusion procedures and the organizational parameters of the IAS will be developed in more detail. The work on the organizational aspect of the IAS will serve as a foundation for Dr. Ed Knop's TDY this summer.

Administration:

The names of the personnel presently assigned to this task group are: Mohamed Sallam - Coordinator, Jim Layton, Moheb Semaika, Gamal Ayad

No TDY support was present this last quarter and the next TDY scheduled is by Dr. Ed. Knop for the summer, 1982.

MAIN OFFICE

The technical work of the main office is done through eleven task groups. The work is performed by 27 professional staff members with TDY assistance as indicated in the "Backstopping" portion of this report. The main office and TDY staff work with field team personnel at each of the three Project sites to conduct demonstrations and field tests, collect data, and carry out plans for interaction with farmers and local government officials.

Engineer Ahmed Maher replaced Engineer Abdel Hamid Fahim as engineering discipline leader. Dr. Ahmed Taher has been designated as agronomy discipline leader replacing Dr. Dick Tinsley who has been acting in that capacity. Agronomist Moheb Semaika was appointed as assistant discipline leader. Drs. Assia El Falaky and Abdel Naim replaced Drs. Keleg and Zanati in the agronomy discipline. Engineer Mahmoud Ibrahim was appointed to the engineering discipline to assist with water budget work and computer programming. Ms. Inam Saber was appointed to the computer office to work as a computer storage technician. Engineer Abdel Hamid Fahim has been given full responsibility for supervising the Hammami pipeline construction. Engineer Bishara Inbac retired from service. His technical duties with the motor pool were assigned to Engineer Ahmed Maher. His administrative duties with the motor pool were assigned to Engineer Ahmed Maher.

The following is a complete list of personnel assigned to the Main Office as of March 31, 1982:

Hassan Wahby
Gene Quenemoen
Farouk Abdel Ar
Dave Martella
Gamal Ayad
Richard Tinsley
Mohamed Abdel Naim

Project Director
Technical Project Director
Economics Discipline Leader
Senior Economist
Senior Economist
Agronomy Discipline Leader
Senior Agronomist

Assia El Falaky	Senior Agronomist
Hamed Saleh (33% time)	Senior Agronomist
Moheb Semaika (66% time)	Senior Agronomist
Ahmed Maher	Engineering Discipline Leader
Eldon Hanson	Engineering Discipline Counterpart
Abdel Hamid Fahim	Senior Engineer
Mohamed Sallam	Sociology Discipline Leader
James Layton	Sociology Discipline Counterpart
Yousria Allam (50% time)	Sociology
Mohamed Helal	Computer Engineer
Azza Nasr*	Computer Engineer
Tim Gates	Water Budget Engineer
Mahmoud Ibrahim	Computer Engineer
Iman Saber	Technician
Ahmed Bayoumi	Farm Mechanization Engineer
Nadia Wahby	Senior Engineer - Water Requirements
Abdel Atti Allam	Engineer - Water Requirements
Wadie Ragy	Engineer - Water Requirements
Mohamed Nabil Naguib**	Engineer - Water Requirements
Farida Abdel Meguidy	Engineer - Water Requirements
Ahmed Taher	Senior Agronomist
Elwy Attalla	Senior Agronomist
Mohamed Ahmed Salem	Senior Administrative - Personnel
Mohamed Said El Shatter	Senior Administrative - Expeditor
Salah El Din Salem	Junior Administrative - Secretary
Sayed Sakr	Junior Administrative - Storekeeper
Zeinab Abdel Ghany	Junior Administrative - Inventory
Ekhlas Abdel Ghaffar	Junior Administrative - Secretary
Magda Yassin Mahmoud	Junior Administrative - Photo Copier
Ashgan Abdel Zaher	Junior Administrative - Photo Copier
Magda Mohamed Mosselhi	Junior Administrative - Secretary
Bamba Shaarawi Aly	Junior Administrative - Photo Copier
Maher Attalah	Junior Technician - Mechanical Work
Abdel Naby Youssef	Technician - Mechanical, Motor Pool
Ahmed Soliman Abdallah	Technician - Mechanical, Motor Pool
Ahmed Ibrahim	Junior Administrative - Motor Pool
Said El Said Elwi	Junior Administrative - Motor Pool
El Araby Mansour Shahin	Junior Technician - Electrician
Imam Sayed Washba	Technician
Osman Shaker	Junior Administrative
Chaaban Mohamed Abdou	Telephone Operator
Boushra Benjamin	Senior Administrative - Accountant
Ahlam Abdel Rahman	Junior Administrative - Accountant
Taha Moustafa	Engineer - Water Laboratory
Ikram Mohamed	Engineer - Water Laboratory

* In training at CSU for 9 months

** Training in Italy.

Ahmed Ghanem	Technician - Water Laboratory
Suzan Abou Shady	Junior Administrative - Library
Abdalla Gad	Technician - Motor Pool
Ahmed	Guard - Motor Pool
Saad Mansour	Management Assistant - Main Office
Hamdi Ahmed Hamdi	Translator - Main Office
Jihan Sadek Abdelnour	Secretary - Main Office
Mona Farouk Morsi	Secretary - Main Office
Nagwa Mohamed Ali Mazen	Public Relations and Administrative
Nawal Abdallah Ahmed	Accountant - Main Office
Moustafa Mahmoud Mahran	Electrician - Motor Pool

TRAINING

At present, there are seven project professionals in training abroad. They are:

Azza Nasr, Engineer, Colorado State University
 Elia Sorial, Economist, Colorado State University
 Esmat Wafik, Engineer, Colorado State University
 Ahmed Ismail, Agronomist, Colorado State University
 Amany El Kayal, Engineer, Utah State University (Peace Fellowship)
 Mohamed Ragy Darwish, Bari Institute, Italy (Italian Government Fellowship)
 Mohamed Nabil Naguib, Bari Institute, Italy (Italian Government Fellowship)

Planning is now underway for the next on-farm water management training course in India.

EWUP is handling administrative arrangements for Egyptians and Americans involved in the Salt River Project Exchange Program. During March two Egyptian engineers traveled to the United States and it is accepted that two Salt River Project engineers will come to Egypt early in April.

PUBLICATIONS

The following manuscripts were received in the editorial office between January 1 and March 31, 1982:

1. DWP 79. Root Penetration Index for Winter Crops, 1981
distributed 1-28-82
2. DWP 80. Data Base Book for Abyuha Canal and Mesqa 26
received 2-4-82
distributed 2-24-82
3. ~~DWP 70.~~ to be published as PTR No. 23
Farm Record Summary and Analysis
for Study Cases at Abyuha, Mansuriya
and Abu Raya Sites, 1979-80
received 2-24-82
to printer 4-5-82
4. DWP 81. On-Farm Water Management Trials
at Abyuha, Winter Season 1980-81
received 2-21-82
distributed 4-4-82
5. DWP 82. On-Farm Irrigation Practices,
Winter Crops (Flax, Wheat and Birsim)
at Abu Raya, Kafr el-Sheikh
1978-79
received 3-3-82
distributed 4-4-82
6. DWP 83. On-Farm Water Management Trials
at Abyuha, Summer Seasons 1980-81
received 3-14-82
forwarded to Minya for author's comments on
John Wolfe's revision
7. DWP 84. Economic Evaluation of Wheat Trials
at Abyuha, El-Minya Governorate
Winter 1979-80

ms. still with Economics Discipline,
comments received from Ft. Collins staff 3-21-82
8. DWP 85. Hydraulic Conductivity Tests Using the
Auger-Hole Method, Kafr el-Sheikh

received: 3-30-82
to printer: 4-8-82

9. DWP 86. Report of 1981 Summer Season On-Farm Pilot Program at Kafr el-Sheikh
received: 4-3-82
presently being edited
10. PTR? Agricultural Pests and Their Control...
E.A.R. Attalla
received: 1-27-82
status: Being edited as probanle PTR.
11. PTR? Problem Identification Report for El-Minya Royal Brooks
received: 3-4-82
status: Being edited as PTR, along with comments from staff.

