

PN-AAAG-652
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QUARTERLY REPORT

July 1 to September 30, 1978

EGYPT WATER USE AND MANAGEMENT PROJECT

Submitted by

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

**Consortium for International Development
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Project Status

Mansouria

A draft of the problem identification report that identifies the agronomic, economic, sociological and engineering constraints in the Mansouria district was completed. This report gives the problems that were identified during the first nine months of field work on the project. The draft will be finalized next quarter and in addition an executive summary prepared.

A. Summarization of Constraints

1. Agronomic Constraints

Crop stand populations - The number of plants per unit area of land is low as percent of optimum number of plants per feddan ranges from 51.4 at El Hammia to 75.5 at Beni Magdoul for the case of corn. In egg plant only 73% was recorded while in tomatoe plants 84% was recorded.

Ground water observations - Ground water depth before irrigation average from 70 to 80 centimeters below the soil surface at El Hammia and Beni Magdoul and was from 58 to 70 centimeters two days after irrigation. The salinity of the ground water is relatively low and therefore it is possible that high crop yields can be obtained under these relatively high water table conditions. However in areas where soil infiltration is low, ponding and high water table conditions can result in marked depressions in crop yields due to the water table approaching the soil surface. Because the water table is close to the soil surface fluctuation in water table levels with irrigation are marked and have a much greater potential for effecting crop yields.

Soil fertility and soil classification - The soil fertility surveys indicate that most micronutrients are in ample supply for most crops. But possibly some micronutrients may be in short supply, notably zinc and iron. This survey also pointed out the need for a soil testing laboratory for Egypt in order to determine the recommendations for fertilizer applications according to individual farmer needs. The soil survey and classification pointed out the salinity is a problem or could be a potential problem on 25% of the land area in Beni Magdoul and on 17% in El Hammia. Soil salinity as measured by SAR shows that 9% of the area in Beni Magdoul and 23% in El Hammia pose potential problems. These areas have yield problems that will become more severe if present management practices continue.

2. Economic Constraints

Lack of data for farm planning and feasibility analysis - Several attempts to evaluate technological alternatives for example, canal lining, animal replacement by machines resulted in unsatisfactory analysis. The difficulty was primarily lack of general farm management input-output data and relationships. Also attempts to get data through secondary sources and through farmer interviews were frustrated by poor communications, memory, bias and distrust. This lack of data for farm planning and feasibility analysis is one of the major constraints to the economist in developing a true picture of present economic conditions in farm operations.

Excessive slack time in crop rotations - The average slack time in crop rotations for the study farms in Mansouria was 16% or 58 days per year for the agricultural years 1977 and 1978. This slack time can be reduced by better farm planning, cooperation on more capital intensive land preparations methods and improved water distribution systems. For example, in connection with improved water distribution systems, some land was idle because water was not available in the Meskas (farm ditches) for irrigation.

Excessive costs for lifting water - Most farmers in Mansouria lift water with tambours and sakias. A tambour is a man operated screw pump (Archimede's screw) and the sakia is an animal power water wheel. Lifting water with a tambour costs three times more than with diesel or electric pumps; a sakia about two times more. From data available average costs for lifting water by tambour may range from 60-90 Egyptian pounds per feddan per year. While on the other hand the cost for operation of the sakias may be from 40-50 Egyptian pounds per feddan per year. These analyses have made it possible for other more economical alternative systems to be suggested.

3. Sociological Constraints

Social organization among farmers - Presently in the Mansouria district there is a virtual absence of formal voluntary organization among farmers on continuous lands and at the village level.

Problematic Communications - There are both inadequate and inaccurate communications among neighboring farmers and government officials. This situation leads to ineffective decision making by farmers and underlies much of the suspicion and distrust evident among them and toward government officials and its technical specialists. Such conditions are counter productive to development processes.

Weakened local leadership - Even though there is a lack of hard data to substantiate these observations it is evident that the declining effectiveness of local leadership comes in several forms. There seems to be a high proportion of village people willing and inclined to assume more leadership than they now have.

4. Engineering Constraints

Water Distribution - Irrigation water distributed by the Mansouria canal system is not distributed equally to all land it serves. A block of land served by one branch canal may receive more than 3 times as much water per feddan as the land served by another branch canal. The complete lack of scheduling of irrigation is one of the main reasons for the unequal distribution. Another reason is the large number of illegal intakes to farm ditches. For example, in El Hammal about 3 times as many illegal farm intakes exist as there are legal intakes.

Farmers near the end of a private ditch usually do not get as much water per feddan as those near the beginning of the ditch. Lack of adequate maintenance of government canals and private ditches in the Mansouria irrigation district caused great problems for the farmer because he could not depend on his water supply. Likewise maintenance of drains is sometimes delayed until they no longer function.

Farmers are accustomed to crossing canals where there is no bridge. After cleaning the canals they still use these crossings thus causing damage to canal embankments and obstructions to the canals. A severe problem of submerged weeds occurred in the concrete line, Beni Magdoul canal during the spring and early summer of 1978. Apparently the weeds were nourished by an accumulation of up to 20 centimeters of silt in the canal. Other materials removed from the canal during the cleaning included sand, chunks of concrete, garbage, and miscellaneous village items. The use of canals by the village people for laundry, cleaning of animals and etc. pose some real problems with respect to canal maintenance and weed control.

Canal seepage - Seepage from irrigation canals and ditches seem to contribute considerably to high water tables in the Mansouria irrigation district. At the time of this writing insufficient data is available to quantify how much of the seepage contributes to the water table position. Measured losses from the Mansouria canal range from slightly negative values in one reach to nearly 4% per kilometer in another reach. During periods of canal closure in January, water tables noticeably decline but the decline may have been due to not only an absence of water in the canal but also an absence of irrigation on the farm lands.

Problem Identification work will continue in the Mansouria irrigation district. Also, plans are being developed for implementation of field trials and limited research activities necessary for the development of a pilot program. Continuous water level recording devices have yet to be installed in the field for obtaining records on ground water fluctuations and on monitoring canal discharges because of the necessity of fabricating and constructing security boxes for these recorders. It is expected that some field trials for the solutions of the problems identified will be implemented during the next quarter. For example the economist's have estimated that the cost saving could easily average more than 20 Egyptian pounds per feddan by changing from a manual animal powered lifting system to an electrical or diesel pump system. Such a system and the associated irrigation scheduling schemes that might be

adopted will be considered during this next quarter in an attempt to increase farm income by reducing costs.

