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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

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A.I.D.
Reference Center
Room 1656 NS

PROJECT PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

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JORDAN - MAQARIN DAM FEASIBILITY STUDY

AID-DLC/P-2125

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

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Ref. Center
Room 1100 NS

AID-DLC/P-2125

October 29, 1975

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Jordan - Maqarin Dam Feasibility Study

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed One Million United States Dollars (\$1,000,000) to the Government of Jordan (the "Government") to assist in financing the foreign exchange and local currency costs of an economic, technical, and financial study of the feasibility of construction of a multi-purpose dam at Maqarin site and its associated power generation facilities and irrigation system.

No meeting is scheduled for this proposal. However, please advise us of your concurrence or objection as early as possible, but in no event later than close of business on Friday, November 7, 1975. If you are a voting member a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development Program
Review

Attachments:

Summary and Recommendations
Project Analysis
Annexes 1 - 7

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MAQARIN DAM
FEASIBILITY STUDY

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MAQARIN DAM FEASIBILITY STUDY

I. Summary and Recommendations

A. Borrower: The Hashemite Kingdom of Jordan (GOJ). The Project will be implemented by the Jordan Valley Commission.

B. Loan:

1. Amount: Not to exceed one million U.S. dollars (U.S. \$1,000,000) to be financed from Supporting Assistance Funds.

2. Terms: Repayable in U.S. dollars in 40 years, including a grace period of 10 years at an annual rate of two per cent (2%) during the grace period and three per cent (3%) thereafter.

C. Project Cost: A.I.D. will finance the total foreign exchange costs and up to 50 per cent (50%) of the local currency costs as set forth below.

<u>Funds</u>	<u>Foreign Exchange</u> <u>(U.S. Dollars)</u>	<u>Local Currency</u> <u>(U.S. Dollars)</u>	<u>Total Costs</u>
A.I.D. Loan	800,000	200,000	1,000,000
G.O.J. ^{1/}	-	250,000	250,000
Totals	800,000	450,000	1,250,000

D. Project Description: The proposed loan will finance an economic, technical and financial study of the feasibility of the proposed Maqarin Dam and its associated power generation facilities and irrigation system.

E. Project Justification: The Jordan Valley Commission's six year (1976-1981) Plan for continuing the activities initiated under the "Rehabilitation and Development Plan of the Jordan Valley (East Bank) 1973-1975," has a major objective to provide assured irrigation water to all of the irrigable land on the East Bank of the Jordan River. Irrigation projects previously initiated in the Valley will by 1977 utilize all the water provided by existing dams and unregulated streams. Therefore, in order to determine the feasibility of securing additional water from the Yarmouk River and the power and irrigation benefits, the GOJ has asked A.I.D. to finance a study of the feasibility of constructing a multi-purpose dam at Maqarin.

^{1/} The exchange rate used throughout this paper is one Jordanian Dinar (JD) equals U.S. \$3.20.

F. Mission Views: The Mission endorses the proposed loan. The A.I.D. Representative 611(e) certification is enclosed as Annex 1.

G. Statutory Checklist: All statutory criteria have been met. (See Annex 2)

H. Issues: None

I. Recommendation: That a loan be authorized in an amount not to exceed U.S. \$1.0 million.

Project Committee

NE /GD - James M. Shea, Chairman
SER/ENGR/OPNS/WR - Charles B. Thompson
NE/ /NE/ME - William H. Faulkner
GC/NE - Cynthia A. Goldstein

PART II. Project Background and Description

A. Background

1. History - The handling and controlling of the waters of the Jordan and Yarmouk Rivers outside the boundaries of Palestine were considered in the 1920 Convention between Great Britain and France concerning the Mandate for Syria and Lebanon, Palestine and Mesopotamia. Under this Convention, experts were to examine the irrigation and hydroelectric potential of the upper Jordan, the Yarmouk and their tributaries. It is not clear that any definitive results came from the examination or even that the study was done. In 1930, the British Colonial office conducted a survey of the potential for irrigation of the Jordan Valley. This survey was followed by further studies under the 1937 Peel Commission and the 1938 Woodhead Technical Commission on Palestine. An important result of the Peel commission was the first hydrographic survey of the Jordan Valley. This hydrographic survey, completed in 1939 also included a plan for the use of the water resources of the Jordan and Yarmouk Rivers and Lake Tiberias. Subsequent to this first water use plan several additional surveys, Commission's plans, studies, proposals, etc. for development of the Jordan and Yarmouk Rivers have been made, namely: Joint study, Palestine Water Corporation, Lebanese Engineers (1943); Lowermilk Plan (1944); Hays Plan (1948); McDonald Plan (1951); Bunger Plan (1952); Charles T. Main Plan (1953); Johnston Plan (1953); Cotton Plan (1954); Arab Plan (1954); Baker -Harza Report (1955); Energoprojekt Study (1960); and Dar Al Handasah Report (1969).

The initial formal suggestion that investigation be made of possibility of storage of water for irrigation and generation of hydro power on the Yarmouk was made in 1948 (Hays Plan). However, no action was taken to investigate potential sites on the Yarmouk. During a flight from Jordan to the United States, Miles Bunger, an engineer employed by the U.S. under the Point 4 Program, chanced to notice the Maqarin site and subsequently made a series of studies of the area. The Bunger Plan (1952) proposed the construction of a dam 420 feet high at Maqarin to store an estimated 500 MCM^{1/} of water; a canal from Maqarin to Adasyia (at the northern end of the Jordan Valley) where a diversion dam would direct the water to an East Ghor Canal which would carry the water almost to the Dead Sea; and power plants at the Maqarin and Adasyia sites.

As a result of Bunger's discovery of the Maqarin site, the Technical Cooperation Administration (TCA), UNRWA and the Jordanian Government developed plans for the project. A road was built to the site and topographic surveys were started. Syria became interested in the project because of the hydroelectric potential of the scheme. This interest led to an agreement in 1953 between Syria and Jordan on the sharing of the benefits expected from the project. After TCA had obligated \$929,000, UNRWA \$856,000 and Jordan \$490,000 (from British loans) and labor recruitment had begun for initiating the project, the U.N. and the U.S.G. in 1953 reversed their positions and the project was abandoned.

1/ MCM = 100 Cubic Meters

The Feasibility of the Maqarin Dam was also considered in the Main (1953), Harza-Baker (1955) and the Yugoslav Energoprojekt (1960) studies. However these studies were not sufficiently detailed or comprehensive enough to permit an investment decision, then or now.

In 1969 a study was completed by Nedeco-Dar-Al-Handasah of the agricultural, economic and socio-economic aspects of development in the Jordan River Valley. One conclusion of this study was that extension of the irrigation system in the Jordan Valley was dependent on the availability of additional water conservation works. The only major additional water resources then available were the Yarmouk and Zarqa Rivers and capturing these waters necessitated the construction of major dams. On the basis of the recommendations of the Dar-Al-Handasah study and a subsequent engineering analysis by Energoprojekt, the GOJ began construction of the King Talal Dam on the Zarqa River in 1972. This project is scheduled for completion in 1977. Land classification studies were made of the East Bank of the Jordan Valley by Harza-Baker in 1953-54 and Dar-Al-Handasah in 1966-67. These studies confirmed the existence of approximately 36,000 hectares of land suitable for irrigation. Approximately 21,000 hectares of the total arable land is now or will be by 1977 under irrigation. The remaining 15,000 hectares of arable land is proposed for irrigation under this Maqarin Dam Project.

2. Rationale for U.S. Assistance - To irrigate the remaining irrigable land in the Valley and to provide adequate irrigation water to those areas now and by 1977 partially irrigated, additional water is required. This water can only come from the Yarmouk River.

In order to inform itself properly for the investment decisions that are necessary for the final phase of the development of the Jordan Valley irrigation program, the Jordan Government in November of 1974 informally requested the help of A.I.D. and the World Bank in obtaining a comprehensive in-depth analysis of the feasibility of a dam at the Maqarin site. (The World Bank is maintaining its interest in the project without formal participation.) In conjunction with the U.S./ Jordan Joint Commission Meeting, in January 1975, the A.I.D. Administrator indicated that A.I.D. would assist in bringing the project up to the point where an investment decision could be made.

There are a number of riparian rights questions raised by the Maqarin Dam Project which may affect the areas contiguous to the Maqarin Dam flows. These questions will be the subject of a separate study.

3. Other Donor Coordination - The World Bank has participated informally in the development of the scope of work for the feasibility study. Participation by other foreign donors was not considered to be appropriate at the feasibility stage.. The GOJ will make its own contacts for help in financing any investment the GOJ might decide to undertake after it has the feasibility study in hand. Already Kuwait and Abu Dhabi have expressed interest in participating in the future project.

B. Project Description - The project consists of the evaluation of the economic, technical and financial feasibility of a proposed multipurpose dam at the Maqarin site on the Yarmouk River in northeast Jordan. The Yarmouk River, at Maqarin, is the boundary between Jordan and Syria. The feasibility study will encompass an analysis of the water requirements (domestic, municipal, industrial and agricultural) of the Irbid Governorate and the East Bank of the Jordan River Valley. On the basis of this analysis the consultant will determine two optimum reservoir capacities calculated on differing inflow conditions, i.e., with and without the diversion of the Wadi Raqqad to the reservoir. After determination of the reservoir capacities under alternative conditions the consultant will develop further studies to determine the optimum additional storage justified for electric power production. On completion of the demand analysis of water and power, the consultant will prepare preliminary designs, cost estimates and a construction program for the project. The analysis will include a benefit-cost analysis with discounting to present worth values by using at least three suitable discount rates.

