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

PROJECT PAPER
PAKISTAN: BALUCHISTAN AREA DEVELOPMENT (BALAD)
391-0479

JULY 1984

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
C = Change
D = Delete

Amendment Number

DOCUMENT CODE

3

COUNTRY/ENTITY Pakistan

3. PROJECT NUMBER

391-0479

4. BUREAU/OFFICE

Asia

04

5. PROJECT TITLE (maximum 40 characters)

Baluchistan Area Development

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
11 23 1989

7. ESTIMATED DATE OF OBLIGATION

(Under 'B' below, enter 1, 2, 3, or 4)

A. Initial FY 84 B. Quarter 4 C. Final FY 87

8. COSTS (\$000 OR EQUIVALENT \$1 = RS 14.00)

A. FUNDING SOURCE	FIRST FY 84			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	4,000	1,100	5,100	8,361	32,639	40,000
(Grant)	(4,000)	(1,100)	(5,100)	(8,361)	(32,639)	(40,000)
(Loan)	(-)	(-)	(-)	(-)	(-)	(-)
Other U.S.						
1.						
2.						
Host Country	-	-	-	-	5,800	5,800
Other Donor(s)						
TOTALS	4,000	1,100	5,100	8,361	38,439	45,800

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ESF	291	210	-	-	-	40,000	-	40,000	-
(2)									
(3)									
(4)									
TOTALS						40,000	-	40,000	-

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

051 062 064 242 252

11. SECONDARY PURPOSE CODE

210

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code BR BL BS LAB PART
B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To accelerate the integration of the Makran Division of Baluchistan into the socio-economic mainstream of Pakistan and to improve the quality of life in Makran through improving roads, water and agricultural infrastructure and strengthening Provincial and Divisional planning, management and human resources.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
04 86 10 87 03 89

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a page PP Amendment)

CONT: DAPratf

17. APPROVED BY

Signature Donor M. Lion

Title Director, USAID/Pakistan

Date Signed MM DD YY
11 15 89

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

11
AUG 15 8 49 AM '84

AUG - 9 1984

RESISTIVE SECRETARIAT

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: AA/PPC, Richard A. Derham

FROM: AA/ASIA, Charles W. Greenleaf, Jr.

SUBJECT: Pakistan: Baluchistan Area Development (BALAD) Project -
391-0479

Problem: To authorize the BALAD project with life-of-project ESF grant funding of \$40 million during fiscal years 1984-87. Funding of \$5.1 million is planned for FY 84.

Background and Summary Discussion: This project focuses on one of the poorest regions (Makran Division) of the least developed province in Pakistan. BALAD supports efforts by the Government of Pakistan (GOP) to give priority to development activities in Baluchistan as reflected in Pakistan's special development plan for the province. The five year project focuses on high visibility activities of direct benefit to the people of the Makran Division, thereby accelerating their integration into the rest of Pakistan. Initial activities emphasize simple design and implementation, taking advantage of proven technologies and existing local institutions. Project activities include: (a) road construction, upgrading and maintenance; (b) water sector improvements; and (c) strengthening of Provincial and Division planning and management.

Relation to A.I.D. Policy

(a) Policy Dialogue: BALAD will provide an opportunity for U.S. Government and Government of Baluchistan officials to expand their dialogue on policy issues related to Baluchistan's development. Project financed improvement of planning and management functions within the province will promote discussion of a broad range of development issues, particularly irrigation operation and management, agricultural development, road operation and maintenance, and the overall review and selection process for priority development activities in the province.

(b) Technology Transfer: Technology transfer will occur in the planning, administration and techniques applied to road improvement and maintenance, water irrigation system design, construction and management, road and irrigation systems planning and, to a lesser extent, in agricultural technology.

(c) Institution Building: A major effort to strengthen human resources will contribute to the success of this project and the Government of Baluchistan's overall development performance. The Project Planning and Management Unit (PPMU) will serve as a prototype for Baluchistan of an expanded unit which can perform many of the activities (both formal and informal) that will improve the Baluchistani and Makrani institutions' development impact. The PPMU will establish a Divisional capability to plan, coordinate and supervise the implementation of sub-projects.