Kafr El Sheikh

Problem identification studies were in full swing this quarter and it is expected that preliminary results of this study will be available by January 1979. Ms. Nancy Adams and a complete complement of multi-disciplinary Egyptian personnel are working in the area. Unfortunately Ms. Adams contracted contagious hepatitis while working in the area and had to return to Cairo for medical treatment. However she had the field work well underway before she became ill and the Egyptians continued with the program laid out by her and the senior advisors. Drs. Santopolo, Schmehl, Scott and Moseley who worked on the project TDY this period also helped maintain progress in this phase of the work.

Dr. M.S. Samir, team leader, returned from taking the on-farm water management short course in Fort Collins in September and effectively took charge of the field work.

Field studies of the effectiveness of adding the micronutrient zinc to rice lands were started. Field comparisons of adding zinc to the nursery vs directly to the transplanted rice fields and vs not adding zinc were started. Also comparisons of zinc and non zinc fields following different rotations are under study. Observations of the crops indicate that there is significant improvement in yields with the addition of zinc and that rice yields are affected by previous crop rotations. However, firm results and the economical viability of adding zinc must wait for the harvest of the crop.

Apartments for Nancy Adams and for TDYs from Cairo were rented and the necessary alterations are almost complete.

It is expected that the problem identification work will be completed during the next quarter. Much of the data have been collected and is presently being analyzed in preparation of the problem identification report. The summer crop rice and cotton will be harvested next quarter and the winter berseem (clover) crop will be planted. Installation of the automatic recorders for measurement of the ground water table fluctuations and the discharge in the canals and drains should be completed next quarter.

El Minya

Part of the Egyptian team for El Minya has been identified and are undergoing training by working in the other two areas. Dr. Erwin E. Nielsen was selected and approved by the Egyptian Government as the American field team leader. He helped conduct the on-farm water management short course, was leader of the field trip to observe American irrigation practice in Colorado, Arizona and Southern California. He has completed both Washington and Colorado State University Orientation (CSU program attached) and will travel to Egypt in October.

Richardson, Brooks, Dimick and Helmy spent two days at El Minya in September to locate housing, local support and identify the area for problem identification studies. Mr. Samah el Sayed Yassin, General Director Irrigation Ministry and his staff were extremely cooperative. They have located office space and apartments for both the Nielsens and for TDYs working in El Minya.

Next quarter will be spent in continued training of personnel who will work in the area, identifying the exact area for the problem identification studies and in establishing the field office. However actual field work will not start until after the first of the year.

Project Advisory Committee (Cairo)

The project advisory committee did not meet this quarter.

Backstopping

The P&C committee continued to meet weekly to plan and coordinate the campus activities (training, TDY, campus studies, logistic support, etc.) in support of the field program.

In July Drs. Abu-Zeid, Brooks and Serry took part in a joint planning meeting with the P&C committee. The minutes of the meeting are attached. In addition to this planning session the three gentlemen visited some irrigation research stations in Colorado, visited a center pivot manufacturing plant and observed center pivot systems in Nebraska, visited some irrigation farms in Colorado and Nebraska and attended the CID meeting in Oregon. In addition Dr. Abu-Zeid visited the Ag Engineering Department, University of California, Davis, Dr. Serry visited the International Fertilizer Center in Alabama and Dr. Brooks visited the Ag Engineering Department at Oregon State University.

The P&C committee was responsible for the summer on-farm water management training course with members giving lectures, leading local field trips and spending weekends with the participants.

TDY

The following were in Egypt TDY this quarter

Dr. Y.C. Moseley, Assistant Professor Agricultural Engineering
(6/19 to 8/19/78)

Dr. M.D. Skold, Professor of Economics
(7/21 to 8/19/78)

Dr. F.A. Santopolo, Professor of Sociology
(7/28 to 8/19/78)

Dr. V.H. Scott, Professor of Civil Engineering
(8/6 to 9/3/78)

Dr. W.R. Schmehl, Professor of Agronomy
(8/5 to 9/2/78)

Dr. E.V. Richardson, Project Coordinator
(9/9 to 10/5/78)

Dr. G.V. Skogerboe, Professor of Agricultural Engineering*
(9/16 to 9/23/78)

* Dr. Skogerboe (only paid in country per diem as he was traveling from third country)

Training

A. On-Farm Water Management Short Course

The short course was presented to eleven Egyptian professionals during the period June 18 to August 22. The list of trainees, instructors, training schedule and schedule for the field trip is given in the appendix. All trainees have returned to Egypt and with the exception of Mr. Emera and Mr. Helmy all are working on the project. Mr. Emera returned to the Farm Machinery Research Institute, Ministry of Agriculture and Mr. Helmy to the Water Management Research Institute, Ministry of Irrigation.

B. Training Field Trip

Five Senior officials in the Ministry of Irrigation spent the period August 5 to 22 in the United States to learn about American Irrigation practice. The officials were able to observe every method of irrigation that is used in the world today except human and animal power lift systems. These included all forms of sprinkler (center pivot, hand set, hose pull, permanent set) drip, bubbler, level basin, gated pipe, cut back, furrow and flood. They observed modern scheduling techniques both on-farm and large irrigation delivery systems. The latter was the Salt River Project in Arizona. They visited many research laboratories and experiment stations such as the Hydraulics laboratory at Colorado State University, the U.S. Department of Hydrology Salinity laboratory in Arizona and the University of Arizona field station. In addition they toured many private irrigated farms. The trainees and their program is in the appendix.

Drs. Brooks and Abu-Zeid and Mrs. Mona El Kady attended the International Congress of Irrigation and Drainage meeting in Athens, Greece May 24 to June 4.

Drs. Knop and Sallam attended the 9th World Congress of Sociology Uppsala/Stockholm Sweden August 14 - 20, 1978.

Mrs. Mona Ghaleb, project administrative secretary spent September 27 - 29 in Fort Collins learning home office procedures. The only cost to the project was air fare Los Angeles, California and return and three days per diem.

C. Video Tape Training

The video tape equipment for taking the SURGE courses arrived in Cairo. Four students are taking AE 535 "Surface Irrigation" for credit and other project personnel are watching the tapes. The project purchased the tapes for this course so that it can be used by members of the project.

It is planned to offer AE 538 "Ground Water Hydrology" 4 credits by Dr. D. McWhorter this fall.

D. On-The-Job Training

This is a continuing program where the American field team and TDYs are continually training the Egyptians on the project on-farm water management and related agronomic, social and economic practices.

Work Plan

September 1978 to March 1978

I. September 1 to December 31, 1978

A. Cairo

1. Complete the Problem Identification reports for Mansouria.
2. Continue studies to further define the problems in irrigated agriculture in Mansouria.
3. Design and start studies to determine solutions to the problems that have been identified in Mansouria.
4. Prepare a report on the soil fertility in the Mansouria area.
5. Analysis of the problem identification data for Kafr El Sheikh and prepare draft report on the findings.
6. Analysis of the data on the zinc trials in Kafr El Sheikh.
7. Select the area in El Minya for the on-farm water management study and start establishing the office there.
8. Dr. Erwin Nielsen, the eighth man on the project will arrive in October. He will work in Mansouria and Kafr El Sheikh areas this quarter to become familiar with the research process.
9. Start the selection of trainees for on-farm water management training course next summer. This will include identifying the persons who will serve as trainers for the following summer when training will be transferred to Egypt.
10. Provide consulting service to USAID and the Egyptian Government on Soil, Water and other agricultural related problems.