The project study, which is fully described in Annex 6, will include in addition to the above elements an environmental analysis. A map showing the principal project areas is presented on page 10.

The Yarmouk River is the largest tributary of the Jordan River, contributing about 70 percent of the total discharge from the East Bank of the Jordan Valley. The Yarmouk joins the Jordan River about seven kilometers below the outlet of Lake Tiberias, near the village of Adasiya.

The Yarmouk River drains an area of 6,800 square kilometers, of which 1,800 square kilometers are in the Hashemite Kingdom of Jordan and the remaining 5,000 square kilometers are in Syria. Several tributaries which drain areas on the Jordanian and Syrian Plateaus join near Maqarin Station to form the Yarmouk River. Wadi Shallala drains the area within the Kingdom of Jordan to the south of Maqarin and to the north of Jerash. The Wadi Zeizun drains the area to the east and collects the perennial flow from the vicinity of Muzeirib. The Wadi Harir drains the area to the northeast. The Wadi Allane contributes the runoff from the Syrian plains to the north. These wadis in general drain a rolling plateau area without deep canyons. Close to their junctions they enter canyons which join to form the Yarmouk River which is itself deeply incised into the plateau forming a narrow gorge several hundred meters deep. The Yarmouk proper has only one major tributary, the Wadi Raqqad. This stream which flows into the Yarmouk from the north just upstream of Ebalid Station, drains a catchment area of nearly 600 square kilometers, about half of which lies within a zone of relatively high rainfall.

Past engineering studies noted that full development of the Yarmouk River would require the construction of two dams on Jordanian and Syrian territories. The construction of one of those dams, Khalid bin-Al-Walid, was under implementation when the June 1967 War broke

out and Israel occupied territories which included part of the dam site and the West Bank of Jordan. Consequently, construction activities were terminated.

The second dam site at Maqarin is accessible at present from both the Syrian and Jordanian sides. The left and right banks of the Yarmouk River, above Wadi Raqqad, are in the present territories of Jordan and Syria respectively. The left bank of the Yarmouk below its junction with Wadi Raqqad is also in Jordan. The Location of Maqarin Dam, being above Wadi Raqqad, is therefore immediately available for implementation as part of the total project.

C. Project Costs - Table 2 below presents the estimated costs of the project. A.I.D. financing will be used to fund the U.S. costs of a U.S. consultant estimated at \$800,000 plus \$200,000 in local costs. The GOJ will provide \$250,000 equivalent for local currency costs.

TABLE 2

Project Costs *

	<u>Total</u>	<u>Foreign Exchange</u>	<u>Local Currency</u>
Salaries	385,000	275,000	110,000
Overhead	280,000	280,000	-
Fixed Fee	55,000	55,000	-
Sub-Contracts	255,000	135,000	120,000
Travel, Equipment Etc.	275,000	55,000	220,000
	<hr/> 1,250,000	<hr/> 800,000	<hr/> 450,000

A detailed schedule of these cost estimates is given in Annex 4.

D. Financial Plan - A.I.D. will finance the total foreign exchange requirements, estimated at \$800,000, and up to 50 percent of the estimated local currency requirements. A.I.D.'s total contribution is estimated at \$1 million and the A.I.D. loan will finance about 80 percent of the estimated cost of the study.

A.I.D. loan proceeds will first be applied to the foreign exchange costs and A.I.D. will reimburse the Government of Jordan for local currency costs toward the end of the project when it is clear that all dollar costs for the study have been covered. The financial plan is set for below. *

	<u>Dollars</u>	<u>Local Currency</u>	<u>Total</u>
A.I.D.	800,000	200,000	1,000,000
Jordan	-	<u>250,000</u>	<u>250,000</u>
TOTAL	800,000	450,000	1,250,000

E. Repayment Prospects - In 1972 and 1973, the average ratio of debt service to the export of goods and services was 7.3 percent. This ratio fell to about 5.8 percent in 1974 due to a rise in exports and the fact that Jordan's debt consists mainly of highly concessional financing from foreign aid donors. It is not expected that the debt service ratio will change substantially over the next five years. This relative stabilization in the debt service ratio is predicated on the anticipated increased export of phosphates, other minerals and agricultural developments combined with a continuation of the availability of concessional loans. The proposed loan, considering the concessional terms recommended and the amount of the loan, will have minimal impact on the debt service ratio. See Annex 7 for further discussions on Jordan's balance of payments.

PART III. Implementation

A. Administrative Arrangements - The Borrower will be the Hashemite Kingdom of Jordan; the implementing agency will be the Jordan Valley Commission (JVC). An organization chart of the Commission is contained in Annex 5.

1. Responsibilities of the JVC - The Jordan Valley Commission will be responsible for (1) preparation of the request for proposals for the feasibility study, (2) selection of a consultant and execution of a contract for performing the feasibility study, (3) providing \$250,000 equivalent in local currency toward the financing of the project, (4) providing all necessary financing beyond the financial plan that may be required for completing the study, (5) providing all available requisite background information and data to the consultant, (6) supervision of the consultant's activities, and (7) making all necessary arrangements for the consultant to have access to the project site in both Jordan and Syria.

The staff of the Commission is fully competent to manage the proposed feasibility study contract. However, there may be a need during the course of the study for some specialized engineering management assistance to help the JVC address complex problems.

2. A.I.D. Monitoring Responsibility - A.I.D.'s monitoring responsibility will include:

- (a) Review and approval of the scope of work, the request for proposals, and the contract documents for the study;
- (b) Follow-up on fulfillment of Conditions Precedent;
- (c) Approval of the selected feasibility study contractor;
- (d) Review and approval of requests for disbursement;
- (e) Follow-up on project progress and reporting requirements;

(f) During the performance of the study, hold periodic meetings with the Jordan Valley Commission to jointly review, evaluate and recommend solutions to problems encountered by the consultant; and

(g) Review and approval of the consultant's draft feasibility report.

3. Selection of Contractor - United States firms have been pre-qualified and the consultant will be selected in accordance with the procedures set forth in Handbook 11 Country Contracting, Chapter 1, "Procurement of Professional and Technical Services." The firm selected to accomplish the feasibility study will also be fully qualified to supply the necessary services for complete project development (i.e. from financing through construction), if the feasibility study results in an investment decision to build the project.

B. Implementation Schedule - Following is the schedule for loan implementation actions.

	<u>1975</u>
Prequalify eligible U.S. firms	August 15
Select short list of firms;	
Request proposals	August 31
Receive Proposals	October 15
Authorize Loan	November
Negotiate & execute loan Agreement	November
Issue Implementation Letter No. 1	November
Negotiate and execute contract	December
Satisfy Conditions Precedent	December
	<u>1976</u>
Issue first Disbursement Authorization	January
Consultant begin study	January
Consultant submit draft of study	November
	<u>1977</u>
Complete study	January
Terminal Disbursement Date	April 30

C. Reporting Requirements - The selected consultant will be required to submit three separate reports. Within 60 days of execution of a contract the consultant will submit an "inception" report which will set forth the work program, scope and schedule of surveys and site investigation works for the design of the project. Within six months of execution of the contract the consultant will submit an interim technical and economic feasibility report and a final report to consist of the completed feasibility study.

