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An Assessment of

THE DAI CONTRACT AND THE PUBLIC AWARENESS GRANTS

UNDER THE USAID/JORDAN

WATER QUALITY AND CONSERVATION PROJECT

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EXECUTIVE SUMMARY

This assessment of the USAID/Jordan Water Quality Improvement and Conservation (WQIC) Project was conducted for USAID/Jordan during the period July 17 through August 5, 1995 by John O'Donnell, a retired AID Senior Foreign Service Officer. The purpose of the assessment is to determine the effectiveness of DAI (and other consortium members), the Jordan Environmental Society (JES), the Royal Society for the Conservation of Nature (RSCN), and the Environmental Education and Communications Project (GreenCom) in meeting Project objectives. The assessment also discusses additional actions, e.g. changes or additions to the level of effort that may be needed to achieve Project objectives and/or to correct any observed deficiencies.

In accordance with the scope of work, the assessment involved review of all relevant Project documentation and individual interviews with the senior management of the Ministry of Water and Irrigation (MWI), the Water Authority of Jordan (WAJ), the Jordan Valley Authority (JVA), the six long-term U.S. advisors under the DAI led consortium contract and their key counterparts in MWI, WAJ and JVA. The preparer also met with representatives of the GTZ and UNDP water projects in Jordan and visited Project sites in the Zarca River Basin and the Jordan Valley.

The assessment is divided into two parts. The first provides a review of progress in meeting the objectives of each Project sub-component, including a discussion of the likelihood of achieving Project objectives and recommendations for USAID/Jordan's consideration. The second presents a discussion of several Project issues including possible changes in the DAI contract and public awareness grants levels of effort, Project strategy, the sustainability of Project activities, and Project management and communications.

The Project appears to be progressing well, although there are serious problems related to establishment and staffing of units within the MWI and the lack of a coherent strategic framework which are described in further detail below.

The senior management of MWI, WAJ and JVA support the Project and have been accessible to the DAI contract team and willing to devote time to dealing with Project issues.

— The DAI led consortium has fielded a strong contract team, composed of highly qualified professionals with solid backgrounds in their technical fields. A good support staff has been assembled and the overall contract technical assistance, equipment procurement and training effort appears to be well managed.

The Contract team has established good relations with other donors working in the water sector, with an agreed upon division of responsibilities to avoid duplication and overlap. There are areas where the programs come in contact, such as the development of a policy agenda, a sector strategy, a water sector master plan and a plan for institutional restructuring. In such cases, it appears that one donor program takes the lead and the other donor programs provide complementary support.

The JES and RSCN have been effective in carrying out public awareness programs for communities and secondary schools. A variety of educational and promotional materials have been produced by both organizations as well as the spots for T V prepared by JES. A good working relationship has been established between the MWI and the NGO's. The Minister and Secretary General of MWI have taken an active role in the public awareness programs. GreenCom provided valuable assistance to RSCN in carrying out its program in the secondary schools.

The Project is an important, ambitious and complex undertaking which attempts to address many of the problems impacting on the water sector at the same time. In attempting to assess the potential for achieving sustainability of Project supported activities, one is struck by a certain duality in the design of the WQIC Project. Some of the components address the Project Purpose of increasing the quality and quantity of the water available in the Zarqa River Basin through activities such as the upgrading of waste water treatment facilities and industrial water conservation/pollution prevention. Other components address higher order or Goal level objectives such as policy and planning, water monitoring and public awareness. The Purpose level objectives seem to have less ambitious and more concrete goals, most of which can be achieved during the life of the Project. The national level objectives are more difficult to achieve and rely on a strong commitment from the GOJ or participating private sector organizations to have a chance of being sustainable.

In assessing the effectiveness of the DAI contract and the public awareness grants, and the likelihood of achieving Project objectives, two major concerns emerged. The first deals with the urgent need for the GOJ to establish and staff key operational units in MWI as the institutional base to continue Project funded activities when Project funding terminates. The second deals with the need to continue developing a common vision and strategic framework for tying the diverse activities in the water sector together in a way that is understood and accepted by the key actors in the sector and the public at large.

While much good work has been done under the DAI contract and the Public Awareness grants, the prospects of achieving Project objectives and sustaining Project activities after AID funding

terminates, are in jeopardy because of the difficulties encountered in establishing and staffing critical operational units within the MWI. These units include the Policy and Planning Unit, the Water Resources/Quality Monitoring and Data Base Management Unit, the Public Awareness Unit and the Human Resources Development Unit. Because these units have not been established and staffed, the opportunities for on-the-job training of permanent MWI staff and institutionalization of Project supported activities have not been optimized.

According to the Secretary General of MWI, the establishment and staffing of the units, especially the Policy and Planning Unit, has been hampered by the difficulty in identifying and recruiting qualified staff and suitable persons to head the units. This is in part due to the inability of the MWI to pay competitive salaries to attract people from WAJ, JVA or the private sector. The establishment of the units has also been complicated by the uncertainty caused by the CIDA study for restructuring the Ministry and whether it would move ahead.

The Project is attempting to address a number of problems at the same time. Effective implementation of the Project and activities in the water sector of Jordan as a whole are handicapped by the lack of a coherent vision and strategic framework, agreed upon by all key players in the water sector and reflected in a unified and streamlined institutional framework, which tie the diverse and complex set of water-related problems and activities into a manageable, understandable whole. When asked if there was a guiding strategy for the water sector, many of those interviewed said no, that they reacted to problems as they developed. Others said that a start had been made towards developing a coherent strategy through documents such as the GOJ five year development plan, the Possible Water Policy Framework prepared by the World Bank and the AID-funded PRIDE study. However, there had been no attempt to use these documents as the base for developing a single, short, straightforward document that articulates a strategy for dealing with the water sector in Jordan that can be understood and accepted by all of the principal actors and the public at large.

At the time that the Project was designed, a common vision of what the Project could and should do was developed by the people involved in the design in AID and the Ministry of Water and Irrigation. Since that time there has been almost a complete turnover in the leadership of the Ministry and the two authorities. A new common vision and a coherent, dynamic strategic framework need to be developed and sustained.

With these principal concerns as a backdrop, the Assessment ranks the Project components in priority order and discusses possible changes in the DAI contract and Public Awareness grants.

and related AID actions The priority ranking and principal recommendations appear below

1 Establishment of the Policy and Planning Unit: AID should meet with the MWI and the DAI contract team to work through the steps needed to establish, staff and provide GOJ budget support for the Policy and Planning Unit within MWI The Unit should be given responsibility for managing the policy profiling and prioritization process As part of this process, a draft strategic framework for the water sector should be prepared with the assistance of short-term experts brought in under the DAI contract The strategic framework should be fully discussed and agreed upon in a workshop involving all of the principal actors in the water sector The strategic framework should guide the policy prioritization process and the public awareness program content

2 Strengthening Field Data Collection AID should meet with the MWI and the DAI contract team to work through the steps needed to complete the water monitoring network and establish, staff and provide GOJ budget support for a unit within MWI which would be responsible for the receipt, storage, retrieval, packaging and dissemination of water resource and water quality information for use in policy formulation, technical evaluations and studies, planning and public awareness programs Consideration should be given to extending the contract long-term advisor in this component for six months to one year to assist in the institutionalization of this process within MWI Project funding should be provided for development and adoption of standard procedures and protocols for water quality samples collection and analysis

3 Public Awareness AID should meet with the MWI and the DAI contract team to work through the step necessary to establish, staff and provide GOJ budget support for a public awareness unit within MWI The MWI unit should continue to work with local NGO's to conduct public awareness programs The MWI should have continuing GOJ budget support to develop and produce educational and promotional materials that can be used by the public and private sector organizations involved in programs to increase public awareness of Jordan's water problems and possible ways to deal with them AID should consider providing additional support to the Amman Chamber of Industry to assist the Chamber in establishing a continuing capacity to carry out training and public awareness programs for member industries as they prepare to deal with the changes in industrial water conservation/pollution prevention that will be required when the new Environmental law is implemented AID should consider extending the long-term Public Awareness advisor for one year to work with MWI, JES, RSCN and the Chamber of Industry Consideration should be given to using Project funding for another buy-in to the GreenCom Project to provide for twice yearly visits by the senior GreenCom technician through the life of the Project to hold workshops with the public

and private organizations involved in increasing public awareness of water concerns. These workshops would facilitate an exchange of ideas and identify areas of collaboration as well as provide the local organizations with information on successful approaches used in other countries which might be appropriate for application in Jordan

4 Irrigation Water Management AID should meet with MWI, JVA, and the DAI contract team to work through the steps necessary to support the plan prepared by the long-term irrigation water management advisor to improve the efficiency of water delivery and on-farm water management by farmers in the Jordan Valley. Action should be taken to determine how to divide the responsibilities for advising farmers on plant water requirements, irrigation scheduling and operation and maintenance of on-farm irrigation systems between JVA and the Ministry of Agriculture extension service. JVA personnel should be trained in the operation and maintenance of the pressurized pipe delivery system. If agreement can be reached on moving ahead with the plan, AID should consider extending the services of the long-term irrigation water management advisor for an additional year to assist with institutionalizing this process within JVA and the MOA. If the GOJ commits itself to carrying out the plan, AID should also consider providing Project funding for some of JVA's most urgent vehicle and equipment requirements to carry it out. The formation of water users' associations should await a demonstration of commitment by MWI, JVA and MOA on improved water delivery and increased on-farm water management training for farmers. Establishment of viable and effective water users' organizations will require a major commitment of all parties if it is to be successful.

5 Industrial Wastewater Discharge Prevention AID should meet with MWI, WAJ, the Chamber of Industries and the DAI contract team to work through the steps necessary to establish a capacity within WAJ and the Chamber to provide basic level water conservation/pollution prevention audits and advice for local industries. If agreed to by WAJ and the Chamber, the long-term advisor in this component should work with the two organizations to establish such a program prior to his departure in February, 1996. The MWI counterpart in industrial water conservation/pollution prevention can take over this responsibility with the assistance of contract-funded intermittent short-term technical advice. Additional funding would be required to establish the Chamber's continuing capacity to provide this service to its membership.

6 Human Resources Development Resources in this component should be reprogrammed to emphasize the training requirements for high priority Project activities such as policy formulation and planning, water monitoring and information, irrigation water management and industrial water conservation/pollution prevention. Computer and English language training should be continued as well.

as management training for senior level supervisors. Consideration should be given to not funding the curriculum development contract and the contract for design of the MWI training center (using space in another government facility, such as NCARRT, instead) to free up Project funds for higher priority activities.

7 Upgrading MWI Laboratory Project funding for this component should stop when the conceptual design for the lab is received and equipment procured for the lab has been installed and personnel trained in its use. The Central Lab should participate in the development and adoption of standard laboratory procedures and protocols discussed in priority 2 above. Future assistance to this activity could be considered when the space constraint is resolved.

8 Artificial Recharge Studies This component should be carried through to its conclusion. Additional Project funding should be provided for an observation training program in artificial recharge in the U.S. and Middle East. Funding should also be provided for a wrap-up workshop when the feasibility studies are completed.

9 Management Information System Funding for this component should be stopped when the detailed engineering design is received and the installation of the Oracle software is completed. Future funding should be considered if and when the three organizations (MWI, WAJ and JVA) commit themselves to doing what it takes to establish a unified, centralized management information system.