B. Fort Collins

1. Training
 - a. Prepare the on-farm water management training manual and syllabus.
 - b. Send by TV tape AE 538 "Ground Water Hydrology" for training of project personnel.
2. Backstopping
 - a. P&C committee and project coordinator will:
 - i. Coordinate the writing of the training manual and syllabus.

- ii. Prepare, review and update work plans.
- iii. Select, train and provide orientation for TDY personnel.
- iv. Select and supervise equipment purchases.
- v. Evaluate last summer training program.
- b. Campus personnel will work with their field team counterparts in:
 - i. Development of all work plans
 - ii. Analysis of data and writing of reports for all project activities on-farm water management, water budget and soil fertility survey.
 - iii. Development of data management program.
 - iv. Development of the short course.

C. Personnel

1. Field Team

Dr. Erwin Nielsen and family will arrive in Egypt in October.

2. TDYs

Dr. Dan Sunada	10/6 to 11/19
Dr. Wayne Clyma	10/23 to 11/22
Dr. Richard McConnen	11/7 to 12/12
Dr. Parviz Soltanpour	12/10 to 1/10
Dr. Everett Richardson	11/27 to 12/16

II. January 1 to March 31, 1978

A. Cairo

1. Main office

- a. Supervise the field work in each of the subareas.
- b. Prepare Problem Identification report for El Minya.
- c. Design on-farm water management research experiments.
- d. Supervise the TV course.

- e. Do soil and water quality analysis.
 - f. Conduct on-the-job training.
 - g. Selection of trainees for summer program in Fort Collins.
2. Mansouria
- a. Continue to collect data on on-farm water management problems.
 - b. Continue to adaptive research program.
 - c. Continue collection of water budget data.
3. Kafr El Sheikh
- a. Complete first project identification report.
 - b. Report on zinc trials.
 - c. Design adaptive research program.
 - d. Collection of water budget data.
 - e. Finish soil fertility survey.
4. El Minya
- a. Collection of social-economic, agronomic and engineering data on on-farm water management problem identification problem.
- B. Fort Collins
1. Training
- a. Work on training manual and syllabus for on-farm water management program.
 - b. Start planning for next summer training course.
 - c. Send video tape course to Egypt and help conduct course.
 - d. Plan training trip to other countries such as Spain, Turkey, Japan and Taiwan with small irrigated farms.
2. Backstopping
- a. P&C committee and Project Coordinator will:
 - i. Supervise and take part in training activities.

work plan. ii. Continue the work outlined in previous quarter

b. Same as item b in previous quarter.

C. Personnel

1. Field Team

No change

2. TDYs

Dr. Max Lowdermilk	Sociology	January
Dr. Dave Redgrave	Agronomy	January
Dr. James F. Ruff	Engineering	February/March
Dr. Robert D. Heil	Agronomy	February/March
Dr. Wayne Keim	Dept. Head Agronomy	January
Dr. Melvin Skold	Economics	January
3 man evaluation team from CID		February/March

~~EGYPTIAN ORIENTATION~~

Fall 1978 - Nielsens

Sessions

I. Life in Cairo from a young person's view

U.S. student - Jim Griswold, who spent one year at AUC

Egyptian student - Nadia Henin, a alumnae of AUC

Special emphasis on school activities and adjustment challenges for the Nielsen's son Mark.

II. Project Orientation by CSU team members

General Overview

Role of Consortium

Special emphasis on role of Dr. Nielsen

III. Team building and support systems

Resource person: Jack Hautaluoma, Psychologist

Special emphasis on intra-group relationships of the in-country team, special adjustment problems that have arisen and role of Nielsens in assisting in team building.

IV. Part I - Business and financial arrangements

CSU Treasurer, Bernard Henrie

Special emphasis: Business procedures for Dr. and Mrs. Nielsen before leaving the U.S.

IV. Part II - Tapes

Video tapes and audio tapes on Egyptian behavior patterns, the role of women in the Arab world, and the Arabic language. The audio tapes are speeches by Peter Bechtold, Foreign Service Institute, James Mayfield, Middle East Center, University of Utah, Farida Zagallai a Libyan student at CSU and language tapes prepared by a CSU Egyptian student.

V. Introduction to Egypt from an American point of view

Resource persons: Returning team members and wives

Introduction to Egypt from the Egyptian point of view

Resource persons: Egyptian students at CSU (including project personnel)

Final dinner: Authentic Egyptian food prepared by Egyptian student wife at CSU.

~~ORIENTATION FOR NIELSENS FOR EGYPT~~

A. Purpose: To provide learning situations that will provide opportunities for the trainees' major questions to be answered by Egyptian graduate students and their spouses, CSU staff with special expertise, and staff members who work directly with the Egyptian Water Use & Management Project.

B. Methods: Orientation will consist of:

a. Interacting with and learning about Egyptian culture during the eight week Training program for 11 Egyptians. Dr. Nielsen was leader of the 8 day field trip to California in addition to working daily with them during the course.

b. Reviewed cassette and video tapes of the orientation given to the other team members in August 1977.

c. Read material in a special notebook prepared for him.

d. Special small group sessions.

C. Objectives:

1) To provide an opportunity for obtaining necessary information about project objectives, project organization, job expectations, and other project methods from the planning and coordination committee members.

2) To provide opportunities for gaining information from CSU Egyptian graduate students and their spouses about the following subjects:

a) Cultural factors related to food customs, gift giving, time and scheduling dimensions, friendships, and the role of women in rural and urban areas.

b) Introduction to spoken Arabic, opportunities for language studies, and non-verbal communication.

c) Religious practices and observance for Muslims and Christians.

d) Major organizations related to the project and Egyptian bureaucracy.

e) Medical, health, educational, recreational, and shopping facilities.

3) To provide relevant information about Egyptian History, Culture, and Religion by CSU staff members with expertise and selected video tapes and cassette recordings by Professors Bechtold and Mayfield.

4) To provide sessions and materials related to Team Building as related to project objectives.