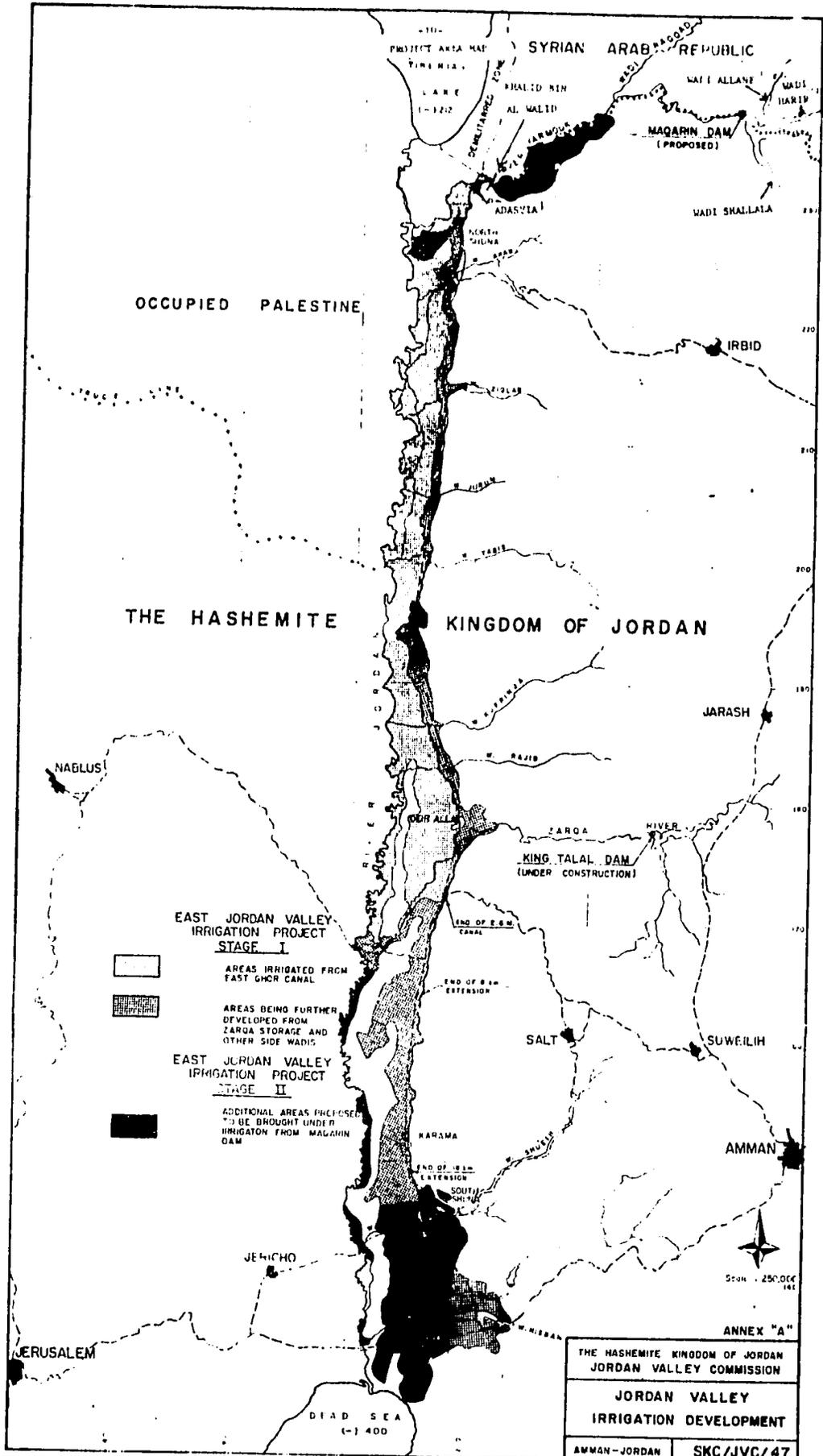
D. Disbursements - Loan funds will be used to finance consultant services and required equipment of U.S. and Jordanian source and origin. The terminal disbursement date will be set at 18 months from the signing of the loan agreement. Loan funds will be disbursed either under a direct letter of commitment to the consultant or by a letter of commitment/letter of credit procedure. Jordanian dinar expenditures will be made in accordance with the terms and conditions of the consultant's contract approved by A.I.D. Reimbursements to the GOJ will be in dinars with A.I.D.'s standard practice.

The following sets forth the projected disbursement schedule:

	<u>Dollars</u>	<u>Local Costs</u>	<u>Total</u>
FY 1976	400,000	280,000	680,000
Interim Quarter	200,000	120,000	322,000
FY 1977	<u>200,000</u>	<u>50,000</u>	<u>250,000</u>
Total	800,000	450,000	1,250,000
A.I.D.	800,000	200,000	1,000,000
Jordan		250,000	250,000

E. Conditions Precedent and Covenants - In addition to the standard conditions precedent of a legal opinion as to validity of the Loan Agreement and of the naming of the borrower's representatives, additional conditions precedent to disbursement are expected to be: (1) the execution of a contract approved by A.I.D. for the feasibility study with a consultant approved by A.I.D.; (2) additional coverage in the legal opinion to the effect that the 1953 treaty between Jordan and Syria concerning the utilization of the waters of the Yarmouk River is in full force and effect.

A covenant in the Loan Agreement will provide that, to the extent possible, the GOJ will throughout the period of the study make possible full access to the project site both in Jordan and Syria as required for carrying out the study. An additional covenant will require the GOJ to provide all necessary funds in addition to the loan and any other resources needed to carry out the feasibility study.



OCCUPIED PALESTINE

THE HASHEMITE KINGDOM OF JORDAN

EAST JORDAN VALLEY IRRIGATION PROJECT STAGE I



AREAS IRRIGATED FROM EAST GHOR CANAL



AREAS BEING FURTHER DEVELOPED FROM ZARQA STORAGE AND OTHER SIDE WADIS

EAST JORDAN VALLEY IRRIGATION PROJECT STAGE II

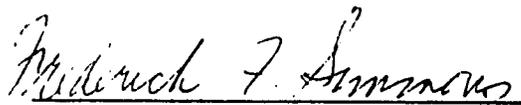


ADDITIONAL AREAS PROPOSED TO BE BROUGHT UNDER IRRIGATION FROM MAQARIN DAM

ANNEX "A"
 THE HASHEMITE KINGDOM OF JORDAN
 JORDAN VALLEY COMMISSION
 JORDAN VALLEY IRRIGATION DEVELOPMENT
 AMMAN-JORDAN SKC/JVC/47
 DRAWN BY WAHD ABU HUMEIDAN 6/9/75

CERTIFICATION PURSUANT TO SECTION 611 (e)
OF THE FOREIGN ASSISTANCE ACT OF 1961,
AS AMENDED

I, Frederick F. Simmons, the principal officer of the Agency for International Development in Jordan, having taken into account, among other things, the maintenance and utilization of projects in Jordan previously financed or assisted by the United States, do hereby certify that in my judgment Jordan has both the financial capability and the human resources capability to effectively maintain and utilize the capital assistance project, Feasibility Study - Maqarín Dam.


Frederick F. Simmons
AID Representative

Date: July 23, 1975

CHECKLIST OF STATUTORY CRITERIA

The following abbreviations are used:

FAA - Foreign Assistance Act of 1961, as amended.

FAA, 1973 - Foreign Assistance Act of 1973.

App. - Foreign Assistance and Related Programs Appropriation Act, 1974.

MMA - Merchant Marine Act of 1936, as amended.

BASIC AUTHORITY

1. FAA § 103; § 104; § 105;
§ 106; § 107. Is loan being made
 - a. for agriculture, rural develop- **Inapplicable.**
ment or nutrition;
 - b. for population planning or health;
 - c. for education, public administration,
or human resources development;
 - d. to solve economic and social develop-
ment problems in fields such as trans-
portation, power, industry, urban
development, and export development;
 - e. in support of the general economy of the
recipient country or for development pro-
grams conducted by private or inter-
national organizations.

COUNTRY PERFORMANCEProgress Towards Country Goals

2. FAA §201 (b) (5), (7) & (8); § 208
 - A. Describe extent to which country is:
 - (1) Making appropriate efforts to **Inapplicable.**

increase food production and
improve means for food storage
and distribution.

(2) Creating a favorable climate
for foreign and domestic private
enterprise and investment.

Inapplicable.

(3) Increasing the public's role in
the developmental process.

Inapplicable.

- (4) (a) Allocating available budgetary resources to development. **Inapplicable**
- (b) Diverting such resources for unnecessary military expenditure (See also Item No. 20) and intervention in affairs of other free and independent nations.) (See also Item No. 11) **Inapplicable.**
- (5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements; and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise. **Inapplicable.**
- (6) Willing to contribute funds to the project of program. **Inapplicable.**

(7) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

Inapplicable.

B. Are above factors taken into account in the furnishing of the subject assistance?

Inapplicable.

Treatment of U.S. Citizens and firms.

3. FAA § 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?

No such situation exists at this time.

4. FAA § 620(e) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect or nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?

No such action has been taken by the GOB.

5. FAA § 620(o); Fisherman's Protective Act § 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters,

a. has any deduction required by Fishermen's Protective Act been made?

No such action has been taken by the GOJ.

b. has complete denial of assistance been considered by A.I.D. Administrator?

Relations with U.S. Government and Other Nations.

6. FAA § 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba. No.

7. FAA § 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? The Secretary has so determined.

8. FAA § 620(d). If assistance is for any productive enterprise which will compete in the United States with United States enterprise, is there an agreement by the recipient country to prevent export to the United States of more than 20% of the enterprise's annual production during the life of the loan? The proposed assistance is not for a productive enterprise.

9. FAA § 620(f). Is recipient country a Communist country? No.

10. FAA § 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? No.

11. FAA § 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property? No.

12. FAA § 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, in convertibility or confiscation, has the the A.I.D. administration within the past year considered denying assistance to such government for this reason? The GOJ has instituted such a program.

13. FAA § 620(n). Does recipient country furnish goods to North Viet-Nam or permit ships or aircraft under its flag to carry cargoes to or from North Viet-Nam? **No.**
14. FAA § 620(q). Is the government of the recipient country in default on interest or principal of any A.I.D. loan to the country? **The GOJ has not been in default in payment to the U.S. on any FAA loan.**
15. FAA § 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? **The GOJ has not severed diplomatic relations with the U.S.**
16. FAA § 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget? **The small arrears in certain assessments were taken into account by the Administrator in the OYB.**
17. FAA § 481. Has the government of recipient country failed to take adequate steps to prevent narcotic drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully? **No.**
18. FAA § 659. If (a) military base is located in recipient country, and was constructed or is being maintained or operated with funds furnished by U.S., and (b) U.S. personnel carry out military operations from such base, has the President determined that the government of recipient country has authorized regular access to U.S. correspondents to such base? **No such base is located in Jordan.**

Military Expenditures

19. FAA § 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)
- (a) the GOJ allocated 31% of its 1974 budget to military purposes, both to prevent internal threats and for defense purposes. (b) The degree to which Jordan's foreign exchange resources are used to acquire military equipment is unknown. (c) The GOJ has no sophisticated weapons systems and is not spending any amount to acquire such systems. (d) The GOJ is not diverting development assistance to military expenditures. (e) Considering Jordan's military requirements for both internal and external security, it is our judgment that the GOJ is not diverting its own resources to unnecessary military expenditures.