(d) Private Sector: Improved roads and an increased supply of water will benefit the private sector directly -- farmers and non-farmers. Roads will, of course, benefit all businesses in the area by providing easier access to markets. Increased supplies of irrigation water will lead to expanded production of high value crops such as dates, with related employment increases. An improved planning process should lead to projects being carried out more efficiently which will benefit the private sector as a consumer of services. Also, many project activities will be implemented by contract.

Bureau Review of the Project: Review focused on concern about GOP ability to meet recurrent costs for road operation and maintenance. (Irrigation facilities are already maintained by users.) A covenant (outlined below) will require the GOP to address this issue. The Bureau also discussed the Mission's desire to contract directly for construction services. The GOP specifically asked the Mission to do all contracting because of a lack of local capability to administer a host country contract. The ASIA Bureau and M/SER/CM concur in the Mission's proposed direct contract since it has staff capability to select a contractor and monitor the contract directly.

Evaluation: The project design benefits from lessons learned in area development activities elsewhere, as well as from our experience in road and water activities. A.I.D. impact evaluations and policy papers have been considered. To measure the impact of this project, development of a data collection plan is an early implementation requirement; it will focus on measures showing project impact on people.

Major Conditions and Covenants: A covenant in the Project Agreement states that the GOP will establish, within three years after execution of the agreement, a system of financing road maintenance acceptable to A.I.D. It will include budgetary allocations, user fees or other sources of revenue.

Waivers: A waiver for the procurement of forty trailbikes and related spare parts from A.I.D. Geographic Code 935 (Special Free World) countries and the requirement of Section 636(i) of the

Foreign Assistance Act of 1961, as amended, is included. These trailbikes are required for travel to remote sites to provide training to farmers and monitor construction and road maintenance activities. The U.S. does not manufacture such bikes. The justification is provided as Annex 7 in the Project Paper. SER/COM concurs.

Congressional Notification: The Congressional Notification was sent to Congress on July 20. The waiting period expired August 3, 1984.

Recommendation: That you authorize the Pakistan Baluchistan Area Development Project by signing the attached Project Authorization.

Attachments:

- A. Project Authorization
- B. Project Paper

Clearances

GC:HFry _____ Date _____
ll - AAA/PPC:EHullander _____ Date _____

ASIA/PD:EKvitashvili:8/6/84:29000:2230k

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Annex-12

place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States or the Cooperating Country.

b. Condition Precedent to Disbursement for Selected Activities

Except as A.I.D. may otherwise agree in writing, prior to any disbursement of funds under this project for any activities, except for design work, under the roads and water components and for those activities related to construction of the office and housing facilities for the Project Planning and Management Unit in Makran, or to the issuance by A.I.D. of the documentation pursuant to which such disbursements will be made, the Cooperating Country shall furnish to A.I.D. in form and substance satisfactory to A.I.D. documentation that:

i. an overall Government of Baluchistan project manager located in Quetta has been appointed;

ii. the Commissioner of the Makran Division has been appointed as Field Project Manager with full operational authority over the Project Planning and Management Unit at Turbat;

iii. a Steering Committee at Quetta and a Working Committee at Turbat have been formally established;

iv. the Project Planning and Management Unit has been formally established under the authority of the office of the Commissioner of Makran Division; and,

v. a Director of the Project Planning and Management Unit has been appointed.

c. Conditions Precedent to Disbursement for Construction of the Office and Housing Facilities for the Project Planning and Management Unit

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds under this project for activities related to construction of the office and housing facilities for the Project Planning and Management Unit at Turbat, other than disbursements for architectural and engineering services related thereto, or to the issuance by A.I.D. of documentation pursuant to which such disbursements will be made, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D., written assurance that the land to be used for construction of the office and housing facilities will remain available for this purpose for the life of the project or until such other time as A.I.D. and the Cooperating Country may mutually agree in writing, whichever is longer.

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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D C 20523

PROJECT AUTHORIZATION

Name of Country: Pakistan Name of Project: Baluchistan Area
Development Project

Number of Project: 391-0479

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, (the Act) I hereby authorize the Baluchistan Area Development Project for the Islamic Republic of Pakistan (the Cooperating Country) involving planned obligations of not to exceed Forty Million United States Dollars (\$40,000,000) in grant funds over a four (4) year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. The planned life of the project is through December 31, 1989.