5) To provide a ring binder of selected orientation resource materials for private use while in Egypt. Materials to be used:

General information about Egypt

Language information

Lists of things to take

Articles on the culture of the country

Articles on cultural adjustment

Articles on management of projects

Information about the Water Management

Project

Egyptian Water Use & Management Project

Orientation Schedule

Monday, September 25 Project Orientation

2:00 P.M. Principles and Problems of Team Research Activities Max Lowdermilk
William Schmehl

Place: Student Melvin Skold
Center, Room 234 Dan Sunada
Wayne Clyma

Research/Development, Philosophy
and Framework for Technical
Transfer

Field Party Support Facilities of
the Consortium for International
Development and CSU

5:00 P.M. Team Building, Support Systems Jack Hautaluoma
Place: Student
Center, Room 234

6:30 P.M. Dinner
Place: Virginia
Dale Room

Tuesday, September 26

3:00 P.M. Personal Business and Financial Bernard Henrie
Place: Student Arrangements for Overseas Treasurer, CSU
Center, Room 207 Participants

4:00 P.M.-5:00 P.M. Video-tape on Egyptian Behavior Bill Griswold
Place: Social Patterns

Science, Room 358 The American Experience in Egypt Faith Skold

Introduction to audi-tapes (to
be used on Nielsen's own time)
Bechtold and Mayfield -
Language
Zagallai--Women's Role
Jean Griswold

6:30 P.M. Egyptian Dinner Sally Tribble (Mr&Ms)
Place: Griswolds' Followed by discussion on Egypt John Sidarous
Home, 1402 from the Egyptian point of view Nadia Henin
Peterson Street

Subjects:
Medical services
Egyptian view of Egyptian
bureaucracy
Religion and holidays
(including Christian)
Customs--gift giving
food customs
time sense
scheduling
Mr. & Dr. Moghazy
Omnia El-Hakim
Max Lowdermilk (Mr&Ms)
Melvin Skold (Mr&Ms)
Dan Sunada (Mr&Ms)
Erwin Nielsen (Mr&Ms &
son)

Transportation and places to
visit
Restrictions--legal and
customary
Position of women--as compared
to that in Pakistan
Non-verbal communication

Special sessions for Nielsen's son

Possible language lessons for Paul
Informal meeting with Jim Griswold and Nadia Henin

Orientation Handbook

General information about Egypt
Language information
Lists of things to take
Articles on the culture of the country
Articles on cultural adjustment
Articles on management of projects
Information about the Water Management Project

One for Dr. And Mrs. Nielsen
One for Paul Nielsen

MINUTES

JOINT MEETING

EWUP Project Directors and Planning and Coordinating Committee

July 10 and 11, 1978

Attendees: Dr. Mahmoud Abu-Zeid, Project Director, Cairo
Dr. Roy Brooks, Technical Project Director, Cairo
Dr. E. V. Richardson, Project Coordinator, Fort Collins
Dr. Willard Schmehl, Agronomist, Fort Collins
Dr. Wayne Clyma, Agricultural Engineer, Fort Collins
Dr. Ed Sparling, Economist, Fort Collins
Dr. Max Lowdermilk, Sociologist, Fort Collins
Dr. A. Serry, Cairo

The Changes in the Government of Egypt Ministries

Dr. Abu-Zeid reported on the recent changes that have occurred in the Ministries of Agriculture and Irrigation. These are: The Ministry of Land Reclamation has been separated out from the Ministry of Irrigation into a separate Ministry and is headed by H. E. Shkrey.

The Minister of Irrigation is still His Excellency Atta.

The Minister of Agriculture is now Dr. Dawood. He was the ex-dean of Agriculture, University of Alexandria.

The Agricultural Research Center has a new Director, Dr. S. M. Dossouki. His specialty is as a plant breeder and has an excellent reputation for the development of some of their cotton varieties.

The Water Research Center

The Ministry of Irrigation, H. E. Atta is presently having each one of the Institute Directors report directly to him.

Water Management Research Institute, Ministry of Irrigation

Dr. Abu-Zeid reported that the responsibility of this institute has been increased to include research on sprinkler and drip irrigation, also that he expects a name change to Water Management Research Institute to be approved.

Sprinkler Irrigation

Dr. Abu-Zeid reported that in Egypt there are 110,000 acres under sprinkler and about 50,000 of the acres are in southern Tharer. The recent request for information on cost of sprinkler irrigation in Egypt was a result of some inquiries made to Dr. Abu-Zeid and it may result in an add-on to the on-farm water management project.

Strategies for Irrigation Development--Working Paper

Dr. Abu-Zeid reported that he has prepared a paper on Strategies for Irrigation Development in Egypt that is presently under review in the Ministry of Irrigation. Some of the major conclusions that he has made in this working paper are: The old lands because of land fragmentation, present distribution system, etc., will not allow for major changes. However, there can be major improvements in crop production by better on-farm water management, changes in the irrigation rotation policy, fertilizers, economic practices, etc. The new lands do allow for major changes and probably will require large land holdings, land leveling, and the use of sprinkler, drip and bubble irrigation systems. It is expected that by the year 2000 to have 2.3 million acres of new land in production.

Following is a report on the project status for each of the project areas:

Mansouria

1. On-Farm Water Management

The problem identification phase of the on-farm water management is on schedule and they expect the first draft of the problem identification report by September 15. They have already identified as a major problem the maintenance of the Miskas (on-farm or farmer controlled and operated ditches). There are silting and weed problems in the Miskas.

A basic question that was discussed, does the project have sufficient information to start field trials and pilot research projects from the problem identification phase, or do we need to gather additional information to serve as a base line to determine that we have improved agricultural production. It was the consensus of the group that after the problem identification phase is completed, we should then start the farm trials and the pilot projects, utilizing the information gathered from the problem identification phase and the experience and knowledge available on improved practices. These improved practices to come from the experiment station research in Egypt and the United States, and the knowledge of the people working on the project. That we cannot continue to keep gathering data but must get started to find solutions to the problems that have been identified. These solutions should be cost-effective, transferability and acceptability by the Egyptian farmers. The project is not looking for the optimum, but wants to get improved practices started in Egypt.

The above statement does not preclude the need or the necessity to collect additional data, but this additional data should be collected while we are in the field trial and pilot project phase.

A related question to the previous paragraphs was should we do our farm trials on the same farm as the one we did the problem identification. The answer was yes as much as possible; however, if we identify a problem that cannot be solved on that farm, then we would move to another farm. Of course, we do not have to obtain a complete set of data on the new farm, but would implement the farm trials or pilot project. It was emphasized by all members of the group that we are interested in developing an improved on-farm water management and associated agronomic practices to obtain increased crop production, and only need that amount

of data that is necessary to accomplish the above objective.

It was reiterated that the basic philosophy of the project is to develop a package of practices that improve crop production (cost-effective) from a basic concept that improved water management and associated agronomic practices will increase crop production. To implement this basic philosophy requires on-farm research (farm trials) and pilot projects to determine those practices which will have the largest cost-effective improvement and acceptability by the Egyptian farmer.