When Dr. E. V. Richardson was in Cairo in January of 1982, the status of staff papers was reviewed. Decisions were made to develop a number of them into Project Technical Papers. The following is a list of these staff papers and a status report is shown regarding the stage of development.

<u>Formerly Staff Paper</u>	<u>Title and Author</u>	<u>Proposed PTR or Manual</u>
70+26	Farm Record Summary... Al-Skold <u>Status:</u> to printer 4-5-82	PTR 23
63	Rice Related Studies... Tinsley <u>Status:</u> editing completed 2-12-82; to be combined with paper presented by Tinsley and Lay in Chicago, 12-81	PTR 9
78	Kafr el-Sheikh Farm Mgmt. Survey... Haider-Al <u>Status:</u> To author for changes 1-1-82	PTR 11
62	Role of Rural Sociologists... Sallam-Layton <u>Status:</u> Editing completed 3-27-82 and author took to review	PTR 13
53	Village Bank Loans... Ayad-Skold <u>Status:</u> Editing completed and final	PTR 15

version typed 2-14-82 author to add recent information to update manuscript

- 25 Population Growth & Development... PTR 18
 Knop-Sallam
Status: Author does not respond to queries. No action taken as yet.
- 26 Effective Extension... PTR 19
 Knop-Sallam
Status: Author does not answer queries. This paper was edited in June of 1981. No further action.
- 18 Rotations System or Continuous Flow PTR 20
 El-Kady-Wolfe
Status: Corrections received from author on final edited version 3-6-82. In preparation for printer.
- 68 Livestock Enterprise on Dairy Farms... PTR ?
 Walters
Status: Decision taken to combine with "Cow Power." To be done by TDY Don Lybecker in August 1982
- 44 Soil and Land Classification..
 Heil
Status: To 4 first reviewers to evaluate as possible PTR (?). Ms. taken to Ft. Collins and no copy here in Cairo
- ? El-Hammami Pipeline Design...
 Sherith
Status: Being processed in Ft. Collins
- Mesqa 10 Design Paper...
 Ree-Gates
Status: Not yet submitted to Editorial Office
- 30 Programs for Calculators HP-67... PTR 6
 Ayad
Status: To be produced in Ft. Collins

II. BACKSTOPPING

Planning and Coordinating Committee

The P&C Committee took part in a planning meeting with the project Advisory Committee in January. The agenda for the meeting is in the appendix. P&C members who attended the joint meeting were Drs. Richardson, Sunada, Skold, and Schmehl.

Committee members worked on the training program for the four Egyptian professionals who are taking non-degree graduate training, attended weekly meeting to plan project activities, reviewed and worked on reports, discussed work plans with the TDY's and backstopped the discipline needs for the Egyptians and Americans working on the project in Egypt.

Dr. Robinson worked with Dr. Richardson and Rashwan on the calibration of the farm pipe turnouts.

The first part of the water management effectiveness in controlling salinity and water logging study was completed with Ms. Durnford completing her dissertation. She will prepare a technical project paper describing the work.

Orientation was provided for Mr. & Mrs. Ken Litwiller who traveled to Egypt in March. Ken is replacing Tom Ley. The Leys will return to Ft. Collins in May.

Omnia El Hakim is proceeding very well on her dissertation.

Dr. Jim Layton, who is on home leave, spent a few days working with the P&C Committee on plans for training, advisory service and farmer organizations. He reported that farmers are working together in the three areas on water scheduling and ditch maintenance and improvement.

Training

1. On-farm water management short course and field trip. Dr. Layton reported that the Egyptians will have the sole responsibility for the course. Course dates are July 31 to September 16. Arrangements were attempted for some Indians to attend the course. Because it will be presented in Arabic, this did not appear feasible. Plans were started on the field trip to visit irrigation projects in the U.S. This trip is scheduled in September.

2. Participant training. Three of the four trainees (Elia E. Sorial, Azza J. Nasr and Esmet W. Ahmed) were sent on a field trip to California and Arizona to visit irrigation projects in January between semesters. Ahmed S. Ismail stayed on campus to take a short course entitled "Agriculture Project Analyses for Developing Economics".

The following is the course schedule for spring:

<u>NAME</u>	<u>COURSES</u>	<u>HOURS</u>
Ahmed Esmat	AE 536 Sprinkler & Drip Irrigation	3
	AG 370 Irrigation	3
	CE 695 Ind. Study-Irrigation & Drainage	3
	GS 670 Inter. Ag. Development	3
Elia Sorial	ES 102 Agric. Economics	3
	ES 505 Agric. Production Economics	3
	GS 670 Inter. Agr. Development	3
	ES 695 Ind. Study - Analysis of Farm Record Data	3
Ahmed Ismail	AG 666 Salinity & Soil Water Management	3
	AE 733 Flow in Porous Media	3
	AG 564 Chem. Anal. Saline & Sodic Soils	1
	AG 495 Ind. Study	2
	GS 670 Inter. Agr. Development	3
Azza Nasr	CS 520 Analysis of Algorithms	4
	ST 309 Engineering Statistics	2
	CE 513 Computer Applications in Hydraulics	3
	CE 670 International Agr. Development	3
	CE 675 Independent Studies	1

3. Salt River Project Exchanges - Five Salt River project personnel were provided orientation at Fort Collins, February 21-24. They were Don Davis, Sid Raiar, Jim McDade, Ron Merkle and Alex Richards.

On April 11 Mr. Davis and Mr. Richard travel to Egypt to work in the Ministry of Irrigation.

The first two Egyptians, Engineers Esam El-Din Fawzi Barakat and Adel Hushem Saleh, arrived in Fort Collins March 28 for a week's orientation prior to going to Phoenix to work on the Salt River project. They will be in Phoenix April 5-May 14 and then visit irrigation projects in southern Arizona

and California. They will return to Cairo about May 27. Their SRP Itinerary & Program is in the Appendix.

4. Special Training - Engineer Ahmed Maher spent one week in Fort Collins and five weeks at Utah State University taking a short course on Design and Evaluation of Irrigation farming systems.

TDY's

The following people went TDY to Egypt this quarter:

Dr. Mel Skold, Economist (December 28, 1981 - January 22, 1982) to work on economic evaluation and follow up on 79-80 farm records analysis and other publications.

Dr. Parviz Soltanpour, Agronomist (December 28, 1981 - January 24, 1982) to work with Task Group 7 soil fertility, review soils laboratory work and work with Task Group 7 on-farm irrigation.

Dr. John Wolfe, Engineer (January 4, 1982 - March 6, 1982) to work with El Minya data, analyze engineering data and work with scientists in other disciplines.

Dr. Bill Schmehl, Agronomist (December 29, 1981 - January 22, 1982) to visit each of the field sites, review the agronomic work at each location, and make recommendations to the Discipline Leader and the Project Directors regarding organization of the work during the remainder of the Project Life.

Dr. Dan Sunada, Engineer (December 28, 1981 - January 22, 1982) to assist with the planning and implementation of the groundwater studies.

Dr. E. V. Richardson, Project Coordinator (January 1, 1982 - January 29, 1982) to meet with advisory committee to discuss accomplishments and goals of EWUP Project.

Dr. Roy Brooks, Engineer (February 2, 1982 - February 28, 1982) to write Problem Identification Report for El Minya field site.

Mr. Bill Ree, Engineer (March 15, 1982 - June 15, 1982) to plan and evaluate construction activities on gravity distribution system at Abueha. Preparation of comprehensive report and accompanying manuals describing design and construction of gravity distribution system at Abueha. Planning, data analysis and preparation of reports for water budget work.

EQUIPMENT

Purchase and shipment of equipment for the El Hammami pipeline proceeded as planned. One controller for the pipeline was tested and packed for shipment. The second controller is being tested.

Miscellaneous equipment and replacement parts were purchased as requested by the field.