Dealing with the components should be tackled in priority order, putting first things first. If agreement is reached with MWI and the two authorities, the Contract Scope of Work and Budget could be amended to support the agreed upon actions. A Project mid-term evaluation in the fall of 1996 should consider what further mid-course corrections might be required.

The prospects for sustainability of Project supported activities once Project funding terminates depend very much on whether the key operational units are established, staffed and provided budget support within the MWI. Achievement of Project objectives and attempting to assure sustainability of Project activities also depend, in certain instances, on other factors such as training of key personnel, changes in the way that the GOJ deals with problems and the purchase and installation of key equipment. These factors are covered in Section III C and in the discussions of individual components.

In the management area, the early practice of holding staff meetings for all Project staff should be reinstated. Seminars on Project related technical matters should be encouraged to provide learning opportunities for Project staff. The Project Coordinator role should emphasize coordination, communications, facilitating

and expediting functions Responsibility for assuring technical quality and feasibility should rest with the operational unit directors, when they are in place, and with the working groups until that occurs

ACRONYMS AND ABBREVIATIONS

AID	Agency for International Development
DAI	Development Alternatives, Inc.
GOJ	Government of Jordan
GreenCom	Environmental Education and Communication Project
GTZ	Deutsche Gessellschaft Fur Technische Zusammenarbeit (German Development Aid Organization)
ha	hectare
JES	Jordan Environmental Society
JVA	Jordan Valley Authority
KAC	King Abdullah Canal
KTD	King Talal Dam
KTR	King Talal Reservoir
MCM	Million Cubic Meters
MOA	Ministry of Agriculture
MWI	Ministry of Water and Irrigation
NCARTT	National Center for Agricultural Research and Technology Transfer
PDI	Planning, Development and Information Directorate (MWI)
PRIDE	Project in Development and Environment
RSCN	Royal Society for the Conservation of Nature
RSS	Royal Scientific Society
SAIC	Scientific Applications International Corporation
USAID	U S Agency for International Development
WAJ	Water Authority of Jordan
WQIC	Water Quality Improvement and Conservation

AN ASSESSMENT OF
THE DAI CONTRACT AND THE PUBLIC AWARENESS GRANTS
UNDER THE USAID/JORDAN
WATER QUALITY IMPROVEMENT AND CONSERVATION PROJECT

I INTRODUCTION

The USAID/Jordan Water Quality Improvement and Conservation Project was approved in February 1993 and a project agreement with the Government of Jordan was signed in March 1993. The project called for a \$25 million grant from USAID and \$5.9 million in counterpart funds from the Government of Jordan. The Project goal is to improve the overall management and conservation of Jordan's water resources. The project purpose is to increase the quality and the quantity of the water available in the Zarqa River Basin System through water conservation. The Project was amended in September, 1994 to add \$17 million in USAID grant funds and \$7 million in GOJ counterpart funds to support construction of the Wadi Meusa water and wastewater system and additional studies.

In January 1994, USAID entered into a contract with a U.S. consortium headed by Development Alternatives, Inc. (DAI) to provide consulting services, technical assistance, training and equipment at a total cost of \$11.2 million. Members of the consortium include DAI, Science Applications International Corporation (SAIC), Harza Engineering, and Development Associates. The contract provides for five long-term U.S. advisors (four for 24 months and one for 18 months) and a U.S. Chief of Party for 48 months.

In addition to the contract with the U.S. consortium, USAID/Jordan entered into Project-funded grant agreements with the Jordan Environment Society (JES) and the Royal Society for the Conservation of Nature (RSCN) and a buy-in to the centrally funded Environmental Education and Communication Project (GreenCom). The grant agreement with the JES was signed in June, 1994 and provides \$365,600 from USAID/Jordan and \$115,000 from JES over a three year period. The purpose of the grant is to support the JES program for designing and implementing an Awareness Project in Water (APW). The grant agreement with RSCN was also signed in June 1994 and provides \$50,000 from USAID/Jordan over a three year period. The purpose of the grant is to allow the RSCN to increase its outreach through the use of participatory approaches with teachers and students to develop and use educational materials on water conservation. The buy in with GreenCom was signed in June, 1994 and provides \$45,000 from USAID/Jordan and \$50,000 in GreenCom core financing over an 18 month period. The purpose of the GreenCom buy-in is to provide technical assistance to the RSCN during implementation of their USAID grant.

The purpose of this assessment is to review progress to date under the DAI contract and the JES, RSCN and GreenCom grants to determine the effectiveness of these entities in meeting the Project objectives. The assessment is also to recommend any additional actions, e.g. changes or additions in level of effort, that may be needed to achieve the project objectives and/or correct any observed deficiencies.

The assessment was carried out in Jordan during the period July 17 through August 5, 1995 by John O'Donnell, a retired AID Senior Foreign Service Officer with 30 plus years of experience in the design, management and evaluation of AID development projects. In accordance with the scope of work (Annex A, attached), the assessment involved review of all relevant Project documentation and individual interviews (See Annex B for a list of persons interviewed) with the senior management of the Ministry of Water and Irrigation, the Water Authority of Jordan and the Jordan Valley Authority, the seven long-term U.S. advisors under the consortium contract and their key counterparts in the MWI, WAJ and JVA. The author also met with representatives of the GTZ and UNDP water projects in Jordan and visited Project sites such as the A Samra Water Treatment Plant, the King Tallal Dam, water conveyance and control structures along the Zarqa river, Wadi Rajib, and the King Abdullah Canal as well as a farm in the Project area in the Jordan Valley.

The assessment is divided into two parts. The first part provides a review of progress in meeting the objectives of each Project Component. This section reviews each sub-component objective and the specific tasks related to it included in the recently revised DAI contract scope of work and the Grant agreements. The review includes a discussion of progress to date, tasks remaining to be done, problems/constraints/concerns, the likelihood of achieving the Project objectives and recommendations for consideration by USAID/Jordan. The second part presents a discussion of several Project issues, including possible changes in the DAI contract level of effort, sustainability, Project strategy, and Project management and communications.

II PROGRESS IN MEETING OBJECTIVES OF EACH PROJECT COMPONENT

A Water Resources Monitoring and Management

1 Establish MWI Policy and Planning Unit

a PP Objective Establish within MWI a Policy and Planning Unit (PPU) which will be responsible for the following functions:

- (1) Policy Development and Strategic Planning

Formulate national priorities and policies for the water sector

Long-term planning and strategy development

Financial and cost studies

Social and economic studies

Water related environmental studies

(2) International Liaison

Review and help MWI units prepare proposals before submission to MOP

When feasibility studies are required, will assist preparing terms of reference, provide data and information, and review the study upon completion

Serve as MWI liaison with MOP and international organizations

Oversee project progress reporting to MOP and donor agencies

Project monitoring, evaluation, and follow up

(3) Human Resources Development (HRD) Policies in MWI

(4) MWI Information System

b Specific Tasks The contractor will 1) identify the key policy issues facing Jordan and how they relate to the use of water in all sectors of society, 2) develop a ranking of key issues and proceed to carry out priority studies required to assist the MWI in conserving and improving the quality of water for the country. These studies will focus on policies related to municipal, industrial and agricultural uses of water, water quality, wastewater treatment, wastewater reuse, etc. While the final list of studies is to be determined by the contractor, USAID, and MWI, it may include areas such as allocation, pricing, standards, future water supply and demand, and alternatives for meeting future demands. The contractor will 3) develop detailed scopes of work for the studies and conduct the studies, upon the approval of USAID and the GOJ, in association with staff from the PDI, local consultants, universities, buy-ins to centrally funded

USAID projects, etc and 4) provide approximately 20 person months of short-term in-country and 4 person months of U S. training in the areas of personnel management, strategic planning, and policy formulation

c Findings This component is behind schedule because of changes in procedure requested by MWI Initially, a policy agenda was to be developed by a small team of Jordanians (7) and U S short-term experts (4) The Scope of Work and Plan for a Policy Agenda Development Team was prepared in August, 1994 The small team approach was not used because the MWI Secretary General decided that he wanted a more participatory approach with Jordanians doing more of the work A Policy Committee composed of approximately 25 members from MWI, WAJ, JVA, DAI, GTZ, UNDP, and MOP was formed in January, 1995 to develop a list of policy issues 25 issues were identified and working groups of three to six people were assigned to work on each issue This has entailed developing profiles of each issue which are due at the end of July, 1995 Performance on preparation of the profiles has been uneven, with much prodding from the MWI co-team leader It is expected that the profiles will be turned in by mid-August The profiles will be reviewed and prioritized and scopes of work will be prepared for the first three or four policy studies to be conducted by short-term Jordanian and ex-pat experts

There has been no progress on the PP objective of establishing a Policy and Planning Unit within MWI After the first and second Directors of the Department of Planning, Development and Information left MWI, no replacement was named and no staff were assigned to the Department The MWI is not able to take full advantage of an excellent opportunity for in-service training of Policy and Planning Unit personnel through participation in the policy issues identification, profiling and prioritization process as well as through interaction with the contract team long and short term advisors It also is important to note that the current policy identification, prioritization and study process is not a one-time effort, but has to be a continuing program carried out by a trained and qualified unit within the MWI According to the Secretary General of MWI, the establishment and staffing of the Unit has been hampered by the difficulty in identifying and recruiting qualified staff and a suitable person to head the unit This is in part due to the inability of the MWI to pay competitive salaries to attract people from WAJ, JVA or the private sector MWI recently (7/27) requested approval from the Council of Ministers to pay MWI staff at the same level as comparable positions in WAJ (30% higher) and to have them work the same weekly work schedule as WAJ The establishment of the Unit has also been complicated by the uncertainty caused by the CIDA study for restructuring the Ministry and whether it would move ahead A recent letter from the Minister of Water and Irrigation to the Canadian Embassy requested that the CIDA contractor (Deloitte and

Touche) send a specialist to discuss the workplan for the second phase of the CIDA study

Effective implementation of the Project and activities in the water sector of Jordan as a whole are seriously handicapped by the lack of a coherent vision and strategy which tie the diverse and complex set of water-related problems and activities into a manageable, understandable whole. When asked if there was a guiding strategy for the water sector, some individuals answered that there was not, that they basically reacted to problems as they came up. Others mentioned that a start had been made towards developing a coherent strategy through documents such as the water and irrigation section of the MOP 5-year development plan (1993/1997), the PRIDE Water Management Study for Jordan and the Draft Outline of a Possible Water Policy Framework prepared by the World Bank in April, 1994 for the Agricultural Sector Adjustment Loan. However, there has been no attempt to use these documents as the starting point for developing a strategy for the water sector that could be understood, accepted and supported by the key actors in the sector and the public at large. Such a strategy is essential as a framework for deciding which policy issues need to be addressed and in what priority order. In a division of labor between the GTZ and the DAI contract team, responsibility for developing a water strategy was assigned to GTZ.

d Recommendations AID should meet with the senior management of MWI to emphasize the urgency of establishing and staffing the Policy and Planning Unit within the MWI. The Unit should be established and fully staffed by December, 1995. There appears to be no legal barrier to establishing such a unit and it does not have to await the finalization and acceptance of the CIDA study. Failure to receive approval for paying higher salaries to MWI employees would make recruiting and retaining qualified staff difficult, but not impossible. Several individuals interviewed expressed the opinion that there were qualified people within the Ministry who would be willing to work in the Policy and Planning Unit at the present MWI salary levels. Hopefully the latitude to offer higher salaries will be resolved in favor of MWI. If not, there will probably be continuing problems with attracting and holding good staff. Establishment and staffing of the unit should proceed in any event with personnel that are willing to work at current MWI salary levels.