Brooks and Abu-Zeid reported that they are planning a pilot study of water course improvement as a cooperative effort with the farmers to improve the management of the water on about 50 feddans in the Beni Magoul branch canal in Mansouria. In addition, in the Mansouria area, there will be field trials of improved water management and agronomic practices in other branch canals, in particular the recently lined branch canal, to determine those practices that will improve vegetable production.

In the El Hamani Canal, it was reported that, because of weeds in the ditch, farmers at the lower end of the ditch lost some of their crops and were quite upset.

2. Soil Survey

Dr. Serry reported that 3,000 acres have had a detailed soil survey, i.e., a sample has been gathered on every 15-acre plot. This soil survey has identified 88 soil profiles in the Mansouria research area, that in the El Hamani area the concentration of salts in the ground water is low, 900 to 2,000 ppm, that in the Beni Magoul area the salinity of the ground water was moderate ranging from 1,000 to 4,000 with a high of 7,000 ppm. The average depth to the water

tables is around 150 cm, they are preparing the soil maps and will have them completed in time for the problem identification report. They have been able to conclude that some areas have sufficient super phosphate and these areas with sufficient super phosphate appear to occur in those soils with a similar profile. With this knowledge it may be possible to decrease the application of super phosphate on some of the lands.

3. Water Budget

The ground water observation wells are in. The surface water gaging stations are being installed. (The recorders have only recently arrived), the water quality analysis of the surface water will be started soon and from the soil survey we have quality analysis of the ground water.

Kafr El Shaykh

1. On-Farm Water Management

The on-farm water management problem identification phase started last April. Nancy Adams and others of the team are in Kafr El Shaykh and expect the problem identification phase to be completed by January 1, 1979.

2. Soil Surveying

The village soil surveying was started August 1 and is moving ahead quite rapidly and is expected to be completed the same time the problem identification phase is done.

Zinc field trials were started in the area as an on-farm water management part of the project. Experiment stations in Egypt have shown that with the application of zinc you get increased rice yields. It has also shown that by adding zinc to the nursery crop you get an increase in yield. In the zinc field trials the project is applying

zinc to some test nursery plots of rice to determine what the increase in yields will be under field conditions.

3. Water Budget

The site for the surface and ground water observation wells has been selected and the program of surface water and ground water observations has started.

4. General

An apartment has been obtained for Nancy Adams. Also a guest house and field office have been established. The senior staff (both Egyptians and Americans) spend some time each week in the Kafr El Shaykh area.

El Minya (Abu-Korkas)

The personnel who will be working in the El Minya area are now working in the Mansouria and Kafr El Shaykh areas as training for the work they will be doing there. Offices are ready.

We do not anticipate starting in the El Minya area until after the first of next year, that is January 1, 1979. At this time, although project personnel have been identified, the Egyptian project leader has not been selected and the American technical counter-part has not been approved. This will be discussed under personnel. A guest house has been selected.

Data Management

Dr. Abu-Zeid and Dr. Brooks both identified data management as a major project problem. They need a continuous effort from the campus to develop and maintain a data management system and urgently want somebody TDY to help in this area. Various persons were discussed and the suggestion was made by Max Lowdermilk that we try to obtain the services of Alan Early who had worked with the Pakistan water management

Project and is now with IRRI in the Philippines and has developed a data management package. We can contact Dr. Brady of IRRI and see if we could get Alan Early to spend a month or so in Egypt helping establish data management. The project planning and coordinating committee and the project coordinator should make it of their major efforts to get somebody to help solve the data management problem.

One solution is to assign data management to Jim Ruff or Dan Sunada as their major responsibility and have them implement the package that Jim Ruff developed last January. At the same time Dr. Abu-Zeid and Dr. Brooks will identify an Egyptian scientist who will have full-time responsibility of maintaining the data. The recently purchased HP9825 is on the campus and being utilized for the training program, but it will be sent to Egypt as soon as the training program is through with it.

Training

There was considerable discussion of training. There was consensus that the training program is moving along very well. The various type of training we have performed is meeting project and Egypt's needs and that possibly we should expand this training. The training can be broken down into on-the-job, short courses, training trips and videotape. These will be discussed in order:

1. On-the-Job

On-the-job training is one of the most important aspects of the project and is moving ahead rapidly. As mentioned previously, the personnel who will be working in Abu-Korkas are presently working on the other two sites getting training for what they will do there. It was concluded that although we might accelerate some project activities by sending junior Americans to perform some jobs in Egypt it was preferable to train and utilize the available Egyptians. A major output

of the project is trained personnel.

2. Short Courses

The short course that was presented last fall and being presented this summer is providing very valuable training to the Egyptians. It is planned to present this course at CSU next summer and after that present it in Egypt. To implement this, we will need to have some Egyptian trainers identified to take the course next summer (1979) and a decision made on who will be responsible for putting on this course in Egypt in the future. That is, identify some institution or university to present the course. The consensus at this time is that the Water Management Research Institute will assume the responsibility for presenting this course.

Dr. Abu-Zeid mentioned that we should develop some one and two week short courses to be presented in Egypt. The one week short course to be a seminar to be presented to managers and directors of the distribution system and other high level administrators in irrigation and agriculture. The two week course to be for junior project personnel, extension people and others.

Some comments made on the short course were: We should use the backstopping and TDY people on the course because they have the experience in Egypt and can do a better job of transferring knowledge. It was stressed that we should be very applied and it should consist of a lot of field work. Another suggestion was that we need to get the Egyptians to ask more questions and get more interaction. It was explained that in general they do interact, but having observers probably inhibited them. It was also suggested that they be given plenty of homework assignments so that they are kept active working on the course work.

The use of the HP9825 computer and the assignment of personnel to use the computer was discussed. Dr. Abu-Zeid was of the opinion that those people who were in training at this time would probably not be assigned full time to use of the computer. The reason is that they are slated to go back to the various project field areas. We need to identify a person to be in charge of the computer and probably will need to train him. This does not preclude the Egyptians who are taking the courses at this time on the use of the HP9825.

3. Training Trips

It was the consensus of this group that the short training trips have been extremely valuable. It was pointed out that the Pakistan trip was very useful to the senior irrigation and agricultural officials who took part in it.

We need similar trips to other irrigated areas in the world, particularly those with small farms and are moving forward with farm water management improvement. It was mentioned about the six senior ministry officials coming in August and the field trip that they will take was described. Dr. Abu-Zeid and Dr. Brooks will be able to see some of the same things that these people will see on the trip that they will take to Grand Junction.