Plans were made for Mr. LaRocque, Equipment Controller, CSU, to travel to Egypt to inventory equipment.

WORK PLANS

Major emphasis of the P&C Committee will be on planning the final two years of the project. Dr. Richardson will travel to Egypt as part of this effort. Research will continue on salinity and drainage, conjunctive use of

ground water, pumping cost, design of irrigation systems and water management alternatives.

Plans will be started on the joint Advisory and P&C committee meeting to be held in September.

The SRP exchange will continue.

Special studies will be provided the four Egyptian trainees prior to their return to the project. Their training will be reviewed to determine any improvements that can be made in the program of study for this fall's training.

Plans will be started for an Egyptian symposium on on-farm water management to be held in Cairo next year.

Mr. Ley will work on the project on campus upon his return from the field study.

III. Personnel

Fieldstaff

Mr. Ken Litwiller and wife traveled to Cairo in March to replace Tom Ley. Mr. Ley will return to Fort Collins in May.

Dr. Layton was in the States on home leave this quarter.

Dr. Tinsley, Mr. Martells and Mr. Braunworth will be on home leave next quarter. Dr. Redgrave will replace Dr. Tinsley on part of his home leave and Dr. Schmehl on part.

Campus

The following people will be traveling to Egypt TDY next quarter:

Billy D. Hayes	May 21 - May 30
Ed Knop	May 23 - July 2
Dan Sunada	June 2 - June 19
E. V. Richardson	June 2 - June 18
Frank Santopolo	June 18 - July 31
Dave Redgrave	June 5 - July 15

APPENDIX



Egypt Water Use & Management Project

22 El-Galaa St. Bulak, Cairo ARE
Phone 756-972, 759-674, Cable EWUMP, EGYPT

Colorado State University Ft. Collins, CO 80523
Phone (303) 491 8655, TWX 910-930-9000

AGR/032-82

March 22, 1982

TO: Project Directors

FROM: Dick Tinsley

SUBJECT: Kafr el-Sheikh Revisited.

While in Kafr el-Sheikh last week, Eng. Metawie and I revisited most of the field sites used by the project from the beginning. This was to review the long term impact of the project's work. Metawie and I then summarized our observations in the attached tables.

Generally, the removal of field drains has been well accepted. Most continue to remain filled. Even those that were replaced are generally smaller than previously and also used primarily to separate different crops as part of the farmer's normal land crop allocation shifts. The most impressive site is 3-21 which was dropped after only one season because farmer could not agree on some proposed marwa improvements. The area is isolated so after discontinuing our work no EWUP personnel has visited the area, yet most of the field drains we removed remain gone including one stretch of some 86m.

The evaluation of long basins use is somewhat more difficult because most fields were in berseem after rice, and rice is traditionally in long basins with berseem broadcast directly into the stubble without any land preparation. The real critical time to evaluate the long basin, long furrow use is with cotton. Our observations did show extensive use of larger fields, and this included fields that followed either cotton or maize last year. We could thus conclude that long basins tend to be accepted, although this should be reviewed again next summer and next winter when many areas are in or following cotton instead of rice.

On the whole, I was impressed with the farmers' acceptance of these practices. In contrasting the acceptance of Kafr el-Sheikh with the problems of Mansuriya, the major difference seems to be: 1. The higher saqia discharge in Kafr el-Sheikh, and 2. The better infiltration rates in Kafr el-Sheikh where recession times are usually on the order of 2-3 hours instead of 2-3 days observed in Mansuriya. This 2nd reason would appear soils related, but I cannot sort it out on our characterization studies.

DT/mg

cc: N. Dimick
E. V. Richardson
K. El Din
T. Loy

ARE
USA
CID

Kafr el-Sheikh Revisited

Site #	Location	Date	Work Done	Present Condition
3-01a.	Head Hamad Canal, left side	Summer '81	Level for cotton long furrows, 8 drains removed.	Wheat, broad beans, sugarbeet, berseem, all on long basins/furrows with beets in cotton furrows. Three drains out of 8 replaced, all separating crops.
3-01b.	Head Hamad Canal, right side	Summer '81	Level, drains removed for rice and maize	Plowing and ready for cotton, unable to evaluate use of long basins. Drains still removed.
3-02a.	End of Hamad both sides	Winter '79-80	Level with 4 drains removed before beans, wheat & berseem, releveled summer '80 for rice & maize	Since winter '79-80 has had rice, maize, followed by berseem, onions, tomatoes, then cotton & tomatoes and finally sugarbeets, wheat & berseem. Now sugarbeets in short cotton furrows, wheat and berseem long basins, 2 field drains replaced to separate crops.
3-02b.		Winter '80-81	Leveled, drains removed, marwa relocated for sugarbeets, wheat	Original crops followed by rice, now berseem beans, wheat. Marwa relocation remains, fields still large with no internal border. Actually larger than our original, most likely because of rice. No field drains replaced.
3-03	Om-Sen	Used for problem identification only		
3-04	Om-Sen	Used for problem identification only		
3-05	Omda land at corner of Meska	Summer '79	Graded border, 0.1%	Land divided into two parts, because of rice needing dead level. Currently in berseem with large basins after rice.
3-06	Beside Dekult at road to Manchia	Summer '79	Dead level demonstration no drains removed	Not reviewed

Kafr el-Sheikh Revisited

Site #1	Location	Date	Work Done	Present Condition
3-07	Om-Sen	Summer '79	Dead level, no drains removed	Not reviewed
3-08	Manshia head	Winter '79-80	Field trial with level field, drilled for wheat, no drains removed (Farmer used cotton long furrows in summer '81 without EWUP assistance.)	Has had wheat, rice, berseem, cotton long furrows, now wheat, flax, and berseem, using large basins, but still has field drains.
3-09	Manshia middle	Winter '79-80	Field trial for wheat with dead level, removed 1 drain.	Wheat followed by rice, berseem and onions with cotton and now sugarbeet. Sugarbeet looks good, best in Manshia but on short basins and furrows, field drain replaced after rice.
3-10a.	Village branch of Manshia	Winter '79-80	Dead level for wheat, removed field drains	Still under EWUP management, cannot evaluate acceptance, other than not being evicted.
		Summer '80	Field trial rice, releveled	
		Summer '81	Pilot program cotton, releveled long furrow	
		Winter '81-82	Pilot program wheat, releveled long basins.	
3-10b.		Summer '80	Field trial cotton level & long basin.	Now in combination of flax, beans, & berseem. Field drain remains absent, long basins still in use, as left from rice. Crops divided by small field drain or dike.
		Winter '80-81	Wheat pilot program releveled, long basin eliminated field drains.	
		Summer '81	Pilot program for rice one half, other half not discontinued because of brick making soil removed.	

Kafr el-Sheikh Revisited

Site #1	Location	Date	Work Done	Present Condition
3-11,12	Beside Manshia drain at entrance road	Winter '79-80	Field trial for wheat, level, long basin.	Has had berseem, maize and berseem, now freshly plowed. One field drain replaced could not determine rest.
		Summer '80	Rice field trial.	
3-13	Head of Manshia	Summer '80	Cotton field trial, level, long furrow, 2 field drains removed.	After cotton, wheat then rice, now berseem not observed.
3-14	Middle Manshia beside drain #4	Summer '80	Field trial cotton, leveled, long furrow removed no field drains.	Not observed.
3-15	Same as 3-10			
3-16	End of Om-Sen		Not observed.	
3-17	End of Om-Sen		Not observed.	
3-18	Manshia beside mesqa	Summer '80	Field trial maize, leveled long basins.	After maize planted to berseem then cotton, & now tomatoes with medium length furrows and wide beds.
3-19	Tail of Dekalt	Winter '80-81	Pilot program for beans & wheat, long basins and removed field drains, marwa improvement	After beans & wheat, became sugarcane and rice, now berseem with citrus being established. Sugarcane with short basin and furrows, berseem & citrus on larger basins than EWUP designed, marwa improvement basically remains, has 2 marwa field drain combinations.
3-20	End of Hamad	Summer '81	Pilot program on cotton, land leveling, field drain elimination.	Continue under EWUP management, no conclusions possible.
		Winter	Pilot program with sugarbeet, wheat, berseem for rice nursery, releveled, lined marwa.	