CONDITIONS OF THE LOAN

General Soundness

20. FAA § 201(d). Information and conclusion on reasonableness and legality (under laws of country and the United States) of lending and relending terms of the loan. **Not Applicable.**
21. FAA § 201(b)(2); § 201(e). Information and conclusion on activity's economic and technical soundness. If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to A.I.D. an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner? **Not Applicable.**

22. FAA § 201(b)(2). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects. **Not Applicable.**
23. FAA § 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States. **Not Applicable.**
24. FAA § 611(a)(1). Prior to signing of loan will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the United States of the assistance? **The assistance is intended to be furnished for the sole purpose of preparation of engineering, financial, and other plans.**
25. FAA § 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of the purpose of the loan? **No further legislative action is required.**
26. FAA § 611(e). If loan is for Capital Assistance, and all U.S. assistance to project now exceeds \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project? **The principal A.I.D. officers certification is attached as Annex 1**

Loan's Relationship to Achievement of Country and Regional Goals

27. FAA § 207; § 113. Extent to which assistance reflects appropriate emphasis on: (a) encouraging development of democratic, economic, political and social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) programs designed to meet the country's health needs; (e) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (f) integrating women into the recipient country's national economy. **Not Applicable.**

28. FAA § 209. Is project susceptible of execution as part of regional project? If so, why is project not so executed? **Not Applicable.**
29. FAA § 201(b)(4). Information and conclusion on activity's relationship to, and consistency with, other development activities, and its contribution to reliable long-range objectives. **Not Applicable.**
30. FAA § 201(b)(9). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth. **Not Applicable.**
31. FAA § 209. Information and conclusion whether assistance will encourage regional development programs. **Not Applicable.**
32. FAA § Section 111. Discuss the extent to which the loan will strengthen the participation of the urban and rural poor in their country's development, and will assist in the development of cooperatives which will enable and encourage greater numbers of poor people to help themselves toward a better life. **Not Applicable.**
33. FAA § 201(f). If this is a project loan, describe how such project will promote the country's economic development taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development **Not Applicable.**

34. FAA § 281(a). Describe extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private, and local governmental institutions. **Not Applicable.**
35. FAA § 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government. **Not Applicable.**
36. FAA § 281(c). In what ways does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities? **Not Applicable.**
37. FAA § 601(a). Information and conclusions whether loan will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions. **Loan is for a feasibility study and does not directly encourage the efforts listed in this section of the FAA.**
Loan is for a feasibility study and does not directly encourage the efforts listed in this section of the FAA.

38. FAA § 619. If assistance is for newly independent country; is it furnished through multilateral organizations or plans to the maximum extent appropriate? **Jordan is not a newly independent country.**

Loan's Effect on U.S. and A.I.D. Program

39. FAA § 201(b)(6). Information and conclusion on possible effects of loan on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving the U.S. balance of payments position. **Not Applicable.**
40. FAA § 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources. **Not Applicable.**
41. FAA § 601(b). Information and conclusion on how the loan will encourage U.S. private trade and investment abroad and how it will encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise). **Not a major goal. Some possibility for future agro-industrial development and investment.**
42. FAA § 601(d). If a capital project, are engineering and professional services of U.S. firms and their affiliates used to the maximum extent consistent with the national interest? **Yes.**

43. FAA § 602. Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and services financed by the loan. **Small business will have an opportunity to provide goods and services.**
44. FAA § 620(h). Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries? **No.**
45. FAA § 621. If Technical Assistance is financed by the loan, information and conclusion whether such assistance will be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs. **No technical assistance is expected to be financed under this loan.**

Loan's Compliance with Specific Requirements

46. FAA § 110(a) ; § 203(e). In what manner has or will the recipient country provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the loan is to be made? **Not Applicable.**

47. FAA § 660. Will loan be used to finance police training or related program in recipient country? **No.**
48. FAA § 114. Will loan be used to pay for performance of abortions or to motivate or coerce persons to practice abortions? **No.**
49. FAA § 201(b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year? **Not Applicable.**
50. FAA § 201(d). Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter? **Not Applicable.**
51. FAA § 201(f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise? **Not Applicable.**
52. FAA § 604(a). Will all commodity procurement financed under the loan be from the United States except as otherwise determined by the President? **Yes.**
53. FAA § 604(b). What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price? **No such procurement will occur under this Loan.**

54. FAA § 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will the loan agreement require that marine insurance be placed in the United States on commodities financed by the loan? **Jordan does not discriminate against U.S. marine insurance companies.**
55. FAA § 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? **Not Applicable.**
56. FAA § 604(f). If loan finances a commodity import program, will arrangements be made for supplier certification to A.I.D. and A.I.D. approval of commodity as eligible and suitable? **The loan does not finance a commodity import program.**
57. FAA § 608(a). Information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items. **The loan agreement will contain appropriate provisions.**
58. FAA § 611(b), App. § 101. If loan finances water or water-related land resource construction project or program, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962? **The loan is intended to finance solely the preparation of engineering, financial, and other plans.**
59. FAA § 611(c). If contracts for construction are to be financed, what provision will be made that they be let on a competitive basis to maximum extent practicable? **No such contracts are to be financed under the loan.**
60. FAA § 612(b); § 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies **Jordan is not an excess currency country. Jordan is financing the foreign exchange portion of contractual and other services.**

owned by the United States are utilized to meet the cost of contractual and other services.

61. Section 30 and 31 of PL 93-189 (FAA of 1973). Will any part of the loan be used to finance directly or indirectly military or paramilitary operations by the U.S. or by foreign forces in or over Laos, Cambodia, North Vietnam, South Vietnam, or Thailand? **No.**
62. Section 37 of PL 93-189 (FAA of 1973); App. § 111. Will any part of this loan be used to aid or assist generally or in the reconstruction of North Vietnam? **No.**
63. FAA § 612(d). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release? **Jordan is not an excess currency country.**
64. FAA § 620(g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property? **The loan agreement will contain a provision limiting use of the funds for use on the project.**
65. FAA § 620(k). If construction of productive enterprise, will aggregate value of assistance to be furnished by the United States exceed \$100 million? **No.**
66. FAA § 636(i). Will any loan funds be used to finance purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or any guaranty of such a transaction? **No.**
67. App. § 103. Will any loan funds be used to pay pensions, etc., for military personnel? **No.**
68. App. § 105. If loan is for capital project, is there provision for A.I.D. approval of all contractors and contract terms? **The loan agreement shall so provide.**

69. App. § 107. Will any loan funds be used to pay UN assessments? No.
70. App. § 108. Compliance with regulations on employment of U.S. and local personnel. (A.I.D. Regulation 7). The loan agreement shall contain a provision to to ensure compliance.
71. App. § 110. Will any of loan funds be used to carry out provisions of FAA § 209(d)? No.
72. App. § 112. Will any of the funds appropriated or local currencies generated as a result of AID assistance be used for support of police or prison construction and administration in South Vietnam or for support of police training of South Vietnamese? No.
73. App. § 113. Describe how the Committee on Appropriations of the Senate and House have been or will be notified concerning the activity, program, project, country, or other operation to be financed by the Loan. Congress shall be notified at least 15 days in advance of obligation.
74. App. § 501. Will any loan funds be used for publicity or propoganda purposes within the United States not authorized by Congress? No.
75. App. § 504. Will any of the funds appropriated for this project be used to furnish petroleum fuels produced in the continental United States to Southeast Asia for use by non-U.S. nationals? No.
76. MMA § 901.b; FAA § 640C.
(a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk The loan agreement shall contain a provision to ensure compliance.

carriers, dry cargo liners, and tankers) financed with funds made available under this loan shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

A.I.D. Loan No. _____

Project No. _____

DRAFT

LOAN AUTHORIZATION

Provided from: Foreign Assistance Act Section 532 ("Security .
Supporting Assistance Funds")
Jordan: Maqarin Dam Feasibility Study Loan

Pursuant to the authority vested in the Assistant Administrator, Bureau for Near East, Agency for International Development ("A.I.D."), by the Foreign Assistance Act of 1961, as amended, (the "Act"), and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan (the "Loan"), pursuant to Part 2, Chapter 4, Section 532, Security Supporting Assistance Funds of said Act, to the Government of Jordan, (the "Government"), of not to exceed One Million United States Dollars (\$1,000,000) to assist in financing the foreign exchange and local currency costs of an economic, technical, and financial study of the feasibility of construction of a multi-purpose dam at Maqarin site and its associated power generation facilities and irrigation system. The Loan shall be subject to the following terms and conditions:

1. Interest Rate and Terms of Repayment

The Loan shall be repaid in United States Dollars by the Government within forty (40) years after the date of the first disbursement thereunder including a grace period of not to exceed ten (10) years from the date of the first disbursement. The interest on the unrepaid balance of the Loan shall accrue from the date of the first disbursement at the rate of two percent (2%) per annum during the grace period and at the rate of three percent (3%) per annum throughout the remaining life of the Loan.

2. Other Terms and Conditions

- a. Unless A.I.D. otherwise agrees in writing, equipment, materials and services financed under the Loan shall have their source and origin in countries included in A.I.D. Geographic Code 941, and in Jordan.

- b. Evidence satisfactory to A.I.D. that the 1953 treaty between Jordan and Syria concerning the utilization of the waters of the Yarmouk River is still in full force and effect and that arrangements under the treaty and otherwise have been made guaranteeing unrestricted access of the consultant to the Maqarin site both in Jordan and Syria.
- c. Such other terms and conditions as A.I.D. may deem advisable.