Once the Policy and Planning Unit is established, it should be the staff arm of MWI responsible for completing the policy prioritization and study process. A training program should be developed for upgrading their analytical skills with a combination of short-term formal and on-the-job training.

AID, DAI and GTZ should work with the MWI to develop a plan for preparing a coherent policy framework and a dynamic strategy for the water sector. The strategy can and should be developed in

conjunction with the policy prioritization study process. A Project-funded short-term ex-pat team could develop a draft of a strategy using the national development plan, the PRIDE study and the World Bank Policy Framework as starting points. The draft strategy should then go through a participatory process of review and approval to assure that it is understood and accepted by the major actors in the water sector. The strategy could then be used to guide short, medium and long term planning and to identify policy issues which require analysis and GOJ action.

Since the Chief of Party is also the long-term policy advisor and is programmed to be in country for 48 months, no addition to the long-term level of effort will be required. Additional short-term level of effort may be needed to field the short-term strategy development team discussed above.

2 Water Management Information System

a PP Objective Develop within MWI the capability to maintain a continuous flow of water information services to relevant policy makers and action audiences, including (1) MWI customers, (2) public and private sector industries, (3) municipalities, (4) agriculture, (5) managers of MWI's operations and services, (6) technical specialists working in the water sector, and (7) opinion leader groups (such as mass media, universities, NGO's etc). Therefore, the objective is to identify a wide variety of sources of data/information inside and out of MWI, and then ensure it is properly packaged and disseminated to the various audience groups.

b Specific Tasks Under this subcomponent the contractor will assist the working group appointed by the MWI to study, make recommendations and develop an action plan for establishing a unified management information system for the MWI. The management information system will include all aspects of water related information in Jordan, administrative and management information, and will provide for data management and geographic information system and modeling tools necessary for using and evaluating this information. Equipment to support the management information system will be procured and installed, subject to the availability of funds. Detailed plans for operating and maintaining the management information system will be developed based on the findings and recommendations of the CIDA study.

The contractor will 1) work closely with the UNDP, GTZ and other donors to avoid duplication and ensure the establishment of a unified management information system, 2) provide technical support during installation of the management information system, 3) assist MWI in development of operations plans, customizing required software, and in testing and bringing operational the management information system once it is installed, 3) develop and produce water-use information services (in Arabic) such as

briefings, reports, newsletters, and training materials, 4) establish an information system for managers, 5) establish mechanisms for improving collaboration with units of other GOJ agencies (These mechanisms will include fact sheets, publications, newsletters, and audio-visuals, radio and television advertisements), and 6) implement a water management information training program

A proposed new activity is to design menu driven systems that managers can access to review critical water related information

c Findings A Management Information System Working Group was established and participated in the initial tasks of performing an information system survey and user needs analysis. On the basis of these studies, a conceptual design for the MIS was completed and approved by AID and MWI. Agreement was reached with GTZ and UNDP on collaboration in supporting the development of an MIS for the three agencies. The detailed engineering design for the MIS is expected from SAIC in August, 1995.

During the implementation of this activity, it became clear that the task of installing a MIS in the Ministry was much bigger (and more expensive) than originally contemplated. The Ministry's information management requirements included not only information on water resources, quality and allocation for planning and public information purposes, but also billing, payroll, equipment inventory and maintenance and other needs for WAJ and JVA as well as the Ministry. It also became clear that there was strong reluctance on the part of the three agencies involved to entrust their information needs, personnel and equipment to a single unified management information system. As a result, the detailed engineering design is taking a more pragmatic approach to the problem, accepting the need for supporting the improvement of three separate, but inter-connected, systems, developing consistent data bases and providing a common software data base platform (Oracle) and system interface points which would facilitate "collapse" of the three systems into a single, unified system if agreement is reached on such a move. As a step in this direction, AID approved procurement of the Oracle data base software in July, 1995. Since the hardware and software requirements for establishing the MIS are much greater than resources available under the WQIC Project, the procurement and installation of equipment will be broken into modules which can be financed if and as funding might become available from AID, other donors or the GOJ. With the completion and acceptance of the detailed engineering design, Project funding programmed for this component will be totally expended.

The PP objective of developing a capability within MWI to maintain a continuous flow of water information services to relevant policy makers and action audiences will not have been achieved.

d Recommendations AID should consider funding a more sharply targeted MIS effort which focuses on providing a flow of user-friendly information, principally from the water resources and water quality monitoring network discussed in Section IIA3, for use in policy analysis and planning by MWI and for public awareness programs of the private and public sectors STTA should be provided to establish these needs, the source and nature of the data required, the format for presentation of the data and a plan for institutionalizing the delivery of such data within the MWI, including the establishment and staffing of a water unit within MWI (as described in Section IIA3) responsible for operating such a focused MIS effort The concept should be discussed with MWI to determine whether it is willing to establish and staff such a data storage, retrieval, packaging and dissemination unit If there is insufficient interest and commitment, the effort should not be initiated

Project support for the larger MIS effort should stop with the completion of the detailed engineering design and installation of the Oracle software platform Completion of the MIS will need a commitment to a unified system by all three agencies, which does not appear likely at this point If such a commitment is made and acted upon, AID could consider furnishing additional support for installation of the system

3 Strengthening Field Data Collection

a PP Objective Augment, strengthen, and upgrade the MWI surface and ground water data collection program so it can serve as a nationwide water quality monitoring program This will involve creating additional collection stations, improving collection and analysis procedures, and ensuring that results are disseminated to appropriate groups

b Specific Tasks The contractor will. 1) conduct a status study and appraisal of existing water quality and water resources monitoring networks and programs, sampling and data measurement stations, equipment and instrumentation to predict specific needs and to fill the gaps towards a well-functioning and effective national water data collection system, 2) develop a plan for upgrading existing and establishing new water quality and water resources monitoring programs and sampling and data measurement stations Based on the status study and appraisal, the contractor will 3) prepare a list of all additional equipment and observations wells needed along with cost estimates and specifications After approval of this equipment and observation well program by USAID and MWI, the contractor will 4) procure/supply/install this equipment and observations wells and necessary sampling and support apparatus The contractor will 5) develop a long-term plan for water quality and water resources monitoring networks administered by MWI to carry the program through year 5, and, 6) conduct and/or

arrange training in-country and abroad for monitoring network personnel

c Findings A Monitoring Network Working Group was established and collaborated with the contract team in carrying out a survey of the existing monitoring network which was completed in December, 1994. The Working Group also developed a Monitoring Network Objectives Statement which establishes the goals for the MN program. A monitoring network adequacy report was completed in April 1995 and a required equipment list was submitted to AID for review in the same month. The estimated cost of the equipment, spare parts and installation necessary to establish a fully functional national water resources and water quality monitoring system is \$3 million. Since this amount exceeds the funds available for this purpose in the WQIC Project (\$800,000), procurement is presently restricted to completing the network in the Amman/Zarqa project area and procuring spare parts to service the nation-wide system. A proposal has been presented to the Ministry and AID to use CIP funds for the local costs associated with the network, principally for equipment installation and drilling of monitoring wells, and use the Contract foreign exchange to procure all equipment needed to complete the network.

Sections of the Monitoring Network Upgrade Plan related to surface water monitoring programs and generic procedures were completed in June, 1995 and work continues on other sections of the Upgrade Plan. Although substantial progress has been made, there are still several serious unresolved problems including

- * Absence of a unified water monitoring system program/organization and limited monitoring personnel,

- * Absence of consistent data collection and data management procedures (These problems should be resolved by the Upgrade Plan, if accepted and institutionalized by the Ministry),

- * Absence of standardized database management practices and up-to-date water resources and water quality databases,

- * Difficulty in maintaining water monitoring instrumentation

SAIC and DAI are recommending an aggressive program to push forward with establishment of the Monitoring Network which includes immediate reorganization of the water monitoring program into a unified program to be operational no later than December, 1995 and undertaking a priority effort to validate the base information in the water resources databases. If such action is not taken, it is unlikely that the PP objective will be achieved during the life of the Project.

d Recommendations AID should strongly support the SAIC/DAI recommendations to establish a unified water monitoring unit and to validate the information in the water resources databases. There appears to be reluctance on the part of WAJ and JVA to turn over responsibility and the personnel assigned to collection of water resources and water quality data to a centralized program within the Ministry. Until the Ministry restructuring plan is finalized and approved, the Project can work around this problem by agreeing that collection of data could continue on a decentralized basis as long as standard data collection and monitoring procedures and protocols were followed (See discussion of this issue in Section IIA4). The centralized unit in MWI should be responsible for receiving, storing, retrieving, packaging and disseminating the data for use in policy formulation and planning. In addition, the validity and integrity of the laboratory analysis of water quality samples can be improved by standardizing analytical, laboratory operations and laboratory quality assurance procedures and practices (see discussion of this issue in Section IIA4). The public awareness function also would be able to access data, and in conjunction with the technical specialists, prepare materials for public dissemination. AID should also consider utilizing existing or possible additional Project or CIP funds to complete procurement and installation of the equipment and spare parts required to operationalize the water resources and water quality monitoring network on a nation-wide basis. Such financing should be made contingent upon the establishment, staffing and GOJ funding of the unified water monitoring unit. The information provided by the network is an essential input to the national policy formulation and planning and public awareness efforts. Assuring the availability of reliable and standardized water quality and quantity data is extremely important for the water use discussions being held as part of the Peace Process. If the GOJ agrees to establish the unified organization and to undertake the validation of the databases, AID should consider extending the level of effort for the Water Monitoring Advisor for an additional six months to one year to assist in institutionalizing this capacity within the Ministry. The contract scope will have to be modified to provide for assistance for establishing and validating the unified water resources and quality data base.

4. Upgrading MWI Laboratory

a PP Objective Upgrade and substantially increase the analytical capabilities of the MWI Central Laboratory, in the number of samples handled and analyses performed, and also strengthen the integrity of the results generated.

b Specific Tasks The contractor will 1) conduct a status study of the Central Laboratory of WAJ and JVA laboratory and appraisal of the equipment needed, 2) finalize the equipment list and develop an action plan for the laboratory program, 3)

conduct an overview assessment of the procedures and protocols of other principal governmental water quality laboratories in the country, 4) prepare a list of equipment for review and approval by USAID and MWI, 5) procure and assist the WAJ staff in installing equipment, 6) evaluate the space limitations that prevent full upgrading of the laboratory and develop a conceptual design and floor plan for a new laboratory; 7) assist the central laboratory in the planning for the development of standard operating procedures for the laboratory, and 8) assist the WAJ and JVA in training the maximum number of people on all pieces of equipment and laboratory procedures and methodology

c Findings An assessment and evaluation of the Central Laboratory was completed in 1994. A recommended list of new equipment was included in the report. Because of the severe space limitations in the Central Laboratory, the equipment procurement was divided into two parts: 1) equipment that can be installed immediately and 2) equipment that can be ordered when the space constraint is resolved. Procurement of the first category of equipment is underway. Some of the equipment has arrived and the balance is expected within the next two months. WAJ has identified a site for a new laboratory and is looking for funding for construction. This element is not included in the WQIC Project. SAIC is in the process of preparing a conceptual design for the new laboratory. The design has been delayed for a variety of reasons but is expected in August, 1995. Operations, quality assurance, and analytical procedures and practices at the Central Laboratory are either lacking or require upgrading. The Central Laboratory employs a number of engineers, including heads of sections, who do not have an educational background in chemistry or microbiology.