Kafr el-Sheikh Revisited

Site #1	Location	Date	Work Done	Present Condition
3-21	End of Manshia off second branch	Winter '80-81	Pilot program on wheat, leveling & field drain removed, long basin. Site dropped for lack of cooperation after one season.	Crop sequence has followed rice and now beans berseem, & wheat. Most field drains remain out including one 86 ms stretch, also large basins are being used.
3-22a.	Head of Manshia	Winter '80-81	Pilot program on wheat, level, long basin, field drains removed.	Now in berseem, with large basins and field drains still removed.
		Summer '81	Pilot program on rice, releveled	
3-22b.		Summer '81	Pilot program on cotton leveling, long furrow, field drains removed.	Now in beans and flax, with ownership change resulting in field drain boundary, other drains remain out and basins are still large.
3-23,24	Head of Manshia at inlet.	Summer '81	Pilot program for cotton, field drain remained, all property boundaries level, long basin.	Now crops are wheat, flax and berseem, with field drain added to flax only, other maintaining long basins, etc.
3-25	Head of Manshia	Summer '81	Pilot program for rice, leveled, large basin, field drain removed.	Now in berseem, with same basins size as for rice.

EGYPT WATER USE AND MANAGEMENT PROJECT

CONTRACT No. AID/NE - C - 1351

U.S. Owned Egyptian L. E. Budget

Quarterly Report
Jan. to Mar. 1982

<u>Category</u>	<u>Budget Amount</u>	<u>January 1982</u>	<u>February 1982</u>	<u>March 1982</u>	<u>TOTAL</u>
<u>Salaries</u>	149,000	7,223.920	5,134.--	5,039.725	17,397.645
<u>Benefits</u>	29,950	851.310	1,112.625	985.515	2,949.450
<u>Travel & Per diem</u>					
International	223,525	401.200	4,597.560	590.700	5,589.460
Unaccompanied Baggage	5,000	---	---	---	---
Participant Travel	69,455	---	---	---	---
Incountry Travel	7,500	224.655	269.445	389.860	883.960
Emergency	2,500	---	---	---	---
Incountry Per diem	218,000	3,963.715	2,563.420	1,440.655	7,967.790
<u>Housing & Utilities</u>					
Temporary	6,600	75.--	78.--	---	153.--
Permanent Staff	392,500	12,871.290	6,502.475	22,137.800	41,511.565
Deposit Permanent Staff	---	---	---	---	---
<u>Other Direct Costs</u>					
Vehicles Operations	127,000	4,786.320	3,348.475	3,891.655	12,026.450
Field Operating Costs	75,000	1,492.945	201.740	929.750	2,220.955
Other	<u>257,970</u>	<u>2,434.130</u>	<u>6,134,840</u>	<u>2,831.105</u>	<u>11,400.075</u>
GRAND TOTAL:	1,560.000	34,324.485	29,539.100	38,236.765	102,100.350

ACENDA
 JOINT MEETING
 OF
 EWUP ADVISORY COMMITTEE
 AND
 CAMPUS POLICY AND COORDINATING COMMITTEE
JANUARY 16 to 20, 1982

Saturday January 16	0830	Opening Remarks (Conference Room, EWUP Headquarters)	H.E. Samaha
	0845	Task Groups & Pilot Programs	Dr. H. Wahby
	0900	Review of Project Activities to date. This is a slide presentation showing the history of the Project, and "before and after photographs" of Project interventions.	Dr. M. Sallam
	1000	Proposed publication procedures.	Dr. G. Quenemoen
	1030	Refreshments	
	1045	AID's Program in Egypt*	Director Brown*
	1115	Training programs; non-degree, and On-Farm Water Management Short Course.	Dr. Richardson and Dr. Sunada
	1145	Discussion	
	1215	Adjourn	
	Sunday January 17	0800	Depart for Mansouria from EWUP Headquarters.
0900		Orientation: Mansouria Field Office	
		a) Meska 10 Pilot Program (see page 4).	
		b) El-Hammami Pipeline Pilot Prog. (see page 4).	
	c) Other activities	Dr. Mona El Kady	

 * Subject to change to January 20 due to commitments pending in Director Brown's office.

Sunday (cont'd) January 17	1030	Visit El-Hammami	
	1200	Visit Meska 10	
	1300	Lunch - Location to be announced.	
	1610	Depart for El-Minya by EWUP Vans. Evening meal and housing arrangements to be announced.	
Monday January 18	0900	Orientation: Minya Field Office	
		a) Meska 26 Pilot Program (see page 5).	
		b) Abueha Canal Pilot Program (see page 6).	
		c) Other activities	Eng. Abdel Raouf
	1030	Visit Meska 26 and Abueha Canal.	
	1230	Discussion at the Field Office	
	1330	Lunch - Location to be announced.	
	1400	Return to Cairo.	
Tuesday January 19	0800	Depart for Kafr El Sheikh from EWUP Headquarters	
	1000	Orientation Kafr El Sheikh Field Office	
		a) Manshia Pilot Program (see page 6).	
		b) Hamnad Pilot Program (see page 6)	
		c) Other activities	Eng. Kamal Ez El Din
	1130	Visit Field Sites	
	1330	Lunch - Location to be announced.	
	1430	Return to Cairo.	

**Wednesday
January 20**

17:30	Opening Remarks (Conference Room, EWUP Headquarters)	H.E. Samaha
17:45	USAID'S Program in Egypt	Director D. Brown
18:15	Summary of the Findings of the Joint Committee during the four-day session in Cairo and on the Project pilot sites	Dr. H. Wahby and Dr. E.V. Richardson
18:45	MOI reactions to the preliminary recommendations for a program of irrigation improvement submitted by EWUP	Dr. M. Abu-Zeid
19:00	General Discussion	
19:30	Refreshments	

THE PILOT SITES

MANSURIYA

Mesqa 10, Beni Magdul

Channel construction completed.
Pump being procured for installation.

The objective of elevating *Mesqa 10* is to provide the proper quantity of water on a gravity-feed basis to all farmers on the *Mesqa*. A sufficient head will be provided to allow for fast and more efficient irrigations, and will also eliminate the need for various on-farm water lifting systems. The use of cement in lining the *Mesqa* will allow for more control of water losses through seepage which are currently contributing to the high water table.

Technical and organizational changes:

1. A cement-lined, elevated *mesqa* has been built beside the present one. It will allow farmers to irrigate by gravity-fed water. A pump at the head of the *mesqa* will provide water at the required level.
2. EWUP is assisting farmers in the establishment of an irrigation association which will work to achieve good water management. It will schedule irrigations along the entire *mesqa* and will carry out a regular program of canal and drain maintenance.
3. EWUP technicians are making recommendations to selected farmers concerning the proper frequency of irrigation and the amount of water to apply. They also assist farmers in using the new gravity-fed water system and the improved on-farm irrigation designs. Land leveling is done where it is needed.
4. EWUP personnel are making recommendations on crop production available to farmers, and are using demonstration plots to reinforce their recommendations. Their recommendations center primarily on improved irrigation methods, the selection of good crop varieties and effective insect control.

El-Hammami Pipeline

Under construction at the present time.

The objective of constructing the El-Hammami Pipeline is to create a system capable of delivering adequate water equally to every *sadda* served. The Pipeline should provide water on a feed basis, thereby eliminating the need for each farmer to lift water to his field. It should also reduce conveyance losses, which should in turn have a beneficial effect on the water table. Finally, the construction of the El-Hammami Pipeline is meant as an experiment which will allow economists to evaluate more accurately the cost of this kind of canal improvement and the resulting benefits.