Assistant Administrator
Bureau for Near East

Date

COST ESTIMATE

FEASIBILITY STUDY, MAQARIN MULTIPURPOSE PROJECT (JORDAN)

ITEM 1

Overseas Salaries at Base Pay (U.S.)

<u>No.</u>	<u>Title</u>	<u>M/M</u>	<u>Base Rate</u>		<u>Total Cost</u>
			<u>Per Yr.</u>	<u>Per Mo.</u>	
1	Project Manager	12	35,000	2917	35,000
1	Design Engineer (Hydraulic Structures)	12	30,000	2500	30,000
1	Irrigation Engineer	9	30,000	2500	22,500
1	Hydro-power Engineer	9	30,000	2500	22,500
1	Hydrologist	9	30,000	2500	22,500
1	Materials Engineer	6	28,000	2333	14,000
1	Geologist	6	28,000	2333	14,000
1	Engineer for Surveys	6	25,000	2083	12,500
1	Soils Classifier	4	25,000	2083	8,333
1	Economist	9	28,000	2333	20,997
1	Environmentalist	4	25,000	2083	8,333
<u>1</u>	Administrative Assistant	<u>12</u>	25,000	2083	<u>25,000</u>
12	Total	98			\$235,663

* FE 100 %

Local Salaries

<u>No.</u>	<u>Title</u>	<u>M/M</u>	<u>Base Rate</u>		<u>Total Cost</u>
			<u>Per Yr.</u>	<u>Per Mo.</u>	
1	Secretary	12	6,000	500	6,000
2	Typists	22	4,800	400	8,800
2	Technical assistants	24	10,800	900	21,600
2	Interpreters	22	7,200	600	17,600

* FE - Foreign Exchange

<u>No.</u>	<u>Title</u>	<u>M/M</u>	<u>Base Rate</u>		<u>Total Cost</u>
			<u>Per Yr.</u>	<u>Per Mo.</u>	
3	Surveyors	18	10,200	850	15,300
2	Draftsmen	20	6,000	500	10,000
6	Rodmen	36	6,000	500	18,000
<u>6</u>	<u>Drivers</u>	<u>60</u>	<u>2,400</u>	<u>200</u>	<u>12,000</u>
24	Total	214			\$109,300 ✓

* FE 0 %
TOTAL SALARIES \$344,963 ✓

ITEM 2

Overseas Differential (U.S. Personnel Only)

0.10 X 235,663 = \$ 23,566 ✓

FE 100 %

ITEM 3

Overhead - Overseas (Field Staff)

1.1 X 235,663 = \$259,229 ✓

FE 100 %

ITEM 4

Home Office Salaries

Project Coordinator 4 35,000 2,917 \$ 11,668

Secretary 4 12,000 1,000 \$ 4,000

TOTAL \$ 15,668 ✓

FE 100 %

ITEM 5

Overhead - Home Office

1.3 X \$15,668 = \$ 20,368 ✓

FE 100 %

ITEM 6

Fixed Fee

8 % of items 1-5 incl. 0.08 X \$663,794 = \$ 53,104 ✓

ITEM 7

Subtotal of Item 1 - 6 incl.

\$716,898

ITEM 8

Subcontract Costs

Aerial Photography and Topographic Mapping \$ 90,000

Percolation Tests \$ 15,000

Borrow Pit Exploration and Material Testing \$ 40,000

Test Drilling

Spillway 10 holes 100 ft. = 1,000

Dam Axis 15 holes 150 ft. = 2,250

Penstock Alignment 20 holes 200 ft. = 4,000

Powerhouse 10 holes 100 ft. = 1,000

Misc. - - = 1,750

TOTAL

10,000 ft @ \$10.00 per ft.

10,000 Ft.

10,000 X \$10 =

\$100,000

TOTAL

FE 50 %

\$245,000

ITEM 9

Cost of Consultants

Lump Sum

\$ 10,000

FE 100 %

ITEM 10

Travel and Per Diem

(10 a) International Travel

One round trip, N.Y. to Amman for each
Team member (tourist class)

12 X \$ 1392

\$ 16,704

ITEM 10 (cont.)

Two round trips, N.Y. to Amman for Project Coordinator (tourist class)	2 X \$1376	<u>2,752</u>
Total		\$ 19,456
FE 100 %		
<u>Per Diem, International</u>		
12 men, 4 days each @ \$6	48 X \$6	\$ 288
1 man, 30 days @ \$37	30 X \$37	\$ <u>1,110</u>
Total		\$ 1,398
FE 100 %		
(10 b) <u>Domestic Travel</u>	Mid U.S. - N.Y. 14 round trips	
@ \$200	14 X \$200	\$ 2,800
FE 100 %		
(10 c) <u>Local Travel</u>		
Rental of 6 vehicles for 9 months @ \$1000 per mo.	6 X 9 X \$1000	\$ 54,000
Rental of 2 vehicles for 3 months @ \$1000	2 X 3 X 1000	\$ <u>6,000</u>
Total		\$ 60,000
Fuel Cost (assume 60 vehicle mo., 400 mi/day, 20 days/mo. 17 mi./gal., \$1.80/gal.)	60 X 20 X $\frac{400}{17}$ X 1.80	\$ 50,823
Local per diem Amman - 68 M/M @ \$37 per day	68 X 30 X \$37	\$ 75,480
Local per diem in field - 30 M/M @ \$22 per day	30 X 30 X \$22	\$ <u>19,800</u>
Total		\$146,103
Total Travel and Per Diem		\$243,311

ITEM 11

Transportation, Excess Personal Baggage

Mid U.S. - Amman, 12 round trips @ \$300

12 X \$300 \$ 3,600

FE 100 %

ITEM 12

Transportation, Household Effects

None

ITEM 13

Transportation, Equipment

Lump sum \$ 2,000

FE 100 %

ITEM 14

Equipment

Engineering instruments \$ 10,000

Office equipment 5,000

Total \$ 15,000

FE 100 %

ITEM 15

Other Direct Costs

Engineering supplies \$ 500

Office supplies \$ 300

Reports and reproduction \$ 500

Office rent @ \$500/mo. \$ 4,500.

Utilities @ \$50/mo. \$ 450

Communications \$ 500

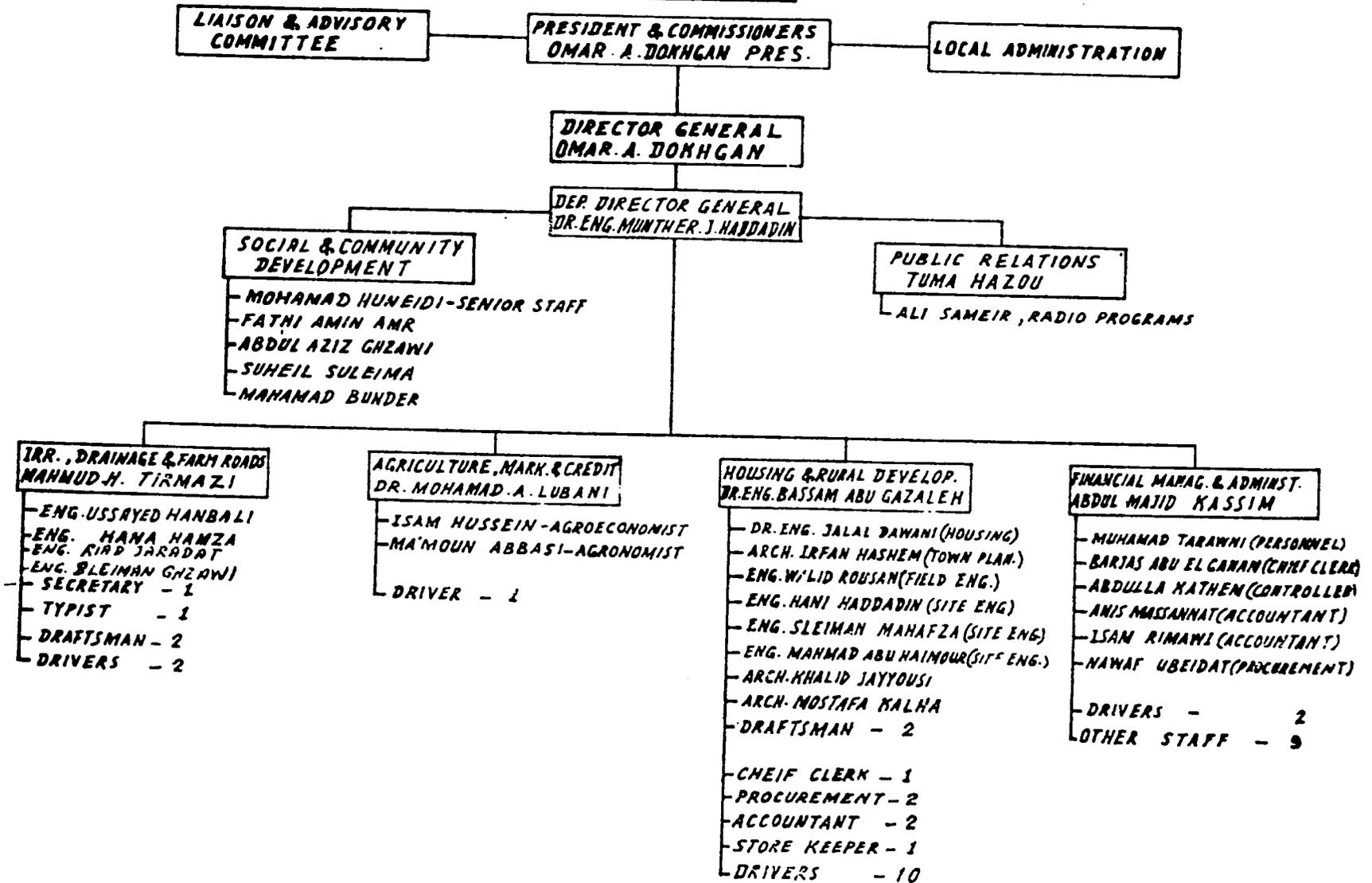
Insurance \$ 600

Total \$ 7,350

FE 0 %

	<u>ITEM 16</u>	
Subtotal of items 8 - 15		\$ 519,292
	<u>ITEM 17</u>	
TOTAL COSTS 1 - 15 incl.		\$1,239,595
	FE 63 %	\$ 796,840
	Local 37 %	\$ 442,753

**JORDAN VALLEY COMMISSION
ORGANISATION CHART**



The Consultants' Services.