There are several other labs in Jordan which perform water quality analysis. USAID/Jordan recently approved a modification of the contract scope of work to provide funding for a nation-wide survey of water quality labs which will be conducted in September, 1995. The existing labs do not have good standard procedures for water analysis nor quality control/quality assurance programs [Funds for developing these programs were not included in the contract]. The upgrading of the Central Laboratory and the establishment of standard procedures and quality assurance programs in the labs doing water quality analysis are essential steps in developing a nation-wide water quality monitoring system. Because of the space limitations at the Central Laboratory and the uncertainty of funding for construction of a new laboratory, this component is not likely to meet the full PP objective stated above during the life of the Project.

d Recommendations AID should consider restructuring the DAI contract budget to provide adequate funds for development of standard operating procedures and quality assurance programs for the Central Laboratory and nation-wide labs doing

water quality analysis. These funds should be included under the Water Monitoring Network component of the Project. Without reliable standard procedures and programs, the water quality data will continue to be suspect. AID, DAI and SAIC should encourage WAJ to recruit and develop chemists and biologists who can replace the engineers who are employed in the Central Laboratory. AID and DAI should continue to not fund additional equipment procurement until the space constraint at the Central Laboratory is resolved. Consideration should be given to procuring the additional equipment and providing additional short-term technical assistance if the new laboratory does become operational during the life of the project, which appears unlikely at this point.

5 Ground Water/Aquifer Recharge Studies

a. PP Objective Determine those areas in the country with the greatest potential for groundwater recharge and conduct feasibility studies for groundwater recharge in those areas which show potential.

b. Specific Tasks The contractor will 1) collect existing hydrological data and geological data to determine those locations throughout the country of Jordan showing technical, environmental and economic potential for ground water recharge, 2) collect field data, if needed, to determine those locations where ground water recharge is feasible and formulate a plan for implementing ground water artificial recharge pilot studies, and 3) prepare a report containing the data, findings, plan formulations, recommendations, and study results.

c. Findings The Artificial Recharge Proposal was authorized by AID in May, 1995 and the long-term advisor arrived in June, 1995. The Artificial Recharge Working Group located 72 potential sites for artificial recharge which have been screened down to 20. The screening process will continue until 2 or 3 sites are identified for feasibility studies. The sites for the feasibility studies are scheduled for selection by October, 1995.

d. Recommendations Artificial recharge of aquifers should be an important element in addressing Jordan's projected water supply short-falls over the long term. It is a common practice in a number of countries, including the U.S. and Israel. In the U.S., treated effluent is converted to drinking water through artificial recharge of aquifers. If the feasibility studies suggest moving ahead with an artificial recharge program, AID should consider funding the engineering design and associated works for one artificial recharge project to demonstrate what can be done and to serve as a training site. AID and DAI should encourage the establishment, staffing and training of an artificial recharge technical team within MWI to oversee an artificial aquifer recharging program for Jordan. AID should also restructure contract funding to provide resources for a study tour of artificial

recharge sites in the U S , Middle East and North Africa and a national workshop on artificial recharge when the feasibility studies are completed

B. Water Pollution Prevention and Cleanup

1 Upgrading Wastewater Treatment Facilities

This component was not included in the scope of work for this assessment

2 Industrial Wastewater Discharge Prevention

a PP Objective 1) Assist the water-using and waste-discharging manufacturing industry in the Zarqa basin system to adopt and practice pollution prevention and waste minimization (PP/WM) and 2) develop, stimulate and strengthen the private sector environmental service and equipment supply sector

b Specific Tasks The contractor will 1) assist in organizing the steering committee, 2) prepare a workplan for the life of the project and detailed annual plans in cooperation with the Amman Chamber of Industry, 3) assist in conducting 10 pollution prevention audits of participating industrial firms in cooperation with WEC or other NGO, 4) conduct four feasibility studies of measures to implement pollution prevention measures utilizing local Jordanian firms and conduct two demonstrations of pollution prevention technologies, 5) procure and install demonstration equipment and arrange for equipment disposition at the end of the demonstration subject to approval by USAID, 6) conduct on the job training activities to transfer skills to Chamber of Industry members, 7) design and assist in the implementation of financial assistance mechanisms, 8) provide short-term specialized training on practical measures to prevent and control industrial pollution

c. Findings A Pollution Prevention/Waste Minimization Committee has been established and a life-of-project work plan was prepared Industries in the Amman/Zarqa area with PP/WM potential were evaluated and ranked The ten industries with the highest potential need were selected for audit The audits of the ten industries were completed in June, 1995 Four facilities (Jordan Petroleum Refinery, Jordan Yeast Co , Jordan Sulpho-Chemicals Co and a vegetable oil refinery) were selected for feasibility studies which are due to be completed in September, 1995. Five participants from MWI and five from the Amman Chamber of Industry attended a two-week PP/WM training program in the U S.in May 1995

Very good progress has been made in this component with good cooperation from the Chamber of Industry and the industrial community in the Amman/Zarqa area It is the only component that is on schedule. Upon completion of the four feasibility studies in

September, two will be selected for plant-scale demonstrations. A Conference on Industrial Pollution Prevention and Water Conservation is planned for December, 1995. The Project also plans to bring in pro-bono volunteers through the Water Environment Federation to advise industries and conduct workshop seminars. A study of alternative financing mechanisms to fund PP/WM and water conservation measures by industries will be completed by February, 1996.

The long-term advisor is scheduled to leave in February, 1996. The various activities for which he is responsible should be completed by that time. The Chamber of Industries is very pleased with the Project and is planning to send a request to USAID/Jordan for an expansion of the current agreement to support conducting water conservation/pollution prevention audits in the Sabah Industrial Estate and the Baqa'a area.

The Chamber of Industry reported that the new Environmental Law for Jordan has passed the lower house of the Parliament and should be passed by the upper house by the end of August with a Royal Decree issued shortly thereafter. They estimate that it will take about 18 months to put together the regulations for implementing the law. They report that industry generally sees this as a positive development, rather than a threatening one. They believe that there needs to be an education and training program for the industrial community to prepare them for cooperating in reducing water use and preventing pollution.

The Water Authority of Jordan has conducted a few water conservation and pollution prevention audits on its own, using techniques learned through participation in the Project funded audits. The Secretary General of WAJ indicated that he would be interested in continuing and expanding this audit function.

a Recommendations Additional water conservation/pollution prevention audits in the Sahhab industrial estate and the Baqa'a area would be useful, but may not be the best use of scarce Project resources. AID might get more mileage out of including support for a public awareness type training program for the industrial community as another activity under the Public Awareness Component, to be carried out by the Chamber of Industry. This would help prepare industries to understand the requirements of the Environmental Law and how they can reduce water use and prevent pollution. The Project should try to develop the program in a way that the Chamber can continue it with its own resources when Project support ends.

Given the interest of WAJ and the Chamber of Industry in continuing a program of audits, AID should consider requesting that, prior to his departure in February, 1996, the long term advisor work with WAJ and the Chamber of Industries to develop a

joint (if possible) or parallel program to assist industries which are interested in looking at water use reduction and pollution prevention possibilities, as the Environmental Law goes into effect. The emphasis of the program should be positive in terms of assisting requesting industries to identify opportunities for water conservation and pollution prevention rather than negative in the sense of looking for violations of the environmental law and imposing sanctions. Additional staff would be required at the Chamber of Industry and additional training, probably by the RSS, would be required by both organizations.

C Irrigation Water Management

1 Improve Water Conveyance System

a PP Objective 1) Conduct a feasibility /design study for reducing water losses and to improve water quality and/or power generation by installing a pipeline from King Talal dam to a downstream diversion weir and alternatives of this project, 2) design the pipeline and oversee its construction if the study shows it is feasible, and/or 3) act upon alternative interventions as recommended in the feasibility study

b Specific Tasks The contractor will prepare a technical, economic, environmental and financial feasibility study of conveying the water 23 kilometers from King Talal Dam to the Abu-Ezeighan diversion weir. If proven feasible and contract is amended by USAID, contractor will prepare final engineering design and supervise construction of the pipe line

c. Findings The Scope of Work for the Zarqa River Conveyance Study was approved by AID in June, 1994. Start up of the study was delayed because the local engineering firm proposed to work with Harza Engineering was unable to comply with AID requirements to provide Jordanian engineers to work on the study. Work on the study commenced on March 25, 1995. The Inception Report and Comprehensive Survey Report have been completed and reviewed by WQICP, MWI and JVA. It is expected that the Options Studies will be completed by September, 1995. Alternatives will be compared and ranked based on technical, cost, environmental and socio-economic criteria. At that time a feasibility study will be undertaken for the option(s) selected by MWI and JVA. Upon completion of the feasibility study, a decision will have to be made whether construction should proceed and whether AID will be willing to fund the detailed engineering design and the supervision of construction.

Persons consulted on the conveyance study indicated the the principal problem was a 6 km stretch of the Zarqa River channel between the Tal Al Thabab weir and where the water in the Zarqa river channel is diverted at the Zeighan weir into a lined canal which joins the King Abdullah canal. This section has a number of

saline springs which greatly increase the salinity of the Zarqa river water entering the King Abdullah Canal during the summer months. The King Talal reservoir water flowing from the Tal Al Thabab weir is currently being diverted above the springs by a simple dirt dam structure into a separate channel and thence into the King Abdullah Canal. The water from the saline springs continues in its own channel in the Zarqa river bed and does not enter the King Abdullah Canal system. It is important to control the salinity of the water from the King Talal dam. Last year, the high salinity caused a great deal of damage to fruit trees irrigated with the saline water. Since it is only a 6 km stretch, the construction of a water conveyance system should not be too costly and might be a good joint venture for MWI/JVA and USAID/Jordan.

d. Recommendations If the Government of Jordan can secure the funding for construction of the conveyance system on the Zarqa River, AID should consider amending the contract to prepare the detailed engineering design and provide supervision for the construction of the system. AID's consideration of this possibility should be conditioned upon the availability of GOJ or other donor funds for the construction.