4. Videotape

There are five Egyptians enrolled in surge to take the course titled "Surface Water Irrigation Systems" being taught by Wayne Clyma. The course is presented via videotape and 20 are attending the class. Because the five who are enrolled and the other 15 are extremely busy at this time of the year, they will not complete the course until about December. It was mentioned that the five who are enrolled at this time have incompletes and we must be sure that they clear there incompletes, otherwise they might become failing grades. The December date is not

too late.

The tapes of Wayne Clyma's course was extremely valuable and permission has been granted by AID to purchase these tapes to maintain a tape file in Egypt.

It was reported that the videotape equipment is on order and will be shipped in time for this fall so that we can send another one or two courses.

There was a discussion about other available taped courses that could be purchased or loaned to the project. It was mentioned that we should contact the other CID universities to determine if they have any applicable taped courses that could be used on the project.

Everybody who has seen the type of courses that we are sending over on tapes feels this is an extremely valuable method of getting information to Egypt and that we should pursue this activity very actively.

5. General

(a) Dr. Abu-Zeid and Dr. Brooks will identify somebody full time to take care of the HP9825. We should give him one-month of training and possibly Dan Sunada could arrange for this either in-country or in Fort Collins.

(b) Minister Atta has asked two universities to initiate Irrigation Departments with emphasis on water management. These universities are actively doing this. There was some discussion about whether or not the Water Management Institute should take over some aspects of water management training programs. It was the consensus that we would stick to our type of training program and work with these universities to build up a water management training institute.

(c) Dr. Abu-Zeid mentioned that we should be proud of the fact that his Institute, Colorado State University and the Soil and Water Management Research Institute have introduced the concept of water management into Egypt and it is taking hold.

(d) Develop training films--We should develop some training films on problem identification, water measurements, water management, land leveling, etc. The Nebraska water management film was an example. Another film suggestion was a film to explain and show to the Egyptian people and farmers the use and value of proper on-farm water management. We also discussed the possibility of a slide show, with slides of before and after of various improvements of farms, ditches, etc. These could be utilized for training films for project personnel, university personnel, to help explain the project and the benefits of on-farm water management to the Egyptian farmer and also be used in the United States to explain the program and its value.

(e) Pamphlets and Field Days

Methods of extending the information that is collected by the project was discussed. We could develop short one-page pamphlets to be handed out to farmers. Also, field days in various regions might be a very valuable tool to introduce farmers to improved farming and water management methods.

Personnel

In this section we will discuss the various ideas and comments made about personnel and personal activities.

1. Replacements for the two-year people presently on the project should if at all possible be from those persons who have worked TDY and backstopping on the project.

In the selection of replacement people all consideration will be given to those who would like to extend. In our contract arrangements with the people we asked for a commitment to extend 15 months prior to their termination date. This is probably too long a lead time. What we really have to have is a firm commitment as to whether or not they will extend six months prior to their leaving date. If a person six months prior to his leaving date does not give an indication one way or the other then it will be assumed that he will not be staying. Another item on extending is how long do they have to extend for in order to qualify for the 30-day home leave. I assume that if they extend for just three or four months they would not qualify for home leave, however, if they extend for a year they would qualify.

In the selection of permanent people, the P & C Committee should write a one or two page summary of the reasons why he was selected. What were his strong points. What other aspects did we consider such as an interview with the family, considerations of his ability to operate in an LDC environment, his publications and his technical competence. In addition to this, we need to give Abu-Zeid and the Egyptian Government more time in the consideration of these people. Since they will be there two years it is extremely important that great care be utilized in selecting these people and we should involve as much as possible the people in Egypt, in particular the Egyptian Government people in the selection.

2. With respect to TDY personnel we need to give at least one month notice to obtain the visa and necessary clearances. It was also stressed we should make our plans for TDY two to six months in advance. Project people in Cairo will be making requests for who they would like

to have or what skills they think they might need in the TDY area.

The people in the various disciplines both backstopping and in Egypt should develop the plans. It appears that there has been some bypass of the project leaders. That is, the backstopping and permanent party in Egypt in a particular discipline have determined who would come TDY and have not discussed it completely with Dr. Abu-Zeid and Brooks.

All TDY's need to be discussed and cleared with Dr. Abu-Zeid.

3. The responsibilities of the American who is attached to each one of the project subareas was discussed. It was a consensus that we should give more responsibility to the Americans in each of the project subareas. This person should be rather broad based and have good management abilities rather than be a narrow-based economist, agronomist, ag engineer, etc. In view of this it is thought that maybe the title for this person should be something like the Technical Team Leader. That way, it would clearly identify that he is the counterpart to the Egyptian Team Leader. This person should also take a more positive role in the area and not work merely in his own discipline, but have an overall broad-based view. In the discussion we pointed out that Erwin Nielsen, whom we have selected as the eighth person, has this broad base of skills and management rather than being narrowly based in any one discipline. That was one of the major reasons why we selected him for the El Minya area. Another thing in consideration of Dr. Nielsen was the fact that he had been overseas, that he and his family had shown an ability to work in remote areas where the living might be more difficult than it might be in Cairo.

We decided that we need a more complete job description of both the American Technical Team Leaders and the Egyptian Team Leaders who will be stationed in the sub-project areas. Both of their roles need to be very carefully and clearly defined for a smooth operating team.

4. In the discussion of personnel, Max Lowdermilk pointed out that he had six tapes on cultural shock and depression and some tapes on management. It was decided that the Planning and Coordinating Committee would screen these tapes and those they felt were appropriate would be sent to Egypt.

5. Nielsen- Dr. Nielsen sat in on the last hour or so of our meeting and was able to discuss his qualifications, interests and abilities with Dr. Brooks and with Dr. Abu-Zeid. This was a very valuable discussion. Dr. Brooks and Dr. Abu-Zeid were impressed with Nielsen's ability and Dr. Abu-Zeid stated he would be confirmed if all the clearance factors were satisfactory. In this discussion it was determined to send Dr. Nielsen over as soon as possible, possibly by the first of October. He would work on the project in Cairo prior to going to El Minya. This would not be a TDY, but we would find an apartment for him and his family in Cairo and it would be a permanent move. There are several things that he can do prior to moving to El Minya: He could help organize a motor pool and the servicing of the vehicles. We have so many vehicles that we need to set up good motor pool procedures for servicing, checking out and utilizing the vehicles. He could help set up the farm machinery and get it operating. He would take part in project activities in Kafr El Shaykh and Mansouria to become better informed on procedures so that he will be more effective in El Minya.