1. The Consultant's services shall be carried out in four distinct phases as enumerated below.

Phase "A": Economic, Financial and Technical Feasibility Study of the Project including preliminary design. This phase would include a certain amount of necessary surveys and site investigation surveys and site investigation works and it is recognized that this work may possibly exceed the 12 months period estimated for Phase "A".

Phase "B": Final Design, Contract Drawings and Tender Documents; bid evaluation and award services.

Phase "C": Construction Supervision and Contract Administration.

Phase "D": Operation and Maintenance Supervision.

2. The services of the Consultant shall be self terminating at the end of each phase, the Consultant shall not proceed with any subsequent phase until and unless authorized in writing by the Owner.

3. The period during which the Consultant shall render services shall commence with the effective date of the Owners notice to the Consultant to proceed and shall continue under Phase "A" for a period of approximately (12) twelve months. The period of services under the succeeding Phases, if authorized by the Owner, will be determined and agreed upon before the starting of the respective phases.

4. The Consultant's services shall follow sound engineering and economic practices and shall comprise of, but not be limited to, the brief description and scope of Consultant's services given hereunder for each phase.

Scope of Consultants' Work Under Phase "A"

1. The Consultant's services during Phase "A," which is expected to cover a period of approximately 12 months, will be directed to the preparation of the Technical and Economic Feasibility Report and Preliminary Design of the Project, including Site Investigation Works and whatever is required to meet the objectives of the phase.

2. In carrying out the above, the Consultant will coordinate and synchronize his services for the Dam and the Irrigation System at all stages and particularly for the economic and financial analysis, so that, the primary benefit side of the analysis will flow from the irrigation facilities and the primary cost side of the quation will be derived from the preliminary design and the cost estimate of the dam and conveyance and distribution system.

3. The scope of the Consultant's services, in Phase "A," shall be governed by, but not be limited to, the Technical and Economic considerations narrated in paragraphs 4 and 5 below, in so far as they may be necessary.

4. Technical Requirements.

a. The Consultant shall review and appraise the following:

(1) Available reports and documents relating to the Project.

(2) Previous topographical and geological surveys and mapping, evaluating their validity.

(3) Existing Hydrological data, including evaporation and sedimentation data and hydrometeorological records applicable to the Project.

(4) Available results of previous site investigation works, e.g., geological and geophysical investigations, hydro-geology, foundation investigations, prospecting for embankment fill materials and concrete aggregates, test grouting, large scale pumping tests, and all other field and laboratory tests and investigations carried out so far.

b. Surveys and Investigation Works.

(1) Based on the review and evaluation of the available reports and documents and previous field and laboratory investigations, the Consultant shall prepare a detailed programme for additional surveys and investigation works in the field and laboratory which shall enable the Consultant to perform his duties adequately and efficiently in preparing safe and economic design for construction of the Project. Survey and investigations may consist of, but not be limited to, the following:

(a) Geophysical

(b) Geological and geo-mechanical investigations including drilling, adits, shafts, field permeability tests, grouting and other tests, etc.

(c) Soil and rock mechanics and foundation investigations.

(d) Investigations of materials for embankment fill.

(e) Investigations of materials for concrete aggregates.

(f) Topographical and geological surveys and mapping.

(2) The Consultant shall provide necessary equipment and related resources for carrying out, under his own supervision and administration, of the surveys and investigation works. The results of the surveys and investigations shall be recorded and interpreted by the Consultant with a view to bring out the significant conclusions reached in respect of the design parameters, construction methods and quality control criteria etc. The aforesaid analysis, interpretation and conclusions shall be submitted to the Owner in the form of a report at the conclusion of the surveys and investigation works

c. Hydro-meteorological Observations.

(1) The Consultant shall recommend the setting up of additional hydro-meteorological stations in the Yarmouk Basin and assist the Owner in selecting the equipment and setting up of such stations. The hydro-meteorological stations shall be established with a view to obtain the data required, in addition to the observations already being made at the existing hydrometeorological stations in the Yarmouk Basin, for the design and operation of the Project. Such data may include climate, evaporation, rainfall, stream flow, suspended sediment and bed load characteristics of the Yarmouk River basin.

(2) The Owner shall arrange to set up, operate and maintain these stations and the Consultant shall provide such periodic guidance and supervision in the operation of these stations as may be considered necessary to ensure the reliability and adequacy of the observations made at the stations.

d. Reservoir Operation Studies.

(1) The Consultant shall consider various dam sizes and their respective reservoir capacities for optimum development possibilities for irrigation, hydro-power, flood control and other beneficial uses. In this connection, integrated reservoir operation studies shall be made to determine the probable water yield of the reservoir to meet the water requirements under the following parameters:

(a) On the basis of the monthly water requirements for irrigation, the irrigation efficiency and the acceptable monthly irrigation shortages, the Consultant shall determine two optimum reservoir sizes for utilization of the Yarmouk Flows assuming that the total area of land available for irrigation is unlimited.

In developing the reservoir operation studies both alternatives shall take into consideration the available flows of all the East Bank streams and the existing storage developments thereon.

For these two alternative reservoir sizes the following inflow conditions shall be considered:

1 Flows of the Yarmouk River and its tributaries above Maqarin as at present.

2 Wadi Raqqad flows being diverted into Maqarin Reservoir.

(b) The Consultant shall then determine the optimum reservoir capacity under each alternative, with and without Wadi Raqqad diversion, to meet the water requirements for improving and extending irrigation facilities to 36,000 ha of irrigable land on the East Bank of the Jordan Valley as envisaged under East Jordan Valley Irrigation Project Stage II.

(c) Having determined the reservoir capacity needed for irrigation requirements under the various parameters stated above, the Consultant shall develop further studies to determine the optimum addition to these capacities for power production. In the process of power optimization, the Consultant shall employ a seasonal simulation study and a least cost development programme analysis.

(d) Due consideration shall be given in the above studies to the losses in storage arising from evaporation and depletion of capacity due to sedimentation over the life of the reservoir, for which suitable allowance shall be made in the water budget while determining the optimum reservoir capacities in each case.

e. Recommended Dam Sizes.

(1) The Consultant shall recommend for consideration of the Owner the most economic dam size which provides sufficient storage capacity at Maqarin site to meet the water requirements of the Project. If these requirements warrant the optimum storage potential of Maqarin site to be fully developed at the present stage, then the recommendation shall provide for a single stage construction of the Maqarin Dam. If, however, the storage potential of Maqarin site is greater than the economic dam size required to meet the said water requirements, the Consultant's recommendation shall provide for a two stage construction of the dam in order to enable future exploitation of the optimum storage potential of the Maqarin site.

(2) On the basis of the Consultant's recommendations in the interim feasibility Report the Owner would consider and select the dam size which shall be designed and estimated in greater detail, including provision for raising the dam to its maximum height, for the purpose of preparing the Technical and Economic Feasibility Report of the Project.

f. Water Conveyor System.

The Consultant shall examine in the early stage of his work in Phase "A," the various alternatives including the river bed by means of which the deliveries of stored supplies can be ensured from the Dam to the Jordan Valley Irrigation System.

g. Hydro-electric Power Generation.

(1) Having determined the reservoir sizes to optimize power production, undertake basic design studies for power generation at the damsite, determine its base and peak load power potential and allocate the cost of increased dam size for power optimization and cost of the power station and its appurtenant works, to hydro-power generation.

(2) Undertake design studies for power generation if any, for utilizing the drop from the Maqarin dam to the Jordan Valley, including suitable adjustments in the size of the conveyor system and provision of balancing reservoir(s) for optimizing power benefits for base and peak load requirements, and allocate the cost of the increased size of conveyor, the balancing reservoir(s) and the cost of the power station(s) to hydro-power generation. Similar design studies shall also be undertaken to utilize the drop from King Talal Dam on the Zarqa River to the offtake of the Zarqa Triangle Irrigation project with particular attention to a combined and optimized generation of hydro-power on the Yarmouk and the Zarqa Rivers.

h. Flood Control.