2. Irrigation Water Management

a. PP Objective Improve the efficiency of the transport of irrigation water to the farmers and to increase its effective use by providing water- and crop-management information to the farmers in the Zarqa River Basin System.

b. Specific Tasks The contractor will 1) develop and assist the MWI to implement a water delivery conservation program, 2) develop and assist in the implementation of an on-farm water conservation program, 3) evaluate the Zarqa Triangle baseline study and focus on improving the operation and maintenance of drip irrigation systems which has been shown to be the major cause of inefficient irrigation on-farm, 4) conduct a study to determine the feasibility of establishing a WUO that would become the official farmers group interacting with the MWI/JVA in addition to MOA, JVFA, the private sector and other groups, 5) develop the framework for an extensive training and communication program on irrigation water conservation directed at farmers and all relevant groups working with farmers including MOA extension workers and JVA field personnel, 6) develop a system to analyze changes in farming practices, measure progress, and assess the impact of the above interventions.

c. Findings WQICP staff have identified several problems with the JVA water delivery system which need to be addressed such as the fine sand and trash in the system, which is damaging water meters and clogging drip irrigation systems, and the lack of expertise within the JVA in the operation of a pressurized

pipe delivery system Recommendations have been made for cleaning up the water in the system and improving the water filter devices used on farms. An observation training program in the U S in operation and maintenance of pressurized pipe delivery systems has been approved for four JVA engineers and final preparations are underway

A Survey of On-Farm Water Management in the Jordan Valley confirmed that no organization has clear responsibility for assisting farmers with irrigation system operation and maintenance Thus, while the GOJ is encouraging farmers to switch to drip irrigation to reduce water use, nothing is being done to assist them in operating and maintaining the systems The Project has identified assistance in on-farm water management as a pressing need This will require some major changes in both the JVA and the Ministry of Agriculture extension service, both of which should be, but are not, providing information and advice to farmers on plant water requirements, water scheduling and irrigation system operation and maintenance The Project has contracted with the University of Jordan to prepare a series of training modules in on-farm water management for training JVA and MOA extension personnel and farmers

A feasibility study for establishing Water User Organizations in the Jordan Valley was completed Alternatives were given for the establishment of a trial WUO Ten people visited Egyptian Water Users Associations and government offices working with them to get an idea if the Associations would be suitable for Jordan A review is being made of the materials collected in Egypt to assist in development of a trial organization that can be tried in the Jordan Valley

Improvement of the efficiency of water delivery and on-farm water use in the Jordan valley are extremely important to the future water supply and demand in Jordan It has been estimated that over 84% of the surface water and 74% of all water in Jordan is used for irrigation, but this will change as household and industrial consumption continue to grow Reduction in water use in the Jordan Valley through improvements in the efficiency of the delivery and on-farm water use systems will mean not only more water for expanded irrigation in the Jordan valley but also more water that could be taken from the King Abdullah canal for use in the Amman area (when the pipeline capacity is expanded to handle larger quantities of water) or from the King Talal Reservoir for irrigation in the highlands as the use of ground water for that purpose is restricted

d Recommendations AID should work with the DAI contract team to persuade MWI, JVA and the MOA extension service of the importance of providing training and advice to farmers on efficient operation and maintenance of on-farm irrigation systems A workshop should be held to discuss how the three organizations

can facilitate the assignment and training of their personnel for this task

AID should support the continuation of the irrigation water management component to assist in institutionalizing a farmer training and extension program within JVA and MOA. If they balk on carrying out such a program, AID should consider terminating the LTTA as scheduled in February, 1996. The preparation of the training modules may be all that can be accomplished without a stronger commitment from the GOJ.

If the JVA commits itself to the plan for improved water delivery efficiency and on-farm water management training for farmers, AID should consider providing Project funding for training and procurement of some of the most urgently needed vehicles and equipment to carry this effort out in the Jordan Valley Project area.

AID support for Water Users Organizations should await a demonstration of commitment by MWI, JVA and MOA on improved water delivery and increased on-farm water management training for farmers. Establishment of viable and effective water users organizations will require a major commitment of all parties, if it is to be successful.

D Water Management Education

1 Training/Human Resources Development

a Human Resources Development in MWI

(1) PP Objective Institutionalize within MWI a focal point for HRD concerns, including manpower planning to achieve institutional goals, maintaining master training plans, overseeing the personnel record system, formulating staff incentive policies and programs, overseeing staff performance evaluation, and providing staff counseling.

(2) Specific Tasks Once the HRD cell is established within the MWI Policy and Planning Unit, the contractor will 1) Review the HRD needs and opportunities in MWI and formulate a Phase I Action Plan for strengthening management capabilities within MWI at all levels, 2) provide an estimated \$20,000 in office equipment for the HRD cell, 3) prepare a manpower plan which assesses the manpower available with the MWI (estimated at 8640 employees) and the available skills against job requirements. The plan will provide details of how the MWI can utilize manpower in the most efficient manner and prioritize areas where strengthening is required. Based on the results of the Phase I Action Plan and the results of the Manpower Plan, the contractor will 4) develop a Phase II HRD program which will continue for the remaining life of the AID funded project.

(3) Findings A training needs assessment was completed and a Phase I Action Plan was prepared which calls for the establishment of a Human Resources Development Unit to handle Ministry personnel functions and the operation and management of training programs. Because of the ongoing CIDA restructuring study, it was decided to postpone the preparation of a manpower plan for MWI. Attention was focused on identification of needed skills for current positions in the Ministry and development of a coding system for these skills which would allow their use in a computerized personnel system. Work on this program is ongoing. A survey of employee skills will then be completed. The comparison of skills needed and skills possessed will help form the basis for preparing manpower development plans once the new ministry organization is decided upon.

Some progress has been made in the Human Resources Development area but achievement of the PP objective has been hampered by the uncertainty caused by the CIDA reorganization study and the failure of the Ministry to establish and staff a Human Resources Unit to manage the overall personnel and training functions. The Human Resources Development Advisor completes his assignment on August 14, 1995. Much of the lasting value of his presence here has not been realized because of the difficulties encountered in efforts to establish a Human Resources Unit which he could have guided and trained. This should be taken as a wake-up call for the other components which also provide for the establishment and staffing of a centralized unit at the Ministry level such as the policy and planning and water information units. Without the establishment of such permanent units with which the ex-pat advisors can work, the prospect are dim for achieving sustainability of the Project-supported activity.

(4) Recommendations AID should use its influence to encourage MWI to recruit a qualified director and staff for the Human Resources Development Unit as soon as possible so that they can benefit from working with the local hire contract advisor over the next year and be in a position to continue the HRD program when Project support is terminated.

b Strengthen MWI In-Service Training Capabilities

(1) PP Objective Increase the planning and management capabilities of the MWI training program from the 1991 level of 16 courses on 10 subjects for 377 trainees to 40 courses on 20 subjects for 600 trainees per year by 1997, to broaden the range of course offerings from 30 to 80, and to improve the quality and relevancy of training for MWI staff. Management skills development will be part of the new courses.

(2) Specific Tasks The contractor will 1) develop a plan for upgrading the MWI training center and prepare plans for constructing new facilities, 2) retain the services of a

Jordanian architecture and engineering firm to prepare detailed designs, construction specifications, invitations for bids, and all other relevant documents required for contracting with a local construction firm, 3) review and finalize the equipment list which has been prepared for the Training Center, 4) procure the equipment which consists of teaching materials, audiovisual equipment, computers, and office equipment, 5) prepare a Master Training Plan which will include an annual plan for all training courses to be offered at the Training Center and by outside training organizations, 6) prepare a Training Center Management Plan which will analyze the management of the center, recommend improvements, specify courses to be offered and which can be developed, and include an identification of additional training institutions in Jordan which can be used to train MWI staff, 7) develop new courses in water and wastewater and provide short-term practical training in the U S for at least three participants in critical water and wastewater areas

(3) Findings A training needs assessment was conducted which identified 49 course topics where training was needed Two ex-pat technicians were brought in to develop curriculum outlines for the highest priority management and technical courses A RFP was prepared for curricula development for the other courses The University of Jordan was selected by the proposal review committee but has not yet been accepted by MWI This action is still pending Four U S observation training courses were arranged in the U S and three in Egypt for a total of 35 participants Training programs were established in computer literacy, English language and report writing Training facilities were established in the MWI, JVA Central Lab and the Amman Chamber of Industries

A feasibility study for a new training center for the Ministry was conducted and the Ministry decided to proceed with construction An architect was employed to develop space requirements and initial cost estimates USAID approved an RFP for design of the new center

Good progress has been made in the in-service training program but achievement of the PP objective has been hindered by the failure to establish a HRD unit to manage the training process With the departure of the HRD ex-pat advisor, one is struck by the inability to take full advantage of an excellent opportunity to upgrade Ministry personnel through participation with the advisor in developing and managing the in-service training program It is unlikely that the PP objectives in Section IIDia and b will be achieved during the life of the Project

(4) Recommendations AID should consider requesting that the Project supported training program for the remainder of the Project life emphasize training required for policy analysis and planning, water resources and water quality

monitoring, industrial water use reduction and waste water pollution prevention, and irrigation water management to support these critical Project initiatives. This should be done in association with a push to establish and staff Ministry units working in each of the areas.

AID should consider not funding the curriculum development contract and the design contract for the construction of the training center to free up money for higher priority activities within the Project.

2 Public Awareness Program

a PP Objective 1) Develop the capability of a Jordanian NGO to plan, supervise production, and carry out information campaigns to increase public awareness of the need for and benefits of water conservation, and 2) initiate and carry out a continuing water-awareness campaign involving where possible GOJ units concerned with water use by different population and economic sectors.

b Specific Tasks The contractor will 1) conduct a scientific study of Jordanians' knowledge, attitudes, and practices in water use and conservation through a subcontract with a Jordanian behavioral science research group or firm -- purpose of the study to develop strategies for public awareness program, 2) gather, devise and field-test physical methods of water conservation for the several major categories of water users in Jordan through a subcontract with a Jordanian group or firm -- purpose of study to build specific communications messages, 3) assist the USAID grant recipient NGO in developing, designing and implementing a program to make the public more aware of the need for and benefits of water conservation, 4) assist the NGO to plan and carry out large and varied water-use campaigns involving mass media to reach the public at large, 5) assist MWI in developing a public awareness unit which will adapt and extend technical research, information and service related material to the general public, 6) procure and provide the MWI with computer system (5 PCs, printers and related equipment) with appropriate software for word processing, desktop publishing, graphics and graphics and audio visual production and design equipment, 7) provide short-term training in the U S for the NGO and MWI staff, other training, either in-country or at external sites, 8) conduct an annual workshop and design and implement short-term training programs for cooperating personnel, 9) develop a long-term operational plan for public awareness, in order to ensure the long-term viability of the program.

c Findings After some initial difficulty in establishing working relationships, MWI and JES have developed a reasonably good relationship. They cooperate on community awareness programs with JES organizing the events with technical

speakers from MWI. A workshop on "How to Develop a Public Awareness Campaign" was held in July 1994 with participation by JES, MWI and other interested public and private sector representatives. The Public Awareness Working Group meets regularly to exchange ideas and discuss upcoming events. The Minister and Secretary General of MWI are frequent participants in and strong supporters of public awareness activities.

A variety of educational and promotional materials have been developed including a water map of Jordan, a children's coloring book with water conservation themes, and a water wheel device which conveys water conservation messages. Three postage stamps with water conservation themes have been issued by the Ministry of Telecommunications and Post. A number of film spots have been prepared for local t v and a workshop has been held for local media personnel. Many public awareness activities were carried out in association with National Water Week in June, 1994 and International Water Day in March, 1995.