General Discussions

In the course of the meeting there were many general discussions which are not included in these minutes. These covered some of the cotton trials, the definition of field trials versus project demonstration areas. The philosophy for the project which was discussed earlier. In this discussion it was emphasized that we are not doing

experiment type of research on the farm. We are trying to determine what are the problems and how to get what is presently known into utilization to take the knowledge that is available in the United States and Egypt and get it applied on the farm. Each of the disciplines should be looking at the problems from their discipline point of view and then determine how their discipline interacts with the others. We need farmer participation in this project, so we need to consider very carefully their views of what they are doing and what should be done to improve agriculture. We need to understand very carefully the present system of water management, agronomic practice, diffusion of data from the experiment stations to the cooperative services and extension service to the farmer. To have a good understanding of the present system we need to determine those things that are hindering increased production and then determine what we can do to eliminate the problems.

The philosophy on what field research should be done is we start at the farm level and determine what the practices are, then determine what water management and agronomic practices that he is doing that need improvement. Possibly he is managing water very efficiently but has other agronomic practices that hinder improved agricultural production. We need to determine if there are any changes in the delivery system that would help the farmer improve his management.

As part of the project we should do some pilot demonstration projects on improvements in the water distribution system. Some possible improvements are: Buried pipe or lining of ditches, changing from gravity to pump or vice versa, getting the farmers involved in management of the distribution system and if needed, determine methods to improve the delivery of water to the farm.

TDY Projections

As part of the discussion we determined what are the project needs for TDY for the next four to six months.

Presently, Mel Skold an economist who replaces Ed Sparling on the project will arrive in Egypt July 21.

TDY	Discipline	Arrival Date in Egypt
Melvin Skold	Economist	Approximately July 21
Bill Schmehl	Agronomist	Approximately August 6
Frank Santopolo	Sociologist	Approximately July 28
Verne Scott	Ag Engineer	Approximately August 5
E. V. Richardson	Project Coordinator	Approximately September 9
Warren Smith	Economist	Tentatively scheduled to arrive for 3 months September 15
Wayne Clyma	Ag Engineer	October
Dan Sunada	Irrigation Engineer	October
Dave Redgrave	Agronomist	January

We must identify what each one of the TDY's will do. We expect and demand a short trip report from all TDY's. This report to be filed if at all possible prior to their leaving Egypt.

We need to have more lead time for the TDY's. Dr. Abu-Zeid said that he needs two months to get visas and security clearances for those people who have not been to Egypt before and needs one month for those who have been to Egypt before.

The field party in each discipline needs to identify their TDY needs and then work with the project director, project technical director

and campus coordinator to obtain these people. They should provide the project coordinator a list of people that they would like to have well in advance of when they want them.

The project planning and coordinating committee should provide a list of available people with their biodatas and tentative times they would be available. A basic problem is the determination of who and what TDY's are needed.

Some potential TDY help that was identified were: (1) a technical editor to help with some of the papers, (2) motor pool operation, (3) pest control, (4) sprinkler irrigation and (5) data management.

Nominal Roll
of the Second Group Trainees Nominated
To Attend the Training Course at
Colorado State University This Summer

1. Mr. Kamel Abdel Fattah Helmy	Engineer
2. Mr. Abdel Aty Allam	Engineer
3. Mr. Wadie Faheem Mankarous	Engineer
4. Mr. Moheb Ramzy Semaika	Agronomist
5. Mr. Magdy Mohamed Awad	Agronomist
6. Mr. Mohamed Naguib Youssef	Sociologist
7. Mr. Mohamed Lotfy Nasr	Economist
8. Mr. Ahmed Farouk Abdel Al	Economist
9. Mr. Mahrous Amin Emera	Mechanical Engineer
10. Mr. Ahmed Hussein Bayoumi	Agricultural Engineer (Farm Machinery)
11. Mr. Mohamed Samir Abd El Aziz	Agronomist - Project leader Kr El Sheikh