The Consultant shall evaluate the extent of attenuation in the frequency and intensity of floods in the Yarmouk River due to the construction of the Maqarin Dam, but shall not be expected to undertake major studies, carry out field surveys or construct a mathematical model for preparation of a detailed estimate of the benefits accruing to the affected areas on account of flood protection; however, such information as may be readily obtainable to evaluate the direct and indirect benefits which may reasonably be expected to arise from the flood control features attendant on the construction of the Project may be used.

i. Irrigation and Hydro Agronomic Criteria.

(1) Method of Irrigation.

Previous studies have established that the method of irrigation to be adapted for all new areas and existing gravity areas should be the sprinklers. These studies on land topography, depth and texture of soil, water quality and availability of labour, may, as far as possible, be used for the design of the sprinkler system.

(2) Non-Irrigation Requirements.

While establishing the total water requirements, to be met from the Yarmouk River and the side wadis, the Consultant shall make provision for the domestic, municipal, livestock and industrial uses in the Irbid Governorate and the Jordan Valley. The Owner assist the Consultant in establishing these non-irrigation requirements.

(3) Storm Run-off.

The Consultant will establish the discharge coefficients and the storm run-offs in relation to the catchment areas for the economic design of structures to carry storm waters across the Irrigation System.

(4) Cropping Patterns.

The Consultant will be guided, as far as feasible, by the recommendations of the previous studies but may make any changes in the structure of agricultural production in the interest of conformity to the present and future conditions and possibilities. The Consultant shall permit sufficient flexibility to make modifications possible with fluctuating market demands, prices and other variable factors.

(5) Consumptive Uses and Diversion Requirements.

The Consultant will determine, through accepted empirical methods, and use of the available climatic data, optimum water requirements of various crops; establish field application and conveyance efficiencies and arrive at the total amount of water to be diverted into the irrigation network during each month. The Consultant will be guided, as far as possible by the findings of the previous studies on water requirements in the Jordan Valley but may make any changes which may result due to his examination and modifications of the cropping patterns and the crop water requirements.

(6) The Owner will provide all previous reports, related documents, etc. to the Consultant, which denote the expected benefits from irrigation per unit of land. The Consultant is expected to update, revise where necessary, and use this data as far as possible in determining the optimum size of the reservoir.

(7) The Consultant shall review the previous studies on Land Classification and Land Resources and establish the extent of areas to be irrigated under the Project, the Consultant shall further propose Land Classification studies for areas, which have not been considered in previous reports.

(8) The Layout and Preliminary Design of the Irrigation System shall be prepared in sufficient detail to permit selection of alternatives and preparation of reliable cost estimates.

j. Field Laboratories.

The Consultant shall equip at the cost of the Owner suitable field laboratories for the dam and the irrigation system which may be required to carry out basic field tests for foundation and construction materials. These field laboratories shall be operated and used by the Consultant and shall be handed over to the Owner on the completion of the Project.

k. Relocation of Utilities and Environmental Analysis.

(1) The Consultant shall identify problems that may arise from the construction of the project such as submergence of land including populated and cultivated areas, relocation of highways, railways, bridges or irrigation channels. The Consultant shall prepare plans showing the limits of the reservoir periphery and the right of way recommended for acquisition along the reservoir rim and in the river-bed due to backwater effects of floods. Similarly areas to be acquired for construction of the dam, conveyor system and power stations, including quarry sites and borrow areas shall be shown on plans.

(2) The Consultant shall identify and analyze any environmental problems likely to arise from the construction of the Project and advise the Owner on the ways and means to minimize the adverse effects arising therefrom, if any. In this respect the Consultant will prepare an economic assessment statement noting benefits and any adverse effects resulting from the Project. Basic guidelines for the preparation of the Environmental analysis are contained in the U.S.A.I.D. and I.B.R.D. related documents.

l. Construction Schedule.

With a view to achieve the Owner's objective for completing the construction of the Project by the end of the year 1980 the Consultant shall evolve a construction plan which would enable adherence to the said schedule as far as economically and technically feasible. If the recommended construction schedule indicates the need and feasibility of undertaking the construction of a river diversion facility or other priority works prior to the award of the main contract the Consultant shall make suitable recommendations to the Owner in order to enable a timely decision to be taken by the Owner for proceeding with the arrangements for such construction as a Preliminary Work.

- m. It is envisaged that, by and large, the surveys and investigations leading to the final design of the Project would have been completed by the Consultant during Phase "A." However, the Consultant may make recommendations on the scope and nature of any further studies, surveys and investigations etc, which he considers necessary during the succeeding Phases.
- n. Preliminary Design and Cost Estimate.
 - (1) The Consultant shall prepare the Preliminary Design of the selected variants for preparing the Technical and Economic Feasibility Report of the Project. The designs shall be based on the surveys and investigations and shall be in sufficient detail as to define the type, size, capacities, layouts and dimensions of the various project components including their construction Schedule. The Preliminary Design shall be supported by the requisite drawings and fundamental design computations relating to hydraulic, structural, mechanical, electrical and irrigation components of the project.
 - (2) The estimates of cost of the selected variants shall be based on quantity surveys of work showing separately local currency and foreign exchange costs including initial investment costs, future additional investment costs, investment time schedule, annual operation, maintenance, replacement and induced costs. The Consultant shall also indicate the physical and price contingencies affecting the cost which may be expected each year for a period of five years. The estimates of the investments required for the construction of the Project shall be subdivided yearly to serve as a basis for budgeting and financing.

5. Economic and Financial Requirements.

- a. The economic and financial analysis of the Project shall be in sufficient detail to allow judgement of all alternatives considered including ranking them in order of preference.
- b. Make estimates of the magnitudes of tangible direct and indirect economic benefits, (net of associated costs) to be derived from each alternative considered. (Benefits are to be calculated on "value Added" basis).
- c. Based on the estimated project costs and benefits, calculate the benefit-cost ratios for each alternative investment considered and rank them in order of preference. The benefit/cost ratios shall be calculated by projecting the cost and benefit stream for the number of years which the Consultant shall deem to be appropriate and discounting both to present worth by using at least three suitable discounting rates.

- d. The economic and financial analysis of the alternative finally chosen as the most desirable is to be studied in greater detail. In view of the multi-purpose nature of the development, costs shall be allocated between purposes and economic and financial analysis should include considerations of the annual operating and maintenance costs of the project, the appropriate timing of necessary replacement expenditures, and the relationship between variable financing conditions and the timing and amount of water charges, similar revenue collections or subsidies required to make the Project financially viable and repay principal and pay interest under the various financing assumptions. The financial estimates pertaining to the Irrigation System and other allied items of revenue collection and water rates shall be duly considered and incorporated in the analysis.
 - e. The Consultant shall carry out a separable cost-remaining benefits financial allocation and calculate the economic rate of return for the Project including sensitivity analysis. Keeping in mind that project costs are likely to be met in part from external financial assistance, the financial analysis shall be based on the usual terms of assistance obtainable through IBRD, or other international financing agencies and oriented to meet the general criteria applied to project appraisal by these agencies.
 - f. Where a two stage construction of the dam is recommended the Consultant shall state as to when, in his judgement, Stage II Construction would be most feasible.
6. Reporting Requirements and Schedule for Phase "A"
- a. Inception Report.

Not later than 60 days after the date of signing this contract, the Consultant shall prepare and submit an Inception Report setting forth the programme of works, proposed to be carried out by him during this Phase, the scope and schedule of surveys and site investigation works for the design of the Project any other relevant information that the Consultant may wish to present at this stage.
 - b. Interim Technical and Economic Feasibility Report.

(1) Based on the review, appraisal and initial analysis of the previous studies and data, supplemented by any additional studies and results of surveys and site investigations which the Consultant may have completed by that time, the Consultant shall submit an Interim technical and economic feasibility report of the Project not later than six months after the date of signing of this Contract.

(2) This Interim Report is intended to assist the Owner in initiating negotiations for financing the construction of the Project through International Financing Agencies. The report should, therefore, be oriented to meet the general criteria applied to project appraisal by these agencies.

- c. Final Report on Technical, Economic and Financial Feasibility and Preliminary Design and Cost Estimates of the Project. This report shall be based on all the works and studies carried out by the Consultant during Phase "A." The Final Report shall comprise of the following separate parts, each part being divided into appropriate number of volumes.

Part I Summary Report.

Part II Technical, Economic and Financial Feasibility Report of the Project.

Part III Preliminary Design Report containing drawings, design computations and specifications of the principal works including detailed Cost Estimates of the Project based on quantity survey of the important components of the works; with justification and analysis of rates employed in the estimates.

Part IV Record of site investigation test results along with the interpretation of the results and the basis of criteria and design parameters evolved from the investigations.

(2) The above Final Report will be submitted by the Consultant in draft form ninety (90) days before the end of Phase "A." This Submission in draft form is intended to enable the report to be reviewed and approved by the Owner.

Jordan Balance of Payments
1970-74

The balance of payments improved by JD 15 million (U.S. 48.0 million) between 1970 and 1974, an increase of JD 12 million (U.S. \$38.4 million) was experienced in 1974 in spite of a fifty percent increase expenditure for imports of foodstuffs (sugar, rice and fruits and vegetables) and defense related commodity imports. Commodity exports almost tripled over the past three years (1972-1974) but were still only a third of imports in 1974. Favorable developments in the transfers account led to a JD 47 million (US \$150 million) improvement in the current account over the last five years. The capital account did not vary significantly during the same period. (See Table 1.)