A Sub-Contract has been awarded for a Water Use Behavior Study which is ongoing. Results are expected in September and will be used to develop messages and program content for public awareness activities. Another sub-contract is currently being negotiated to conduct a Water Use Practices Study which will identify water saving devices which can be publicized and promoted by the public awareness program.

Two people have been assigned by MWI to work on the public awareness program, but there is no official public awareness unit established within MWI. The MWI has no budget for producing educational and promotional materials and relies on the Project for such support. The Project Coordinator at JES will be leaving the public awareness program to accept a higher position. All of these factors point to the tenuous status of the program and raises real questions about its sustainability when Project support ends. The long-term resident advisor is scheduled to leave in February, 1996.

d Recommendations USAID/Jordan should use its influence to persuade the MWI to establish, staff and train a Public Awareness Unit to carry on the activities initiated under the Project. Such action should be taken in the near future to take advantage of the on-the-job training opportunities offered through working with the long-term public awareness advisor and short-term technical advisors. The MWI should also establish a line item in its budget to support operational expenses and the production of educational and promotional materials by the Unit. The production of such materials by MWI will allow them to be made available to NGO's such as JES and RSCN, reducing their requirements for funding to produce materials and making it easier for them to sustain their educational and promotional programs which Project funding ends.

USAID should consider extending the long-term public awareness advisor for one additional year to assist in the institutionalization of the public awareness unit within the MWI, even though this was not the original objective of this Project component. The advisor's involvement with MWI should be contingent upon their establishment, staffing and budgeting of a public awareness unit. If such action does not take place, USAID should consider removing the advisor from MWI and concentrating on the two activities discussed below.

The long-term advisor should begin to work on a regular basis with the Chamber of Industry to help them develop a training and public awareness program for industries as they prepare to live with the standards and regulations included in the new Environmental Law. The long-term advisor should also work with the Irrigation Water Management advisor, JVA, the Ministry of Agriculture and farmers in the Jordan Valley to develop a training and public awareness program for on-farm water conservation.

The question of sustainability of the public awareness program in JES will require the leadership of JES to focus on the problem of how they can maintain one person and a modest support budget to continue backstopping their community awareness program when Project support ends. The long-term advisor should work with the leadership of JES to develop such a plan.

a Jordan Environment Society Grant

(1) Grant Objectives. 1) Strengthen institutional capacity of JES to plan, supervise and implement public awareness activities, and, 2) Design, implement and monitor Awareness-Project-in-Water programs

(2) Specific tasks JES will 1) appoint a full time project coordinator, project associate, executive assistant, part time support staff and an advisory committee, 2) plan and conduct formal and informal training activities for the management and implementation of the APW which is necessary to build human resource capabilities for public awareness campaigns, 3) extend its capacity to conduct pilot water conservation activities in Amman and the JES branches throughout Jordan, 4) increase the membership of JES, 5) work with MWI to design, plan and coordinate the public awareness campaigns and the APW, 6) use the results of the water-use behavior and water-use practices studies to develop, plan and implement strategies and activities to influence the water-use behaviors, 7) undertake a variety of activities to a) create general awareness through mass media campaigns and workshops, b) develop human resources for implementation of Public Awareness Activities and c) implement action public awareness activities, 8) coordinate with others who are working in water conservation efforts, such as the Chamber of

Industries and the Royal Society for the Conservation of Nature (RSCN)

(3) Findings. JES has complied with all of the tasks specified to strengthen its institutional capacity to plan, supervise and implement public awareness activities. It has hired staff, created an advisory committee, held training activities, conducted activities in its branches, increased its membership and worked with MWI to plan and coordinate public awareness campaigns. Its performance in this respect has been very good. However, the question remains of the sustainability of this capacity once Project support ends.

With respect to designing, implementing and monitoring Awareness-Project-in-Water programs, JES also has an excellent record as detailed in Section IID2 above. The water-use behavior and water-use practices studies have not been completed but are in process.

The Project Coordinator has been replaced. The long-term advisor is scheduled to leave in February 1996. The JES grant runs until June 1997 and should continue to produce good results. The big question is whether JES can continue to carry out a public awareness program when the AID grant and support under the DAI contract end. It is possible that JES could come up with the funds to maintain one person and a modest support budget to backstop the community awareness program, but would need additional donor support to carry on a larger public awareness program. As with most NGO's, it is difficult for them to develop the capacity to fund a major program and they must rely on outside assistance. It is likely that this is the road that JES will have to take although they may be able to support a modest back-stopping effort for the community awareness program from their own resources. If the MWI develops a capacity to produce educational and promotional materials for public awareness campaigns, JES could work with MWI to disseminate these materials through its branches.

(4) Recommendations. USAID should consider continuing the services of the long-term advisor to work on a limited basis with JES to follow through on its program under the AID grant. JES has developed to the point where the heavy initial involvement by the long-term advisor should no longer be necessary.

AID should evaluate the JES program at the end of 1996 to determine whether it should provide a follow-on grant to JES for specific continuing activities in public awareness.

b Royal Society for Conservation of Nature Grant

1) Grant Purpose. To allow the RSCN to increase its outreach through the use of participatory approaches.

with teachers and students to develop and use educational materials on water conservation

2) Specific Tasks RSCN will a) Conduct a two week workshop to draft material for ten secondary school level water theme pamphlets and a teachers' guide for use with the pamphlets; b) contract for the production of ten four-page booklets, the teachers' workbook, posters and a guide for initiation and maintenance of RSCN clubs, implement approximately eight workshops for 28 participants each composed of students and teachers, support the implementation of the water environmental education series by teacher-student teams

3) Findings The RSCN grant is just about completed, lacking only a graduation ceremony with Queen Noor's attendance which will be held in September. The program was successfully implemented. The materials development workshop resulted in the production of the water books and posters which dealt with themes such as the circulation of water, pollution of surface water, underground water pollution, irrigation and household water conservation. 186 secondary school leaders were trained in eight 2-day workshops and received the water books to assist them in carrying out water conservation/pollution prevention training in their schools. RSCN collaborated with JES on the Water Walk for National Water Day and attended various seminars and workshops on water conservation and pollution prevention. They reported that they have not attended meetings of the Public Awareness Working Group.

RSCN was pleased with the assistance that they received from GreenCom and hope that such assistance can be continued in the future -- not necessarily to continue training the public awareness section staff, which they consider to be well trained, but to advise them of new public awareness approaches that have been tried in other countries and might work in Jordan.

The secondary school program appears to have a certain amount of built in sustainability with the preparation of the waterbooks and posters and the training of teachers and students which can continue training sessions for another couple of years. Another round of training would be useful in a couple of years to develop new student-teacher teams. Such a program would require relatively little in the way of resources and might be carried out by RSCN, with perhaps a small grant from an external donor.

The General Manager of RSCN said they would be interested in extending [the program] the program that they conducted at the secondary school level to the intermediate school level and would be approaching USAID/Jordan with a proposal for grant assistance for such an effort.

4) Recommendations RSCN should be invited to participate in the Project Public Awareness Working Group AID should consider an extension of the GreenCom buy-in to provide intermittent advice to RSCN, JES, Chamber of Industries on public awareness approaches used in other countries which might be suitable for application in Jordan

c GreenCom Buy-In

1) Buy-In Objective To provide technical assistance to the Royal Society for the Conservation of Nature (RSCN) in Jordan during their implementation of a grant under the USAID/Jordan Water Quality Improvement and Conservation Project

2) Specific Tasks The contractor will a) provide the contract services of one local expert on the design and management of education strategies to work with RSCN in the development and implementation of their water themes intervention described above, b) provide the services of one senior consultant in environmental education and communication strategy development and implementation for five weeks to support RSCN during critical periods of their work under the USAID grant

3) Findings RSCN was pleased with the assistance received from the local expert and the senior consultant in implementation of the AID grant They provided useful inputs in the materials development workshop, materials production, training workshops and throughout the Project

4) Recommendations AID should consider continuing the GreenCom buy-in to provide intermittent advice to RSCN, JES, the Chamber of Industries and MWI on public awareness approaches used in other countries which might be usefully applied in Jordan Such assistance might take the form of twice-a-year one or two day workshops with the participation of the GreenCom expert and all of the local organizations involved in public awareness programs

III ISSUES

A Issue Changes in Level of Effort

Much good work has been done under the DAI contract and the Public Awareness Grants However, the prospects of achieving Project objectives have been severely handicapped by the problems that MWI has encountered in its efforts to establish and staff critical operational units within the Ministry such as the Policy and Planning Unit, the Human Resources Development Unit and a Water Monitoring and Information unit There has been no systematic on-the-job training of personnel who have clearly defined positions within these critical units and who will continue to carry out the functions which have been supported by the Project after Project

funding terminates This makes assuring the sustainability of these activities much more difficult The seriousness of this problem is driven home as the long-term advisors get ready to leave in February, 1996 (one advisor leaves in August, 1995) The assignment of GOJ personnel to work with the Contract advisors has been largely on an ad-hoc basis, through informal working groups where many of the members from WAJ and JVA have continuing responsibilities in their parent organizations and can devote only limited amounts of time to working on the Project When these informal working groups are disbanded, it is likely that there will be no permanent institutional capacity to continue the work supported by the Project One of the reasons for the difficulty in establishing and staffing permanent counterpart units is the uncertainty caused by the CIDA restructuring study and what may happen to the Ministry organization and personnel The ad-hoc working groups have been functional, but AID and MWI must face the fact that much of the Project benefit and potential sustainability has been and will continue to be limited if the critical counterpart units are not established and staffed as soon as possible There are other areas where commitment of the MWI and other agencies are needed if Project objectives and sustainability targets are to be achieved such as the assignment of responsibility for advising farmers in on-farm water management to JVA and the MOA extension service

With this principal problem as an over-riding concern, the following discussion ranks the project components in priority order with suggestions for changes in the Contract level of effort and related AID actions

1 Establishment of the Policy and Planning Unit This component should receive top priority Already many months of valuable on-the-job training have not realized their full potential because of the failure to establish and staff this unit Policy formulation and planning for the water sector as a whole is the logical responsibility of the MWI Agency specific policy formulation and planning can continue to be done at the WAJ and JVA level, but overall water sector policy formulation and planning must be done at the Ministry level where it is essential and badly overdue AID should seek an early meeting with the MWI to work through the steps needed to establish, staff and provide GOJ budget support for the Policy and Planning Unit The Unit should then be given responsibility for managing the policy prioritization and policy process. As part of this process, Project support should be provided for short term technical assistance to prepare a draft of a dynamic sector-wide strategic framework which is discussed in greater detail in Section III B Priority should be given to short-term formal and on-the-job training for Unit staff Since the DAI Chief of Party is also the Policy advisor and will be in Jordan for 48 months, there is no need for an increase in the long-term level of effort although an increase in the short-term level may be needed for development of the water sector strategy

2 Strengthening Field Data Collection The availability of timely and reliable data on water quantity and quality is essential to policy formulation, planning and public awareness programs in the water sector. SAIC and DAI are advocating an aggressive program to make the water resource and water quality monitoring network fully functional on a nation-wide basis and to establish and staff a Ministry unit to collect, receive, store, retrieve, package and disseminate water resource and quality data. AID should strongly support this effort, especially the receipt, storage, retrieval, packaging and dissemination effort. (The collection effort could continue to be done by elements of WAJ and JVA until a unified system is agreed upon by the Ministry.) If the program is accepted by the MWI and a water monitoring and water resources/quality data management unit is established, staffed and provided GOJ budget support, AID should consider extending the assignment of the SAIC water monitoring advisor for six months to one year to consolidate institutionalization of this program which is described in further detail in Section IIA3. AID should consider working with the GOJ to make CIP funds or additional Project funds available to complete the procurement and installation of equipment and spare parts and the drilling of monitoring wells required to establish an effective national water monitoring network. The Contract scope should be amended to provide assistance for establishing and validating the water resources and quality data base. Funding should also be provided for assisting in the development of standard procedures and protocols and quality assurance procedures and practices which should be used by the Central Laboratory in analyzing water quality samples and training collection and lab personnel in their use.