Training Course Personnel

Agricultural Engineering

Wayne Clyma*, Bill Hart, Tom Ley

Agronomy

Willard Schmehl*, David Redgrave

Civil Engineering

Dan Sunada*, Jim Ruff, E. V. Richardson, Tom Edgar

Economics

Ed Sparling*, J. Warren Smith

Industrial Sciences

Erwin E. Nielsen

*Training Course Coordinators

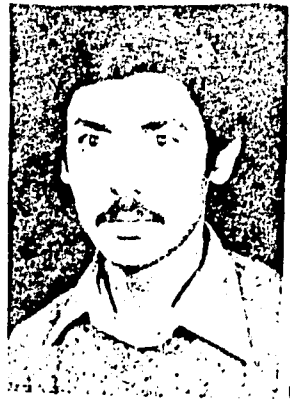
Sociology

Max Lowdermilk*, Frank Santopolo, Jim Layton



Ahmed Farouk
Mohamed Abdel Al

Economist



Magdy Mohamed
M. AYOUB

Agronomist



Ahmed Hussein
BAYOUMI

Farm Machinery Engineer



Mohamed Samir Abdel
Aziz Abdel Karim EL-ARIF

Horticulturist



Walidou W. EL-MAHA

Mechanical Engineer



Abdel M.
ALI EL-MAHA

Irrigation Engineer



Ezzel Abdel
Fattah EL-EL

Irrigation Engineer



Wadie Fahim
MANKAROUS

Irrigation Engineer



Mohamed Naguib
Mahmoud NAGUIB

Sociologist



Mohamed Lotfi
Youssef NASK

Economist



Moheb Ramzy
SEMEKA

Agronomist

**EWUMP TRAINING COURSE SCHEDULE
SUMMER 1978
C140 Clark Building**

JUNE

JULY

AUGUST

**Field Trip
Coordinators:
E. V. Richardson
Kris Schneider**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
18 Sessions will be from 8:00 a.m. - 11:30 a.m. Monday through Thursday and 8:00 a.m. - 11:30 a.m. Friday. Times will be flexible to meet the needs of the course.	19	20	21	22	23	24
		(Washington Orientation)	(Washington Orientation)		Egyptians to arrive Ft. Collins (Sunada)	Free day (Sunada)
25 I Orientation (Sunada) Picnic (Richardson)	26 II Introduction (Sparling) Assessment 9825 Computer	27 IX Econ. Prod. Bottleneck (Sparling)	28 IX Econ. Prod. Bottleneck (Sparling)	29 VI Water Deliv. (Ruff)	30 VI Water Deliv. (Ruff)	1 Rocky Mt. National Park (Sunada)
2	3 III Mapping (Lowdermilk, Clyma)	4 City Park (Sunada)	5 XIII Data Manage. (Lowdermilk, Clyma, Ruff)	6 IV Phy. Char. Soils (Redgrave, Clyma, Sunada)	7 IV Phy. Char. Soils (Redgrave, Clyma, Sunada)	8 Denver Museum of Natural History (Sunada)
9	10 IV Phy. Char. Soils (Redgrave, Clyma, Sunada)	11 IV Phy. Char. Soils (Redgrave, Clyma, Sunada)	12 X Social Inv. (Lowdermilk)	13 X Social Inv. (Lowdermilk)	14 V Chem. Prop. Soils (Redgrave)	15 Free Day
16	17 V Chem. Prop. Soils (Redgrave)	18 V Chem. Prop. Soils (Redgrave, Sunada)	19 V Chem. Prop. Soils (Redgrave)	20 VIII Agron. Prac. (Redgrave)	21 VIII Agron. Prac. (Redgrave)	22 Free day Frontier Days Cheyenne, Wyo
23	24 XI Discipline Skills	25 XI	26 XI	27 XI	28 XI Discipline Skills	29 Field Trip San Luis Valley (Soltanpour)
30 Field Trip San Luis Valley (Soltanpour)	31 VII Water Appl. (Clyma)	1 VII	2 VII	3 VII Water Appl. (Clyma)	4 XII Survey Design Implementation (Lowdermilk)	5 Field Trip Eastern Colo (Richardson)
6 Field Trip Eastern Colo (Richardson)	7 XIV PROBLEM IDENTIFICATION (Clyma)	8 XIV PROBLEM IDENTIFICATION (Clyma)	9 XIV	10 XIV Banquet (Schneider)	11 XV On-Farm Water Management short course Field Trip to Colorado, Utah, Arizona & Cal.	12 XV Grand Junction Field Site
13 Travel Cortez	14 Glen Canyon Dam Grand Canyon	15 Travel	16 Salt River Project	17 U.S.K.C. Lab Phoenix	18 Univ. Ariz. Field Sta. U.S.B.R. Welton-Mohawk	19 Travel to Riverside
20 Disneyland	21 Salinity Lab S.E.A. Riverside	22 Egyptians to return home	23	24	25	26

Egyptian Water Use Mangement Project Field Trip

- Friday, August 11 Leave Fort Collins 8 am Continental Trailways bus will pick the group up at Prospect Plaza Apartments. Arrive Grand Junction 4 pm Lodging reservations have been made at the American Family Lodge, 721 Horizon Drive, (303) 243-6050. Dr. John G. Keenan, 858-3629, of the Fruita Research Center will meet the group at the the motel for a tour of Dr. Skogerboe's work. Please call him if the group will be arriving late.
- Saturday, August 12 Field site visit all day of 1) Level Basin, 2) Line ditches, and 3) Orchard Mesa drip and bubble irrigation system. Lodging reservations are once again at the American Family Lodge.
- Sunday, August 13 Leave Grand Junction 8 am Arrive Cortez 2 pm Lodging reservations have been made at the Travel Lodge, 301 West Main, (303) 565-8562. They will be expecting the group around 5 pm. This should allow time for a visit to Mesa Verde on the way into Cortez. Please call the motel to confirm reservations if the group will be arriving late since they did not require a deposit.
- Monday, August 14 Leave Cortez 8 am stop at 4 corners, Glen Canyon Dam on Colorado River and South Rim Grand Canyon. Dinner could be here or in Flagstaff. Lodging reservations are at south rim at the Regal 8 Inn, 2440 East Lucky Lane, (602)774-8756. A deposit has been sent for the rooms so they will be held for a late arrival.
- Tuesday, August 15 Leave Flagstaff 8 am Arrive Phoenix 12 noon. This is a free afternoon. Lodging reservations are at the Motel 6, 2323 East Van Buren, (602) 267-1397. A deposit has been sent for these rooms.
- Wednesday, August 16 All day tour of the Salt River Project. Mr. Ted Wilson, (602) 273-5417, will be expecting the group to arrive at 8:30 am. The Salt River Project Office is located in Project Building on Project Drive. Lodging will once again be at the Motel 6.
- Thursday, August 17 Morning tour of the U.S. Water Conservation Laboratory. Mr. John Replogle, Research Leader for Irrigation and Hydraulics will be expecting the group to arrive around 8:30 am. The Lab is located at 4331 East Broadway. Check out from the motel should be done prior to departure for the tour since the group will be leaving for Yuma from the Lab. Mr. Replogle's phone number is 261-4356. Leave Phoenix 1 pm Arrive Yuma 5 pm. Lodging reservations have been made at Motel 6, 2730 Fourth Avenue, (602) 344-3550. A deposit has been sent.

Friday, August 18

Morning tour of the University of Arizona Field Station. Mr. Bob Ross, (602) 782-3836, will have a representative meet the group at the motel at 8 am. The Field Station is located at 6425 West 8th Street.

Afternoon tour of the U.S. Bureau of Reclamation Welton-Mohawk Project. Mr. Charles Siegel, (602) 726-2543 will be expecting the group to arrive about 1 pm. The USBR is located at 3800 Ave 3E. Lodging will once again be at the Motel 6.

Saturday, August 19

Leave Yuma 8 am Arrive Riverside 3 pm. Drive through the Coachella and Imperial Valley Irrigation Districts. Erwin Nielsen will have information on this. Reservations for lodging have been made at the Motel 6, 23581 Allesandro Blvd. (714) 653-2131. A deposit has been sent for these rooms.

Sunday, August 20

Day at Disneyland. Arrangements have been made for a group rate of \$6.30 each for admission and 11 rides. Tickets should be purchased from the group services window. The confirmation is under the name of Richardson and the confirmation number is 80 284 C. Their phone number is (714) 956-5000. Lodging reservations are at the Motel 6.

Monday, August 21

All day tour of the USDA Salinity Lab, 4500 Glenwood Drive, Riverside. Mr. Jack Goertzn, (714) 683-0172, will be expecting the group to arrive around 9 am. Lodging reservations are at the Motel 6.

Tuesday, August 22

Continental Trailways bus will take the group from the motel in Riverside to the LA International Airport for flights home.

Senior Ministry of Irrigation Officials Training Trip

Participants

Engineer Aly Zaytoon	Under Secretary of State, Assyout
Engineer Samah El-Sayed Yassin	General Director of Minya Irrigation
Engineer Mokhtar Abdel Halim	Office Director of H.E. the Minister
Engineer Ezzat Mohamed El-far	General Director of Sharkia Irrigation
Engineer Beshara Isshak Yussef	Staff Water Management Research Institute

Training Program

August 5 - 7	Washington D.C. Orientation
August 8	Arrive Denver at 1:57 p.m. TWA 561 4:00 arrive Fort Collins Reserve Thunderbird Motel
August 9	7:30 a.m. to 7:00 p.m. Tour Colorado Big Thompson Irrigation Project
August 10	8 - 12 a.m. Tour CSU Engineering Research Center and discussion of its operation. 1 - 5 p.m. Free 7:30 p.m. Dinner with training participants at student center.
August 11	Join On-Farm Water Management short course Field Trip to Colorado, Utah, Arizona and California to observe irrigation research and practice in the United States.