2. The project is intended to assist the Cooperating Country's effort to integrate the Makran Division of Baluchistan Province into the socio-economic mainstream of Pakistan and to improve the quality of life for the people who live there by providing technical assistance, construction services, training and operating expenses to (a) construct, rehabilitate or upgrade maintenance of approximately 900 kilometers of road in the primary road network of Makran Division, (b) construct or improve water karezes and small and medium scale diversion structures and dams, and (c) strengthen the capacity of the Cooperating Country, the Government of Baluchistan, and the Makran Division to plan, prioritize, select and implement development projects for Baluchistan, particularly the Makran Division.

3. The agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms, covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin Commodities, Nationality of Services

Commodities financed by A.I.D. under this project shall have their source and origin in the Cooperating Country or in the United States except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the Cooperating Country or the United States as their

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d. Covenant as to Financing Road Maintenance

Except as A.I.D. may otherwise agree in writing, the Cooperating Country shall, within three years of the date of the Project Agreement, establish a system, acceptable to the Cooperating Country and A.I.D., for financing the cost of maintaining roads constructed, rehabilitated or improved under the project which system may include budgetary allocations for this purpose, user fees or other sources of revenue.

e. Waivers

Based on the justification set forth at Annex 7 of the Project Paper, I hereby:

a. approve a waiver from A.I.D. Geographic Code 000 (U.S. only) to A.I.D. Geographic Code 935 (Special Free World) for the procurement of 40 trailbikes and related spare parts, required for this project;

b. find that special circumstances exist to waive, and do hereby waive the requirements of Section 636(i) of the Act; and

c. certify that exclusion of procurement from Free World countries other than the Cooperating Country and countries included in Geographic Code 941 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

Frank B. Kill

for M. Peter McPherson
Administrator

Aug 17, 1984

Date

Clearances:

AA/ASIA: CWGreenleaf *CO* Date *8/9*

AA/PPC: RDerham *RDH* Date *8 15 1984*

GC: HFry *HFry* Date *8/13*

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BACKGROUND DOCUMENTS (ON FILE AT USAID/PAKISTAN)

1. BALUCHISTAN AREA DEVELOPMENT PROJECT--ROAD COMPONENT--CONSULTANT'S REPORT
2. THE WATER SECTOR OF MAKHRAN--CONSULTANT'S REPORT
3. GOVERNMENT OF BALUCHISTAN SPECIAL DEVELOPMENT PLAN

LIST OF ABBREVIATIONS AND DEFINITIONS

- AA Assistant Administrator, Agency for International Development
- AC Assistant Commissioner, the Chief Administrative Officer at the tehsil level
- ACEP The Agricultural Commodities and Equipment Program
- ADP The Annual Development Program, the principal planning and budgeting document for investment in the GOP
- AID The Agency for International Development, headquartered in Washington, D.C. (AID/W) and including its field missions (such as USAID/Islamabad)
- ARD Agriculture and Rural Development
- BALAD Baluchistan Area Development Project
- C&W Communications and Works, the line agency responsible for construction of roads and public buildings
- CDSS Country Development Strategy Statement, an AID document describing the proposed development program in a country
- DSTP Development Support Training Project
- ESF Economic Support Fund (predominant source of AID assistance to the Government of Pakistan)
- FAA Foreign Assistance Act of 1961, as amended

(vii)

FAR	Fixed Amount Reimbursement
FX	Foreign Exchange
FY	Fiscal Year
GOP	Government of Pakistan
GOB	Government of Baluchistan
IBRD	International Bank for Reconstruction and Development
IEE	Initial Environmental Examination
IMF	International Monetary Fund
IQC	Indefinite Quantity Contract
karez	A long horizontal underground water carrying tunnel
kaurjo	An open ditch to carry flood water diverted from a stream
KOA	Karez Owners Association
LC	Local costs
LGRD	Local Government and Rural Development Department
LT	Long-term
PACD	Project Assistance Completion Date
P&D	Planning and Development Department