3 Public Awareness The building of public awareness of the water problems in Jordan and what can be done about them is an extremely important function. This activity should be extended and expanded to provide for institutionalization of a public awareness unit in MWI with a staff and budget to produce educational and promotional materials for use by government agencies and private NGO's like JES and RSCN. The long-term Public Awareness advisor should be extended for an additional year to allow her to work with the MWI in this institutionalization process. Her duties should also be expanded to work with the Amman Chamber of Industries in establishing a training and public awareness program for member industries as they prepare to adjust to the new Environmental law. Consideration should be given to extending the buy-in with GreenCom to provide for twice yearly workshops with the various public and private sector organizations involved in increasing public awareness of Jordan's water problems and how to deal with them. The GreenCom assistance should be continued after the long-term advisor departs and through the life of the Project.

4 Irrigation Water Management With over 84% of surface water and 74% of all water used for irrigation, a

relatively small percentage reduction in use through improved delivery and on-farm water management can have a major impact on water availability at the national level. For example, if water use for irrigation in the Jordan Valley can be reduced by 10% through more efficient delivery and on-farm water management, it would result in a savings of about 22 mcm of water which could be pumped back to Amman from the King Abdullah Canal (when the pipeline is expanded) or could be diverted from King Talal Reservoir for irrigation of surrounding highland areas, reducing the drawdown of ground water resources in the area. Such savings in water use can be realized through improved delivery and better training and technical assistance for farmers in on-farm water use. DAI has developed a plan for institutionalizing improved water delivery and farmer training involving JVA and the Ministry of Agriculture extension service as described in more detail in Section IIB2. If JVA and MOA will agree to commit their organizations to the changes needed to make such a program operational, AID should consider extending the assignment of the long-term irrigation water management advisor for an additional year to work on institutionalization of the program. If the JVA commits itself to the program, AID should also consider providing additional funds for the most urgent equipment requirements of JVA to carry out such a program in the Amman/Zarqa project area.

5. Industrial Wastewater Discharge Prevention The water conservation/pollution prevention program initiated under the Project has important implications for the quantity and quality of the effluent flowing to the As Samra water treatment plant and for the pollution of groundwater resources. AID should support building upon what has been done to date by establishing a capacity within WAJ and the Chamber of Industry to offer basic auditing and advisory services to industries on reducing water use and preventing discharge of pollutants into the sewer system or in ways which will contaminate groundwater resources. AID should request that the long-term water conservation/pollution prevention advisor work with WAJ and the Chamber of Industry to establish such a program before he departs in February, 1995. Additional support should be provided to the Chamber of Industry to increase their capacity to provide basic level audit/advisory services in water conservation/pollution prevention. The MWI counterpart who has been trained by the long-term advisor in this component could work with WAJ and the Chamber of Industries with assistance from intermittent short-term technical assistance.

6. Human Resources Development Resources in this component should be reprogrammed to emphasize the training requirements for high priority project activities such as policy formulation and planning, water monitoring and information, irrigation water management and industrial water conservation/pollution prevention. Computer and English language training should be continued. If Project funds are available, some general management training, particularly for senior level supervisors, should be continued.

Consideration should be given to not proceeding with the curriculum development contract and the contract for design of the training center to free up funds for other higher priority activities

7 Upgrading MWI Laboratory This is an important activity to help assure the integrity of water quality monitoring. The conceptual design of the lab should be completed and the lab equipment which has been ordered should be installed and personnel trained in its use. Standard procedures and protocols for water quality analysis should be developed for use in the Central Laboratory and other labs and personnel trained in their application. Aside from these activities, no further funding for this component should be required until the space constraint is resolved, which is unlikely to occur during the life of the Project

8 Artificial Recharge Studies The use of artificial recharging of aquifers is an important technique for addressing some of Jordan's long term water supply problems. This work should continue to its conclusion and additional funding should be provided, if available, for observation training in the U S and Middle East and for a wrap-up workshop upon completion of the feasibility studies

9 Managment Information System Once the detailed engineering design and installation of the Oracle software is complete, no further funding should be provided for this activity. A more sharply targetted MIS approach should be focused on the water information needs discussed in priority 2 above. If and when the three agencies can agree to establish a unified, centralized management information system, then additional support for this activity could be considered

These are some general thoughts on changes that should be made in the Contract level of effort and Project funding. AID should work with DAI and its consortium partners to develop a restructured Contract Budget and Scope of Work for the balance of the Project. A full-scale evaluation of the Project should be scheduled for the fall of 1996 to determine what additional mid-course corrections might be desirable

B Issue Project Strategy

The USAID/Jordan Water Quality Improvement and Conservation Project is an ambitious, complex undertaking which attempts to address many of the problems impacting on the availability and quality of water in Jordan at the same time. The mission could have chosen to concentrate on one or two aspects of the water problem in Jordan, but chose instead to take on many of the most critical problems. The Chemonics PRIDE study provided a good intellectual base for the current effort. At the time that the Project was designed, a common vision of what the Project could and

should do was developed by the people involved in the design in AID and the Ministry of Water and Irrigation. Since that time there has been almost a complete turnover in the leadership of the Ministry and the two authorities.

During the assessment, the people interviewed were asked if there was a vision or strategy that provided a framework for tying the complex set of problems and activities in the water sector into an understandable, manageable whole. Many answered no, that there was no strategy and that everyone basically reacted to problems as they developed. Some said that attempts had been made to articulate such a strategy in the five year development plan or the PRIDE study or the Draft Outline of a Possible Water Policy prepared by the World Bank in 1994, but that there was no single, short, simple document that articulated a strategy for dealing with the water sector in Jordan that could be understood and accepted by all of the principal actors and the public at large.

The implementation of the WQIC Project suffers from the lack of such a dynamic strategic framework. The water sector as a whole will continue to operate mostly in a reactive mode without such a strategic framework. Various actors involved in the water sector will continue to have difficulty understanding how their roles and responsibilities fit into the overall scheme of things without such a strategy. The Project has an opportunity to assist in developing such a strategy and should take on the task of developing a coherent and dynamic strategic framework. The framework should discuss the nature of the water problem in Jordan and what should be done about it over the short, medium and long term in a brief (10 - 12 pages) document in simple, straightforward and understandable language. AID should consider requesting DAI to bring in one, two or three individuals with extensive experience with the water sector in developing countries, a strategic orientation, and a deep understanding of water problems and ways to deal with them to prepare a draft of such a document. The draft could then be the subject of a workshop bringing together the principal actors in the water sector who could discuss the strategy and try to agree on the content of the document. The managers of such a workshop would have to be alert to containing discussions of the "trees" and keeping the focus on the "forest". It would be difficult, but would hopefully be doable and worth the effort. The strategy could then be used as the framework for prioritizing the policy issues that the Project has been profiling over the past few months. If a strategy or common vision is not developed, the water sector will continue to operate in a reactive mode and the broad approach implied in the WQIC project design will not be able to realize its great potential as a catalyst for improving the ways in which Jordan deal with its multi-faceted water problem.

C. Issue Sustainability of Project Supported Activities

In attempting to assess the potential for achieving sustainability of Project supported activities, one is struck by a certain duality in the design of the WQIC Project. The Project goal is to improve the overall management and conservation of Jordan's water resources and the Project purpose is to increase the quality and the quantity of the water available in the Zarqa River Basin System through water conservation. Some of the project components address the Project purpose such as Upgrading Waste Water Treatment Facilities, Industrial Wastewater Discharge Prevention, Improve Water Conveyance System and Irrigation Water Management. Other Project components address higher order or Goal level objectives which are at the national level and not restricted to the Zarqa Basin such as Establishing MWI Policy and Planning Unit, Water Information System, Strengthening Field Data Collection, Upgrading MWI Laboratory, Aquifer Recharge Studies, Human Resources Development and Public Awareness.

The Goal level objectives also impact on increasing the quality and quantity of water available in the Zarqa River basin but also have a much broader, national impact. The Purpose level objectives seem to have less ambitious and more concrete goals, most of which can be achieved during the life of the Project. For example, the upgrading of the waste water treatment facilities should be completed, the feasibility study for saving water losses in the Zarqa River system should be completed and water using and waste discharging manufacturing industry in the Zarqa basin system will have been assisted to adopt and practice pollution prevention and waste minimization.

The national level objectives are more difficult to achieve and rely on a strong commitment from the GOJ or participating private sector organizations to have a chance of being sustainable. Achievement of the national objectives requires in several instances the establishment, staffing and training of personnel for operational units within the MWI such as the Policy and Planning Unit, the Water Monitoring Unit, the Human Resources Development Unit and the Public Awareness Unit. These units have not been fully established and staffed. An opportunity for strengthening these functions within MWI has not been fully utilized and will continue to be underutilized until the units are established and staffed and GOJ funds are budgeted for their operating expenses. The difficulty encountered in doing this is the single greatest factor working against the possibility of sustaining Project supported activities after Project funding terminates. AID and MWI should sit down together and determine whether these units can be established, staffed and provided GOJ budget support. If they cannot, AID will have to carefully consider whether it wishes to continue allowing the expenditure of funds on activities which have little or no prospect of becoming sustainable.

18 months have gone by since the DAI contract team arrived -- 18 months in which permanent MWI staff assigned to the proposed units could have benefitted from on-the-job training through participation with the ex-pat long-term and short-term advisors in the planning and implementation of Project activities. In cases where a permanent counterpart was supplied such as in Water Conservation/Pollution Prevention, she has learned a great deal and is prepared to continue working on activities initiated under the Project after the long-term advisor departs. The ad-hoc working groups have served a useful purpose, but many of the members from WAJ and JVA continue to have responsibilities with their parent organizations and can devote limited time to Project activities. When the Project terminates it is likely that the working groups will be disbanded and little institutional capacity will remain after the expenditure of a large amount of money for technical assistance. Much time has passed since the Project began but the situation can be remedied by prompt and decisive action by MWI.

In other cases, the prospects for sustainability of Project funded activities are limited because changes are required in the way that the GOJ deals with problems. For example, two recent studies financed by the Project showed that on-farm water use in the Jordan valley is inefficient and that there is no government organization that is providing advice and assistance to farmers on proper water use and irrigation system operation and maintenance. Farmers are encouraged to adopt more efficient irrigation systems but are provided limited assistance by the private sector in doing so. The Project is funding the development of a training program for farmers in on-farm water management. This is an excellent step, but the question remains as to who will continue to provide this training for farmers when the Project terminates. It is not in the mandate of the JVA and the MOA extension service does not have the irrigation engineering expertise to provide advice on the operation and maintenance of on-farm irrigation systems. The GOJ has to take action to deal with this problem or the prospects of sustaining farmer training in this important area are bleak.