Technical and organizational changes:

1. EWUP is constructing a pipeline to replace the present El-Hammami Canal.
2. Farmers have been encouraged to organize an Irrigation Association for scheduling irrigations along the pipeline, and for developing and running a watercourse maintenance program.
3. EWUP technicians are offering assistance and advice to farmers concerning the use of better on-farm irrigation systems. (This may include the use of gated pipe for the efficient irrigation of individual fields.)
4. EWUP personnel offer recommendations on how to achieve good crop production and use demonstration plots as needed to demonstrate the effectiveness of the methods they recommend. They concentrate primarily on areas of improved irrigation techniques, the selection of good crop varieties and effective insect control.

EL-MINYA

Mesqa 26

Mesqa 26 diverts water from the Abyuha Canal about 3.2 km south of where it branches off from the Ibrahimiya Canal. *Mesqa 26* is 840 m long and serves approximately 40 *feddans*, 25 on the lefthand side, and 15 on the righthand side. The 40 *feddans* are divided into 101 plots ranging in size from 0.10 to 1.46 *feddans* each, with an average of 0.40. The plots are cultivated by 52 farmers. About half of these cultivate one plot on this *Mesqa*, but also work plots on other *mesqas*. On the otherhand, one farmer on *Mesqa 26* cultivates 7 plots, and two others cultivate 6 plots each.

Technical and organizational changes:

1. In January, 1981, *Mesqa 26* was elevated to provide gravity irrigation with at least a 20 cm head to all the land that it served. The *Mesqa* was divided into three reaches by the installation of check structures. These structures provided far better water control than had existed before. Water is discharged from the raised *Mesqa* to the fields now through 20 turnouts, 13 on the left side and 7 on the right. Each turnout is designed to serve approximately 2 *feddans*.
2. Water is presently being pumped into the *Mesqa*, simulating conditions as they are expected to be after the raising of Abyuha Canal. The discharge rate was projected at 0.80 to 0.90 m³/sec, but the actual discharge has deviated somewhat from this ideal. Water is measured into the *Mesqa*, and, in some cases, also at the outlet and *marwa* (farm ditch level).
3. An organization of farmers has been established to schedule irrigations along the *Mesqa* and to clean and maintain *mesqas* and drains. The farmers are administering these activities themselves through the organization.

Abyuha Canal

Studies of the water distribution system in Abyuha indicate that the small size of existing streams and the inadequate head of water reaching the fields hinder efficient water management. Furthermore, inadequate control of the flow of water at inlets and outlets to and from *mesqas* (farm distribution channels) leads to excessive flow in drains. It was decided, therefore, to initiate a program for reconstructing the existing open channel distribution system, providing flows with adequate head and good control.

With the installation of appropriate control structures, the reconstruction of channel sections and improved channel layout, and the raising of channel banks, sufficient head would be conserved in the parent Ibrahimiya Canal to deliver water to the fields with adequate head for gravity irrigation. A farmer organization is needed for the operation of canal works and to schedule irrigations.

Technological and organizational changes:

1. The cross-section of the Abyuha Canal (4 km long) is to be modified and the banks raised to provide sufficient force to deliver water to each *mesqa* by gravity.
2. Check structure construction on the Abyuha Canal will include one at the bridge (Station 2.0 km) and a tail escape structure at the end of the Canal.
3. Each *mesqa* will be provided with a headwork with adjustable slide gates to provide good control of water.
4. Each of the cross sections of the thirty *mesqas* served by the Canal will be modified and the banks raised to provide for gravity forced distribution of water to the farms.
5. Gated farm turnouts will be constructed, as well as tail escapes, on each of the thirty *mesqas*.
6. Farmer irrigation organizations are being developed along each *mesqa* for purposes of water scheduling and maintenance. It will then be necessary to develop a canal-wide organization which will deal with water scheduling among the various *mesqas*.

KAFR EL-SHEIKH

Manshiya and Hammad Pilot Programs

EWUP personnel have conducted an evaluation of the existing irrigation system layout and tried various adjustments to improve the conveyance and application of irrigation water, while at the same time reducing losses. On-farm improvements have included improved methods and design in level border and furrow irrigation, implemented along with a program of land leveling. EWUP technicians are working with farmers, giving

advice on when and how much to irrigate, and on improved agronomic practices. An evaluation of the present system of open field drains has led to the consideration of eliminating excess drains, and the addition of others in areas of need. Researchers also considered the impact of on-farm water management on drainage and salinity control. Finally, they are helping farmers to organize for purposes of scheduling and maintenance. Such organizations are particularly important in areas where water shortages occur during critical farming periods.

Technological and organizational changes:

1. Existing irrigation system layouts have been redesigned to introduce a new method of application.
2. A program of land leveling to accompany irrigation changes increases water application efficiency.
3. EWUP personnel are developing a program for making farmers familiar with improved irrigation practices.
4. Farmer organizations are being established to clean and maintain *mesqas* and drains.

DECISIONS TAKEN
by the
EWUP JOINT COMMITTEE
JANUARY 16, 1981

The EWUP Joint Committee, consisting of the Planning and Coordinating Committee and the Advisory Committee, met in the EWUP Cairo Office on January 16, 1981. Project Directors presented a proposed Publications Policy which was discussed and the following resolutions were taken. Dr. Daniel Sunada then presented information on current training activities undertaken by the Project. These were discussed, and the following modifications adopted. Finally, it was resolved to hold a meeting of project directors from all projects working within the MOI and the MOA in order to avoid duplication of effort and to improve communication among the projects. No date was set for this meeting.

I. Publications Policy

A. Class I: Internal Memoranda--Draft Working Papers (Type 1)
Distribution in addition to the basic circulation specified for this type of publication will be at the discretion of the Project Directors.

B. Class II: Manuals
The Joint Committee further refined the definition of this class of publication, suggesting that certain Manuals be written in simple language for the express purpose of being used as educational materials in extension education programs. Manuals will embody the results of EWUP research in the form of recommendations and examples. Each Manual will confine itself to specifications on how to do a single task.

C. General Publication Policy

A list of essential topics will be prepared and submitted to the Joint Committee. These topics will be covered by EWUP publications. The list will conform to the eleven Task Groups designed a year ago, which cover all aspects of EWUP's applied research.

Each class of publication will be accompanied by an abstract in English and in Arabic, as well as by a summary in non-technical language.

Dr. Abu-Zeid will send a letter to Dr. Kamel Hindi, Chairman of the Agricultural Development Committee for Foreign Aids at the MOA, asking him to exchange MOA publications for EWUP publications. The Project should try to obtain copies of all publications produced on Egyptian irrigation and agricultural projects for the information of Project researchers and MOI personnel.

The proposed PROJECT TECHNICAL REPORT DISTRIBUTION LIST has been modified. See copy attached.

II. Training Program:

- A. It was agreed that Project Directors may extend the length of training programs undertaken by EWUP personnel at Colorado State University from nine months to twelve months, or as needed. Extensions will be granted by the following procedure:
 1. Recommendation to extend by the student's academic supervisor at the University.
 2. Acceptance of the recommendation by the P & C Committee
 3. Approval by the Project Directors, based on the information contained in the Semester Reports submitted by the student's Academic Supervisor (see below, B).
- B. Supervisors of EWUP trainees at the Colorado State University will submit reports on the progress of each student at the end of every semester to EWUP in Cairo.
- C. Project Trainees who have already spent time at Colorado State University will be eligible to return for further training. Approval for return trips will be granted on the basis of the student's performance academically while at the University, and in the field upon his return. It will then be decided whether further training would be beneficial to the individual and to the aims of the Project.
- D. EWUP personnel who are selected for training and who are enrolled in an Egyptian university at the time must alert their Egyptian academic supervisors of their intention to study at Colorado State University. The Project should make sure that the Egyptian academic supervisor is aware of the projected training course in time to coordinate efforts and to ensure proper preparatory training for the student.
- E. The EWUP Training Office should work together with the Irrigation Research Center Training Office to insure full cooperation and coordination of effort.