Closure of the Suez Canal in 1967 and the Syrian frontiers from 1970 to 1972 blocked nearly all exports to the West, and concentrated Jordan's foreign trade on the Arab markets (72 percent of total commodity exports). Temporary closure of the Lebanese-Syrian frontier in 1973 and the October 1973 fighting in the Golan Heights also had adverse effects on export expansion. Subsequent to cessation of warfare in 1973, domestic commodity exports in 1974 increased almost threefold, from JD 19 million (\$61 million) to JD 50 (\$160 million). In 1974, food exports accounted for about 25 percent of total domestic commodity exports. Phosphate exports were growing steadily up to 1969 when closure of the Syrian frontier combined with over supply in world markets, reduced sales by one-third. By 1974 phosphate sales had recovered and contributed 49 percent to domestic commodity exports. Other industrial exports, primarily cement, comprise the balance of the domestic commodity exports.

Over a five year period (1969-1973) food imports represented 29 percent of the total trade deficit. In 1974 imports of food stuffs rose significantly accounting for 40 percent of the trade deficit.

The strong improvement in the services account (Non-Factor Sources-net) between 1970 and 1973 was initially the result of lower government spending abroad. However this was reversed drastically in 1974 and is the single category most responsible for the deficit incurred in services. Revenues from foreign travel also grew in the 1970's and at present is almost equal to the expenditures of Jordanians traveling abroad. The most important improvement in the non-trade current account was in worker's remittances which increased from JD 14.7 million (\$47 million) in 1973 to JD 24.1 million (\$77.1 million) in 1974, equivalent to almost fifty percent of commodity exports.

Foreign AID

Unrequited official transfers amounted to JD 62 million (\$198 million) in 1974, or about a fourth of East Bank GDP. A large part of the inflow

filters down into the economy through Jordan government salary payments, sustaining employment and standards of living. These foreign currency receipts finance the high level of imports. Before the 1967 war budget support came largely from the United States and England. The program was gradually being phased out with the growing strength of the Jordanian economy and stood at only JD 8 million in 1966. The outcome of the 1967 war deprived the economy of the West Bank production and the GOJ of West Bank tax revenues increasing at the same time the need for defense and refugee relief expenditures. Under the Khartoum agreement of August 1967 Saudi Arabia, Kuwait and Libya made available JD 37 million in annual budget support. The United States and England meanwhile discontinued their financial support. In 1970, Kuwait and Libya suspended their support, but the loss was almost completely offset by renewed support from the United States and some help from other Arab states. In 1972 Saudi Arabia and the United States both increased their support. Kuwait support was resumed in 1973. (See Table 2.)

The renewed Government attention to economic development combined with intensive project identification by the Government and foreign donors has led during the last three years to an increase in foreign development loans. Disbursements of development loans increased from an average level of JD 3 million in the 1967-71 period to about JD 11 million in 1973. New commitments rose from JD 16 million in 1972 to JD 30 million in 1973. Such commitments over the past three years were made by the United Kingdom (\$19.4 million), Kuwait (\$24.2 million), Federal Republic of Germany (\$34 million), World Bank (\$24.3 million) and the United States (\$25 million). Commitments from the foreign lenders have been highly concessionary. At the end of 1972 average interest on the outstanding and disbursed public foreign aid debt was 2 percent with a grace period of 9 years and maturity of 31 years. Foreign loans contracted in 1973-1974 were also highly concessionary so that the average terms on conditions will probably remain at 1972 levels. Servicing costs on the public foreign debt (excluding military loans) increased from \$7.9 to \$13.7 million. The ratio of debt service to export of goods and services (adjusted for transit goods, non-monetary gold exports and capital revenues) was 7.3 percent in 1972 and 1973. Although data for 1974 are not available, it is assumed due to the significant increase in exports, that the debt service ratio fell to between five and six percent.

Considering the long grace period on new debt and expected increases in the export of goods and services, particularly phosphate, cement and increased remittance revenue from expatriate Jordanians, the debt service ratio is expected to remain stable over the next several years. Beyond that time earnings from phosphate and other exports will probably grow at a slower rate and the debt service rate may start to rise. However, if the export potential from mining, processing of minerals, and agriculture is also successfully developed then the debt service ratio to export earnings is not expected to rise substantially over the longer term.

TABLE 1: BALANCE OF PAYMENTS
1970-1974
(millions of JD's)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Export of goods f.o.b.	12	11	17	24	50
Import of goods c.i.f.	65	76	95	108	156
<u>Trade Balance</u>	<u>-53</u>	<u>-65</u>	<u>-78</u>	<u>-84</u>	<u>-106</u>
Non-Factor Services (net)	-5	-3	-	3	-9
Investment income (net)	6	5	3	5	7
Workers Remittances	6	5	8	15	24
<u>Balance of Goods and Services</u>	<u>-46</u>	<u>-58</u>	<u>-67</u>	<u>-61</u>	<u>-84</u>
Transfers	40	37	68	65	87
<u>Current Account</u>	<u>-6</u>	<u>-21</u>	<u>1</u>	<u>4</u>	<u>+ 3</u>
Private Capital (net)	-1	-1	-	-1	-1
Public Capital (net)	2	8	7	8	9
Others	3	2	1	2	1
<u>Addition to Reserves</u>	<u>-2</u>	<u>-12</u>	<u>9</u>	<u>13</u>	<u>+12</u>

Source:

Central Bank of Jordan, Monthly Statistical Bulletin, Vol. 11, No. 3, March, 1975
Table 15.

TABLE 2: PUBLIC FOREIGN AID RECEIPTS
1970-1974
(in millions of JD's)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>Budget Support</u>	<u>33.1</u>	<u>34.9</u>	<u>44.0</u>	<u>44.7</u>	<u>52.9</u>
Saudi Arabia	14.8	15.0	22.7	14.4	} 38.7
Kuwait	11.6	-	-	8.5	
Libya	6.6	-	-	-	
Other Arab States	-	2.9	0.2	0.8	
U.S.A.	-	17.0	21.1	20.9	<u>14.2</u>
<u>Budgeted Economic and Technical Assistance</u>	<u>2.4</u>	<u>0.5</u>	<u>0.4</u>	<u>0.3</u>	<u>0.3</u>
Arab League	2.1	0.3	-	0.2	N.A.
U.S.A.	0.3	0.2	0.4	0.1	0.3
<u>Other Current Transfers</u>	<u>3.6</u>	<u>0.1</u>	<u>21.6</u>	<u>16.1</u>	<u>8.8</u>
U.S.A	-	-	14.4	9.8	N.A.
U.N. Agencies	4.5	3.6	6.8	6.6	8.8
Others	-0.9	-3.5	0.4	-0.3	N.A.
<u>Development Loans (gross)</u>	<u>3.0</u>	<u>9.4</u>	<u>10.8</u>	<u>12.7</u>	<u>8.9</u>
Saudi Arabia	0.5	0.4	-	-	-
Kuwait	0.3	0.3	0.7	1.0	1.0
U.S.A.	0.8	0.4	2.3	4.9	-
Germany (Fed. Rep. of)	0.1	0.6	5.2	2.4	4.6
U.K.	0.3	1.8	1.3	1.6	0.2
IDA	0.1	0.2	0.8	1.3	1.5
Others	0.9	5.7	0.5	-1.5	1.6
<u>Total</u>	<u>42.1</u>	<u>44.9</u>	<u>76.8</u>	<u>71.7</u>	<u>70.9</u>

Source:

Central Bank of Jordan, Monthly Statistical Bulletin, March, 1975, Vol. 11,
No. 3, Table 30.

TABLE 2: PUBLIC FOREIGN AID RECEIPTS
1970-1974
(in millions of JD's)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>Budget Support</u>	<u>33.1</u>	<u>34.9</u>	<u>44.0</u>	<u>44.7</u>	<u>52.9</u>
Saudi Arabia	14.8	15.0	22.7	14.4	} 38.7
Kuwait	11.5	-	-	8.5	
Libya	6.6	-	-	-	
Other Arab States	-	2.9	0.2	0.8	
U.S.A.	-	17.0	21.1	20.9	<u>14.2</u>
<u>Budgeted Economic and Technical Assistance</u>	<u>2.4</u>	<u>0.5</u>	<u>0.4</u>	<u>0.3</u>	<u>0.3</u>
Arab League	2.1	0.3	-	0.2	N.A.
U.S.A.	0.3	0.2	0.4	0.1	0.3
<u>Other Current Transfers</u>	<u>3.6</u>	<u>0.1</u>	<u>21.6</u>	<u>16.1</u>	<u>8.8</u>
U.S.A	-	-	14.4	9.8	N.A.
U.N. Agencies	4.5	3.6	6.8	6.6	8.8
Others	-0.9	-3.5	0.4	-0.3	N.A.
<u>Development Loans (gross)</u>	<u>3.0</u>	<u>9.4</u>	<u>10.8</u>	<u>12.7</u>	<u>8.9</u>
Saudi Arabia	0.5	0.4	-	-	-
Kuwait	0.3	0.3	0.7	1.0	1.0
U.S.A.	0.8	0.4	2.3	4.9	-
Germany (Fed. Rep. of)	0.1	0.6	5.2	2.4	4.6
U.K.	0.3	1.8	1.3	1.6	0.2
IDA	0.1	0.2	0.8	1.3	1.5
Others	0.9	5.7	0.5	-1.5	1.6
<u>Total</u>	<u>42.1</u>	<u>44.9</u>	<u>76.8</u>	<u>71.7</u>	<u>70.9</u>

Source:

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No. 3, Table 30.