In the case of NGO's which have been participating in Project activities, the prospects for sustainability are affected by their ability to generate funds to continue their educational and promotional public awareness programs. The RSCN does receive funds from the GOJ and also has received assistance from the World Bank. The JES receives money through individual and organizational dues and also has grants from other donors. There appears to be interest in both groups in continuing public awareness programs in water conservation once the Project ends. They may require some help from AID or other donors as their own revenues are limited. One way that they could keep their expenses down would be to work with the Public Awareness Unit in MWI on the messages and design of educational and promotional materials which could be produced using MWI budget resources and then distributed through the cooperating

NGO's Institutionalizing such a procedure should be a priority undertaking of the Project funded Public Awareness program

The sustainability of certain Project funded activities is handicapped by the lack of funding for the purchase and installation of equipment. For example, the funds available for procurement of equipment and drilling of monitoring wells for the Water Monitoring Network (\$800,000) fall far short of the amount required for establishing a nation-wide network (\$3 million). In order to assure the sustainability of the monitoring network, the operational unit should be established and staffed and funding will need to be secured to complete installation of the equipment and wells. A proposal is on the table to do this with CIP funds. The sustainability of the JVA program for assisting farmers in on-farm water management is hampered by the lack of technicians trained in that area and the lack of vehicles and equipment. AID should consider funding some of the most urgent training and vehicle and equipment needs to get this program moving, at least in the Zarga Project area.

D Issue: Project Management and Communications

Aside from the problems related to the difficulty in establishing and staffing the operational units within the MWI, the Project appears to be progressing well. After some initial problems with housing allowances and access to Embassy services, the logistics of supporting the Contract team seem to be functioning well. A good technical and support staff has been assembled, progress reporting is detailed and timely, procurement and in-country and observation training abroad seem to be proceeding smoothly. Good working relations have been established with the GTZ and UNDP water projects. There were some complaints about the delay in completing the conceptual design of the Central Laboratory. These complaints should be resolved when the study is delivered this month.

The Project has received good support from the Minister and the Secretary Generals of MWI, WAJ and JVA. They are accessible and willing to devote time to dealing with Project issues. Aside from the difficulties resulting from not establishing and staffing the permanent counterpart operational units, relations with and support from the GOJ have been very good.

Some individuals interviewed mentioned different types of management and communications problems. A fairly frequent complaint was the failure to hold regular meetings of all Project personnel. During the early stages of implementation, meetings involving the Contract team and all of their counterparts were held on a regular basis. Then for a reason unknown to those who complained, they stopped. They urged that the meetings be resumed so that everyone would know what was going on and could see how their responsibilities and duties related to those of others working

on the Project and to develop a spirit of teamwork AID, DAI and MWI should try to resume the regular meeting of all Project staff and also arrange periodic workshops to treat selected Project topics in greater detail such as a workshop on the water monitoring network or artificial recharge of aquifers etc One of the incentives for MWI, JVA and WAJ people to work on the Project is the opportunity to expand their knowledge The regular meetings and periodic workshops offer them this opportunity which would also contribute to improved morale and motivation

Other complaints dealt with communications between DAI, MWI and AID and the role of the Project Coordinator There were obviously two sides to the story The problems may arise in part from different perceptions of the role of the Project Coordinator The role is not clearly spelled out in either the Project Agreement or the Project Paper In the Project Paper, the role is stated as follows "The MWI Project Coordinator will be an authorized GOJ representative for all project implementation activities " There is no definition of what it means to be "an authorized GOJ representative for all Project implementation activities " The practice that has been followed is to interpret that as meaning that the Project Coordinator is one of three GOJ representatives who should clear certain Action Memos from the Contract team to AID. Which types of memos should be cleared by the GOJ representative and which GOJ representative should clear is not clear Such an ambiguous situation can and has led to misunderstandings One of the advantages of having three GOJ representatives is that at least one of them should be available on a timely basis to clear Action Memos The Secretary General of MWI and the Secretary General of WAJ both are authorized to serve as a GOJ representative but have many demands upon their time which suggests that the Project Coordinator should clear the majority, but not necessarily all, of the Action Memos It should also be clear that his authority is a derived authority and that he should be working within guidelines provided by the Minister and Secretary General of MWI It would be a mistake to develop rigid guidelines as to who signs what The process should be kept simple and responsive This suggests that the GOJ representatives should be flexible and supportive in processing Project documentation Responsibility for assuring the technical quality and feasibility of Project activities should rest with directors of the key operational units, when they are established, or with the Component Working Groups until that occurs The role of the Project Coordinator should be one of a facilitator and an intermediary to assist the Project team in resolving Project related issues Adopting such a flexible, responsive, facilitating posture and encouraging full and open communication among the Project participants should de-fuse many of the problems and misunderstandings inherent in an ambiguous environment

ANNEX A: ASSESSMENT SCOPE OF WORK

OBJECTIVE

Short-term technical assistance is needed to conduct an assessment of the USAID/DAI Contract, public awareness grants with the Jordan Environmental Society (JES) and the Royal Society for the Conservation of Nature (RSCN) and the support provided by the GLOBAL GreenCOM Project to RSCN. These entities are responsible for implementation of a major part of the Water Quality Improvement and Conservation (WQIC) Project. The assessment shall determine the effectiveness of these entities, with special reference to DAI, in meeting the project objectives. It shall also recommend any additional actions e.g. changes or additions in level of effort, that may be needed to achieve the project objectives and/or correct any observed deficiencies. The consultant, who provides this technical assistance, shall incorporate his findings and recommendations into a report to be submitted to USAID.

BACKGROUND

A major part of the WQIC Project is under contract with DAI. This part includes: water resources monitoring and management, industrial wastewater discharge prevention, irrigation water management, and water management education with emphasis on human resources development and public awareness in water conservation. To accomplish these activities, DAI has six long-term technical advisors and a range of short-term assistance. Five of the long term people are on two year assignments which are scheduled to end beginning in February 1996. The sixth position, the chief of party, is scheduled for the contract life.

In addition, USAID, through the Project, has provided grants to RSCN and JES for public awareness activities in the water sector. We also have a buy-in with the Academy for Educational Development under the Global GreenCom project for support to RSCN. DAI through one of the long-term positions, provides implementation support to JES.

SCOPE OF WORK

The consultant shall work with the USAID project officer, and other WEA staff as necessary, in completing the objective of this consultancy. In completing the assessment, the consultant shall include, but not be limited to, the following

1. Review the WQIC Project Paper, the DAI contract, the JES and RSCN Grants and the GreenCom Scope of Work.
2. Meet with Their Excellencies, the Minister of Water and Irrigation and the Secretary Generals of the Ministry of Water and Irrigation, the Water Authority of Jordan and the Jordan

Valley Authority, the President of the JES, and the President of RSCN

- 3 Meet with all DAI personnel assigned to the project in Jordan
- 4 Meet with all counterparts of the DAI personnel These counterparts are employees of the Ministry of Water and Irrigation (MWI), the Jordan Valley Authority (JVA), the Water Authority of Jordan (WAJ), and the Jordan Environment Society (JES)
5. Review all annual plans, progress reports and individual consultant reports prepared by DAI and GreenCOM.
- 6 Review the Project Implementation Reports prepared by USAID
- 8 Review all inputs already provided by DAI and GreenCOM
9. Identify and analyze outputs resulting from DAI and GreenCOM interventions Special attention should be given to the impact and coordination of the public awareness activities implemented by both
11. Assess the effectiveness of DAI and GreenCOM inputs in meeting the project objectives
12. Based on the status of achievement of project objectives, and the status of level of effort still to be provided, identify any changes or additions in level of effort that are required to achieve project objectives
- 13 Prior to departure from Jordan, prepare a draft assessment report for USAID review and comments
14. Within three weeks of departure, submit to USAID a final detailed assessment report about the work covered by the USAID/DAI Contract Ten copies of the final report shall be submitted

LOGISTICAL SUPPORT

During his/her work in Jordan, USAID will provide the consultant with logistical support such as secretarial services and office space

TECHNICAL ASSISTANCE DURATION:

Three weeks in Jordan followed by two working days in the U S

ANNEX B: LIST OF PERSONS INTERVIEWED

Development Alternatives, Inc. (DAI)

Ed Stains -- Chief of Party
Coleen Brown -- Deputy Chief of Party, Public Awareness Advisor
Ross Hagan -- Irrigation Water Management Advisor
Bob Smail -- Human Resources Development Advisor
Hala Dahlan -- Curriculum Development Coordinator

Science Applications International Corp. (SAIC)

Dario Dal Santo -- Water Quality Monitoring, MIS Advisor
George Ring -- Artificial Aquifer Recharging Advisor

Harza Environmental Services, Inc.

Shawn Niaki -- Pollution Prevention/Waste Minimization Advisor

Jordan Environmental Society (JES)

Mr Ahmad Obeidat -- President
Suleiman Hanbali -- Executive Director
Munir Adgham -- Coordinator of Awareness Project in Water
Dr Sufian Tell -- Member of Board of Directors
Dr Rawhi Sherif -- Head of Information and Education Committee

Royal Society for the Conservation of Nature (RSCN)

Issa Shaheen -- General Manager
Ahmad Rusan -- Head of Public Awareness

Ministry of Water and Irrigation (MWI)

Dr. Salih Irshedat -- Minister
Dr Mohammad Bani Hani -- Secretary General
Dr. Muwaffaq Saqqar -- Project Coordinator
Ahmad Abu Ajamieh -- Advisor to the Minister
Dr Hani Rashid -- Senior Irrigation Advisor
Daoud Hijazi -- Senior Counterpart - Artificial Recharge
Mohammad Najjar -- Senior Counterpart - Laboratory Up-grade
Mohammad Awamleh -- Senior Counterpart - Public Awareness
Rania Abdel Khaleq -- Environmental Engineer

Water Authority of Jordan (WAJ)

Eng. Koussal A Quteishat -- Secretary General
Bassam Al-Tal -- Director of Training
Zuhair Hyasat -- Director of Information

Jordan Valley Authority (JVA)

Eng Hashem Shbul -- Secretary General
Johammad Hanbali -- Assistant to Secretary General

Amman Chamber of Industry

Khaldoun Abu Hassan -- Chairman
Usama Mudallal -- Environmental Consultant

USAID/Jordan

Tom Oliver -- Director
Diana Swain -- Deputy Director
Dr Carl Dutto -- Office Director, WEA
Bob Hanson -- Evaluation Officer
Abdullah Ahmad -- Project Officer, WQIC

Other Donors

Peter Ohlmeyer -- Project Coordinator - GTZ
Edward Qunqar -- UNDP
Luay Froukh -- Water Resources Engineer - UNDP/MWI

Other

Dr Mohammad Shatanawi -- Director of Water & Environment Research
and Study Center - University of Jordan
Dr Ahmad Abu Shaika -- Consultant on Water Policy Development
Omar Abdullah Dogkhan -- Former President - Jordan Valley Authority
Eng. Remon Halteh -- General Manager - Yeast Industries Co , Ltd
Rahmatullah Ali Shahidi -- Farm Manager