**DISTRIBUTION LIST
FOR
PROJECT TECHNICAL REPORTS**

	Number of Copies
1. Ministry of Irrigation	
A. Office of the Minister	5
B. Irrigation Research Center	25
C. Office of the Senior Under-Secretary of State and Chief of Irrigation Department.	50
2. Ministry of Agriculture	
A. Office of the Minister	5
B. Agricultural Research Center	25
C. Agricultural Extension Department	2
3. Ministry of Land Reclamation	
A. Office of the Minister	5
4. Universities (Publications to be sent to Colleges of Engineering and Agriculture, depending on the content)	
- To each Dean of the College, 5 copies	
- To each University Library, 2 copies	
A. Al Azhar University	
B. Alexandria University	
C. Assyut University	
D. 'Ain Shams University	
E. Cairo University	
F. El Canal University (Ismailiya)	
G. El Fayum, Faculty of Agriculture	
H. Helwan University	
I. El-menufeya University	
J. El-Minya University	
K. Tanta University	
L. Zagazig University	
M. American University	

.../...

Distribution List cont'd

5. Egyptian Documentation and Information Center for Agriculture (EDICA)	2
6. AID Agricultural Projects (11) one each	11
7. USAID Library	1
8. EWUP Library	3
9. Engineering Research Center, CSII	6
10. Consortium for International Development	1
11. UN Development Program	1
12. National Academy for Scientific Research and Technology (Kasr El Ainy)	3
13. National Research Center (Dokki)	3
14. FAO Rome	3
15. For distribution upon request	
Cairo, 22 Sh. Galaa, Bulaq	100
Ft. Collins, Colorado, USA	100

SCHEDULE FOR SALT RIVER/EGYPT WATER USE & MANAGEMENT PROJECT ORIENTATION

February 22 - 26, 1982

All sessions will be held in Room 180, Lory Student Center, unless otherwise noted. Student Center phone: 491-6395.

MONDAY, February 22

- | | | |
|------------|---|---|
| 8:00 a.m. | Gathering time (coffee and cider will be available) | |
| 8:30 a.m. | Orientation Overview | Mrs. Faith Skold
Acting Coordinator
Office of Int'l Training |
| 9:30 a.m. | Egypt: Past, Present & Future | Dr. E. V. Richardson
Campus Coordinator
Egypt Water Use & Mgmt Project |
| 10:45 a.m. | EWUP Project Overview | Dr. Melvin D. Skold
Department of Economics
Member, EWUP Planning & Coordination (P&C) Committee |
| 12:00 noon | Lunch (on your own) | |
| 1:30 p.m. | Crosscultural Seminar | Mrs. Jean Griswold
Coordinator, Office of International Education
Mrs. Omnia El-Hakim
Egypt Water Use & Mgmt Project |

TUESDAY, February 23

- | | | |
|---|---|---|
| 8:30 a.m.
*Room E-110
Engineering Bldg | Introduction to Egypt and Islam
Videotape: "The Long Search:
'There is no god but God'" | Dr. William J. Griswold
Department of History |
| 12:00 noon
*Room 166, Lory
Student Center | Informal Crosscultural Session | Training Participants and
Egyptian Friends |
| 2:00 p.m. | Expectations of Egyptians in
Working with Americans (Panel) | Mrs. Faith Skold, Moderator
Mr. Esmat Ahmed
Mr. Rashwan Ibrahim
Mr. Ahmed Ismail
Ms. Azza Hasm
Mr. Elia Sorial
Egypt Water Use & Mgmt Project |

SCHEDULE FOR SALT RIVER/EGYPT WATER USE & MANAGEMENT PROJECT ORIENTATION, page 2.

WEDNESDAY, February 24

9:00 a.m.	Living in Egypt: Opportunities and Practical Concerns (Panel)	Dr. Edward Knop, Co-chair Dr. Sheila Knop, Co-chair Department of Sociology Dr. Alex Dotzenko Mrs. Mae Dotzenko Department of Agronomy Mr. Henry Horsey Mrs. Mary Horsey Department of Civil Engineering
12:00 noon	Lunch (on your own)	
1:30 p.m.	The Ministry of Irrigation in Egypt Today	Dr. E. V. Richardson
4:00 p.m. *LaPorte Room Lory Student Center	Training Workshop	EWUP Team

THURSDAY, February 25

8:00 a.m.	Gathering time	
8:30 a.m.	Team Building: Principles of Being a Good Team Member	Dr. Jack Hautaluoma Department of Psychology
12:00 noon	Lunch (on your own)	
1:30 p.m. Room 203, Lory Student Center	Living and Working in Kafr el Sheikh	Dr. David Redgrave Department of Agronomy

FRIDAY, February 26

8:00 a.m.	Gathering time	
8:30 a.m.	EWUP Project: Basic Issues in Interdisciplinary Relationships	Dr. Edward Knop, Chair Dr. E. V. Richardson Dr. Willard Schmehl Department of Agronomy, Member PAC Committee Dr. Melvin D. Skold
12:00 noon Long's Peak Room Lory Student Center	Summary Session	

IT ERARY FOR EGYPTIAN EXCHANGE PARTICIPANTS

Mr. Esam El-Din Fawzi Barakat

Mr. Adel Hushem Saleh

April 5 - May 14, 1982

Ahlan Wa Sahlan - Welcome

Monday, April 5 - Water Staff

8:30 AM	Pick up at hotel - Don Davis
8:45	Orientation Film - Don Davis
9:15	Table of Organization Review of Management's Responsibilities Questions and Answers - Don Davis
10:15	board Conf Room - Welcome to SRP - Reid Teeples
11:30	Lunch - Cafeteria
12:00	Overview of Program
1:00 PM	Tour Administration Bldg. Computer Center History Center Interactive Drafting & Design Files and Reproduction - John Downing & Don Davis
2:00	Pera Club - Don Davis
3:00	Break
3:15	Questions & Answers Familiarization to Valley - Don Davis
5:00	Return to hotel - Don Davis

Tuesday, April 6 - Water Operations

8:15 AM Pick up at Hotel (Bob Hensley)

8:30 Overview of Water Operations Dept. (Sid Friar)

9:30 Break

10:00 Discuss Water Operations mission and functions,
amount of water delivered, summer demand,
Table of Organization, Budget,
Questions and Answers (Friar)

11:30 Lunch (Friar)

12:30 PM Brief tour of Association Dispatch Center
(ADC) - overview of transmission
system, supervisory control, communication
equipment and responsibilities (Bob Hensley)

2:00 Travel to Phoenix Irrigation - discuss
subdivision irrigation methods, zanjero equipment,
area of responsibilities (Bob Hensley)

3:45 Return to hotel (Bob Hensley)

Wednesday, April 7 - Water Operations

7:30 AM Pick up at hotel (Bob Hensley)
Travel to Western Irrigation

8:30 Tour Western area of responsibility, tour typical
farm unit, discuss irrigation methods,
Questions & Answers

10:30 Tour Western Irrigation office

11:30 Lunch (Bob Hensley)

12:30 PM Travel to Southside Irrigation

1:30 Tour general Southside area of responsibility,
distribution system, irrigation methods.

3:30 Return to hotel (Bob Hensley)

Thursday, April 8 - Civil Engineering

8:00 Pick up at Granada Royale (Tim Stanton)
8:30 Civil Engineering Dept. Overview (Tim Stanton)
9:00 Water Civil Division Overview (Alex Richards)
9:30 Break (Alex Richards)
9:45 Transmission Design (Herb Mattingly)
10:30 Distribution Design (Jim Reiman)
11:15 Quality Control (Art Moore)
12:00 Lunch (Art Moore)
12:30 PM Broad Crested Weirs (Steve Tanis) Includes trip
to weir sites and U.S. Water Conservation Lab
4:30 Return to hotel (Steve Tanis)

NOTE: Room b-174 reserved for morning session

Friday, April 9 - Holiday

Free day

Sat & Sun, April 10th & 11th Weekend

Free days

Monday, April 12 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Dennis Erickson	Pick up guests at Granada Royale Hometel, 4401 East McDowell and return to PAB.
7:45	Ron Merkley	Orientation on Water C&M's mission and function, regarding maintenance of canals, laterals, and deep well pumps.
9:30		Break
9:45	Ron Merkley	Provide Overview of nine day Water C&M program May 3 to May 13.
10:30	Dennis Erickson	Visit Groundwater Building C&M. Introduce to Groundwater/Building staff. Tour facilities at Groundwater/Building
11:30	"	Lunch
1:00 PM	"	Visit Southside C&M. Introduce to Southside staff. Tour facilities at Southside.
2:15	"	Return to hotel.

Tuesday, April 13 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Dennis Erickson	Pick up guests at Granada Royale Hometel, 4401 E. McDowell
8:00	"	Visit Western C&M. Introduce to Western C&M staff. Tour facilities at Western C&M
9:00		Break
9:15	Dennis Erickson	Field trip to familiarize major items to be covered during nine-day training program.
11:30	"	Lunch
12:30 PM	"	Introduce to Water C&M General staff.
1:00	"	Review schedule for nine-day cross-training. May 3rd to May 13th. Determine areas of interest. Adjust schedule if necessary.
2:15	"	Return guests to hotel.

Wednesday, April 14 - Water Resources and Services

8:30 AM	Brian Crouse	Pick up at hotel and transport to PAB.
9:00	"	Walk-through and introduction to Customer Service Office (CSO) area and personnel.
9:30	"	Break with supervisors.
9:45	"	CSO training film and explanation of Field Rep duties.
11:00	"	Explanation of office mission & function.
12:30 PM	"	Lunch with CSO supervisors
1:00	"	Introduction to Jim Brassfield for overview of Accounting/Collections Division.
	Dale Messmer	Discuss Division functions, show and describe documents and plats.
2:00	"	Explain functions of escrow, special billing, transfer journal and cash collections.
3:00	"	Break, explain functions of sub-division scheduling and water charges.
4:00	"	Continue with water charges - cover any miscellaneous items and/or answer any questions they have. Return to hotel.

Thursday, April 15 - Water Resources and Services

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:30 AM	Jim McDade	Pick up at hotel.
8:45	"	Head of Lateral Measurement (HOLM) overview Records of improvement Charts and graphs of results
9:45		Break
10:00	Jim McDade	Lateral Standard Determination (LSD) overview. Records, charts and graphs
10:45	"	Specialized studies, projects and measurements
11:30	Sid Wilson	Agriculture program
12:30 PM		Lunch
1:00	Gary Small	Groundwater Planning
2:00	Bill Warskow	Watershed management
3:00	Darrell Jordan	Hydrology Division functions
3:30	Dallas Reigle	Equipment room, etc.
4:00	Guy Delaney	Pumps and special contract records
5:00	"	Return to hotel.

Friday, April 16 - Special Studies

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:30 AM	Ed Kirdar	Pick up at hotel.
8:45	"	Overview major functions of Special Studies Group including Central Arizona Project (CAP) and Central Arizona Water Control Study (CAWCS) Plan 6 objectives and operations. This will be accomplished by utilizing video tape, slide and maps with the discussion in Room 1268.
10:45	"	Visit Salt-Gila Pumping Plant and the CAP Aqueduct construction. Lunch in route.
2:30 PM	Tom Sands	Overview of computer applications related to Special Studies that includes HEC-5R and SRPSIM computer programs.
3:30	Ed Kirdar	Review and evaluate the Orientation Program with Egyptians. Recommend changes, if any. Overview remainder of the program.
5:00	"	Return to hotel.

Sat & Sun, April 17 & 18

Weekend Free

Monday, April 19th - Water Resources and Services

7:30 AM	Jim McDade	Pick up at hotel.
7:45	Martin Richards	Demonstration of current meter measurement of Arizona Canal @ Arizona Falls.
9:00	Jim McDade	Demonstration of irrigation gate measurement.
10:00		Break
10:20	Jim McDade	Additional demonstrations of irrigation gate measurement techniques using probe, calipers, weir stick and Hatcher calculator.
12:00		Lunch
12:30 PM	Jim McDade	Demonstration of broad-crested weirs and flumes.
2:30		Break
2:45	Jim McDade	Hydraulics lab demonstration.
4:00		Return to hotel.

Tuesday, April 20 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Don Pipes	Pick up at hotel.
	"	Trip to Western Irrigation pointing out facilities enroute.
8:30	"	Explain Northside Irrigation, Table of Organization, responsibility of superintendent and Mission and Functions.
10:30	Bill Hancock	Responsibilities of Chief Clerk office procedures, accounting and auditing.
11:30	Bill Hancock, Don Pipes	Lunch
12:30 PM	Bill Hancock	Water order preparation, direct entry, audit charge cards, etc.
2:30	Don Pipes, Bill Hancock	Rev'ew of day's activities.
3:00	Don Pipes	Return to hotel.

Wednesday, April 21 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Don Pipes	Pick up at hotel.
8:30		Meet Watermaster, Charlie Seyler.
8:30	"	Responsibility of watermaster, cover area audits, construction problems, water orders, etc.
11:00	Charlie Seyler	Lunch
12:00	Bob Gray	Schedule Area 23.
3:00 PM	Don Pipes	Return to hotel.

Thursday, April 22 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
6:30 AM	Don Pipes	Pick up at hotel.
7:15	Bob Gray	Meet regular zanjero on Area 23.
	"	Explain schedule which was completed yesterday, gate operation, emphasis on measuring, trouble calls, etc.
11:00	Don Pipes	Lunch
12:00	"	Ride with relief zanjero on Area 23, continue to discuss zanjero responsibilities and measuring.
2:30 PM	Don Pipes	Return to hotel.

Friday, April 23 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Al Risinger	Pick up at hotel.
	"	Travel to Southside Irrigation.
8:00	"	Explain Southside Irrigation, Table of Organization, area of responsibility.
10:30	Watermaster, Ray Bowyer	Explain watermaster responsibilities.
11:30	Al R singer, Ray Bowyer	Lunch
12:30 PM	Ray Bowyer	Tour of Southside Irrigation, farm tours, irrigation methods, measuring, different structures.
3:30	Al Risinger	Return to hotel.

Sat & Sun, April 24 & 25

Weekend Free

Monday, April 26 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Al Risinger	Pick up at hotel.
8:15		Meet Zanjero Ken Morris, Area 30, hands on water measurement, gate operation, trouble calls.
11:00	Bob Bahls	Lunch
12:00		Schedule with Zanjero Morris.
2:30 PM	Al Risinger	Review day's activity.
3:30	"	Return to hotel.

Tuesday, April 27 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Al Risinger	Pick up at hotel.
8:30		Meet Zanjero Abel Esparza at Southern Line. Hands on zanjero duties, measuring gate operation, trouble calls, etc.
11:30	Dennis Roach	Lunch
12:30 PM		Meet Bob Valenzuela, relief for Area 35, continue hands on zanjero operation - trouble calls, etc.
3:30	Al Risinger	Return to hotel.

Wednesday, April 28 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:30 AM	Ron Grosch	Pick up at hotel.
9:00	"	Review organization structure and mission.
10:00	"	Supervisory system operation.
11:00	"	Control room operation.
12:00	"	Lunch
1:00 PM	"	Field tour at 2-4.1 and 2-0.
2:00	"	Field tour at Indian Bend.
3:00	"	Review of day - Questions & Answers.
4:00	"	Return to hotel.

Thursday, April 29 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:00 AM	Ron Grosch	Pick up at hotel.
9:00	"	Tour South Con.
10:00	"	Tour Granite Reef.
11:30	"	Travel to Saguaro Lake.
12:30 PM	"	Lunch at Saguaro Lake.
2:00	"	Tour through Stewart Mountain Dam.
3:30	"	Return to Valley.
4:00	"	Return to hotel.

Friday, April 30 - Water Operations

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:00 AM	Watermasters, Ralph Lane & Hank Gerlach	Pick up at hotel.
8:30	"	Console operation explained.
9:30	"	Hands on operation.
10:00	"	Take readings.
11:00	'	One hour with ADC operation.
12:00	"	Lunch
1:00 PM	"	Scheduling explained/observed.
3:00	"	Wrap-up - Questions and Answers.
4:00	"	Return to hotel.

Sat & Sun, May 1 & 2

Weekend Free

Monday, May 3 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Dennis Erickson	Pick up guests at Granada Royale Hometel, 4401 East McDowell and return to PAB.
7:45	Ron Merkley	Discuss in detail: Water C&M mission and function Operation and Maintenance (O&M) Budget Key Indicators
9:30		Break
9:45	Ron Merkley	Discuss in detail: Storm Control responsibilities Table of Organization and Manager's responsibilities, and staff responsibilities.
10:30	Dennis Erickson	Take guests to Southside C&M to begin Specialized Work Program #3.
11:00	Tom Bawden	Greet guests and introduce to Southside staff. Review of Southside C&M's mission and function.
11:30	Tom Bawden	Lunch
12:30 PM	Tom Bawden	Discuss Operation and Maintenance (O&M) Budget and Key Indicators. Cover Division Table of Organization and general responsibilities of Superintendent and Assistant Superintendent.
2:00	Tom Bawden	Return guests to hotel.

Tuesday, May 4 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Wes Farley	Pick up guests at Granada Royale Hometel, 4401 East McDowell and return to Southside C&M.
8:00	Tom Bawden	Review two-day program at Southside C&M.
8:30	Eddie Arnold	Review maintenance Areas 4 and 5 Foreman responsibilities Crew make-ups and type of maintenance performed by each.
10:00		Break
10:15	Eddie Arnold	Types of equipment and their uses Storm activities Interface with other departments Tour yard (include precast)
11:30	Eddie Arnold	Lunch
12:30 PM	Wes Farley	Cover administrative needs to support our maintenance program. Field Requests Material handling and warehousing
2:00	Wes Farley	Return guests to hotel.

Wednesday, May 5 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Wes Farley	Pick up guests at Granada Royale Hometel, 4401 W. McDowell and return to Southside C&M.
8:00	Willie Jolly	Field trip to observe typical irrigation maintenance projects. Exposure to men and equipment uses, Area 4 and Area 5.
10:00		Break
10:15	Willie Jolly	Continue field trip to observe typical irrigation maintenance. Review normal duties of Maintenance Foreman.
11:30	"	Lunch
12:30 PM	"	Visit irrigation construction project under construction.
2:00	"	Return guests to hotel.

Thursday, May 6 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Winn Winkyaw	Pick up guests at Granada Royale Homotel, 4401 West McDowell and return to Water C&M (Crosscut).
7:45	"	Overview of Weed Control Program (Aquatic and Terrestrial) Review job responsibilities Review Budget for Weed Control Program
9:30		Break
9:45	Winn Winkyaw	Review all chemicals used and method of application. Goals and Objectives of Weed Control Program.
11:30	"	Lunch
12:30 PM	"	Visit field locations where weed problems are evident, and areas where maintenance results can be seen. Observe canal mowing operations.
2:00	"	Return guests to hotel.

Friday, May 7 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:00 AM	Winn Winkyaw	Pick up guests at Granada Royale Homotel, 4401 West McDowell and travel to Western C&M.
7:30	"	Observe the mixing of chemicals in spray trucks. Explain the different mixes, the expected results, and proper storage of chemicals.
8:30	"	Familiarize them with spray trucks and observe spraying operation.
10:00		Break
10:15	"	Visit Acrolein demossing site. Observe set-up procedure and equipment requirements.
		Observe results of demossing from previous applications.
11:30	"	Lunch
12:30 PM	"	Return to Crosscut Office.
		Review paperwork and reports.
		Review the fish program.
		Tour Chemical Laboratory and review its mission and function.
2:15	"	Return to hotel.

Sat & Sun, May 8 & 9

Weekend Free

Monday, May 10 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Sandy Stanley	Pick up guests at Granada Royale Hometel, 4401 West McDowell and travel to Groundwater/Building C&M.
7:45	Paul Peters	Greet guests and introduce to office staff. Review Groundwater/Building's mission and function. Overview of deep well pump operations, related budget, and key indicators.
8:30	John Biggs	More detailed review of wellsite maintenance and operation program. Review job responsibilities of all personnel.
10:00		Break
10:15	Leon Johnson	Field trip to show typical wellsite and maintenance. Review canal structure maintenance program. Show automatic trash rack in operation. Filter Plants on SRP canal system. Review job responsibilities.
12:00	Leon Johnson	Lunch
1:00 PM	Sandy Stanley	Review administrative activities. Scheduling of maintenance Associated costs Key Indicators
2:15	Sandy Stanley	Return guests to hotel.

Tuesday, May 11 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Mike Francis	Pick up guests at Granada Royale Homotel, and return to Western C&M.
8:00	Phil Gaiser	Greet guests and introduce office staff. Review Western's mission and function Review O&M Budget and Key Indicators Cover division Table of Organization and general responsibilities of Superintendent and Assistant Superintendent. Provide overview of three-day program at Western.
10:00		Break
10:15	Bill Bobb	Discuss maintenance Areas 1, 2, and 3. Cover Foreman's responsibilities. Cover crew make-up and type of work performed by each. Discuss the types of equipment and their uses. Storm conditions and duties. Review how we interface with other departments. Tour maintenance yard and shop.
11:30	Bill Bobb	Lunch
12:30 PM	Mike Francis	Cover administrative needs to support our maintenance and construction program. Field Request. Material handling and warehousing.
2:00	Mike Francis	Return guests to hotel.

Wednesday, May 12 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Mike Francis	Pick up guests at Granada Royale Hometel, 4401 West McDowell, and return to Western C&M.
8:00	Larry Harding	Field trip to maintenance Areas 1, 2, and 3. Typical maintenance work. Guests can ride with " <u>trouble crew</u> " to observe various emergency repairs being done. (Hands-on Optional)
10:00		Break
10:15	Larry Harding	Review the interfacing of C&M with Irrigation Operations personnel. Review trash routes and equipment including P.B. Loader.
11:30	"	Lunch
12:30 PM	"	Observe Irrigation construction project under construction.
2:00	"	Return guests to hotel.

Thursday, May 13 - Water Construction and Maintenance

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
7:30 AM	Mike Francis	Pick up guests at Granada Royale Hometel, 4401 West McDowell, and return to Western C&M.
8:00	Larry Harding	Review work for the day. Outline work to be performed by "repair crew."
8:30	"	Accompany " <u>repair crew</u> " on typical repair jobs. Several small repairs should be prearranged to give a variety of typical maintenance work required. (Hands-on Optional)
10:00		Break
10:15	Larry Harding	Continue repair crew maintenance work and how we interface with Operations by use of Field Request.
11:30	"	Lunch
12:00	"	Cover pros and cons of maintenance of underground pipelines. The effects of urbanization on our irrigation system.
2:00 PM	Mike Francis	Return guests to hotel.

Friday, May 14 - Water Staff

<u>TIME</u>	<u>NAME</u>	<u>DESCRIPTION</u>
8:30 AM	Ed Kirdar	Pick up at hotel.
9:00	"	Review program & comments solicited from Egyptians.
10:00		Break
10:30	Reid Teeples	Meeting for Egyptians to inform Salt River Project management of their experience at SRP, and how they may use the information in their work in Egypt.
		Presentation of Zanjero Certificate.
11:30	Ed Kirdar	Lunch
12:30 PM	"	Orientation film (in Arabic language) to reinforce their understanding of SRP.
1:00	"	Afternoon free for special requests of Egyptian Guests.

End of Program at Salt River Project.