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PC-1	The basic planning document for an individual investment project in the GOP budgetary system
PCS	Provincial Civil Service
PSC	Project Steering Committee, which provides overall BALAD project direction
PD/P&D	Project Director/Planning and Development, the director of the PPMU
PHE	Public Health Engineering, the line agency responsible for construction of potable water systems
PID	Project Identification Document
PIL	Project Implementation Letter, the document whereby AID and the GOP agree to specific arrangements for project implementation
PIO	Project Implementation Order
PWC	Project Working Committee, located at Turbat, capital of the Makran Division overseas and coordinates implementation of BALAD project activities
PPMU	Project Planning and Management Unit
ProAg	Project Agreement
rabi	The winter season, or winter crops
ST	Short-term (technical assistance or training)
T&V	Training and visitation, a system of agricultural extension
tehsil	The subdivision of a district in the GOP administrative system
UN	United Nations
USAID	United States Agency for International Development, the AID Mission in Pakistan
U.S. Mission	The combined agencies of the U.S. Government in Pakistan
WAPDA	Water and Power Development Authority, the agency responsible for electrification and electrical systems
WFP	World Food Program, a United Nations program

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I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

1. Funding

USAID/Pakistan recommends that an ESF grant of \$40.00 million be authorized for the Baluchistan Area Development Project (BALAD) (391-0479), which has a Project Assistance Completion Date of December 31, 1989 and a total project cost (including GOP inputs) of \$45.768 million. Additional support will be provided under other AID projects. AID funds for the BALAD Project will be obligated as follows:

<u>U.S. Fiscal Year</u>	<u>Grant Amount</u> (US\$ Millions)
1984	5.1
1985	6.0
1986	5.0
1987	<u>23.9</u>
TOTAL	<u>40.0</u>

2. Geographic Code

The project authorization should specify that, except as AID may otherwise agree in writing:

a. Goods and services financed by AID under this project shall have their source and origin in countries included in AID Geographic Code 000 or Pakistan; and,

b. Ocean shipping financed by AID under this project shall be only on flag vessels of the United States or Pakistan.

3. Waivers

USAID/Pakistan recommends that a source/origin and nationality waiver from AID Geographic Code 000 to Code 935 and a waiver of FAA Section 636(i) be approved by the Assistant Administrator for Asia to permit the procurement of forty (40) motorcycles for use under the project, which are valued at approximately \$51,000.

B. Summary Project Description

Rationale

After 35 years of independence, Pakistan's Provinces are still only partially integrated into a federation. Ethnic, linguistic and regional differences, combined with physical isolation have prevented the full integration of the Northwest Frontier Province and Baluchistan into the Nation. The Government of Pakistan (GOP) has made national integration a paramount objective, the achievement of which is supported by the \$1.625 billion 1982-87 AID Program, which places strategic emphasis on lagging areas.

Stability and development are essential in Baluchistan given the fact that it borders on Soviet-occupied Afghanistan and revolutionary Iran and its Makran coast covers 400 km of the Arabian Sea. The AID program reflects the GOP's own efforts to accelerate development in Baluchistan by making special budgetary allocations to special development plans, over and above the normal allocation based on the proportion of population in each province. The 1981 program negotiations, which initiated a new GOP-USG economic assistance relationship, reflects strategic agreement on this point. Baluchistan's share of the total \$1.625 billion U.S. economic package will be substantially higher than the 5% share which corresponds to Baluchistan's proportion of the population of Pakistan. Within Baluchistan, the area most neglected in terms of development investment is the Makran Division, the southernmost political unit of Baluchistan which borders on Iran and the strategic Arabian Sea. The Makran Division is least favored in many ways. It has lower rainfall and hence fewer agricultural options; it has fewer roads and hence is more isolated than other inhabited parts of the Province. It also has less grazing capacity and smaller irrigated areas. And yet Makran has development potential. Its combination of need and strategic location coupled with its development potential and the fact that other parts of Baluchistan are receiving intensive AID and other donor attention, make Makran the natural geographic focus of this Project.

The Baluchistan Area Development Project (BALAD) will support the GOP's efforts to integrate the Makran Division of Baluchistan Province into the socio-economic mainstream of Pakistan, and to improve the quality of life for people who live there. The concentration and mix of Project activities in Makran Division was shaped by both area needs - shortages of roads, water sources and effective institutions - and practical project management considerations - lack of communications, limited human resources and difficult transportation. For these reasons, activities are located in a limited geographic area, are mutually reinforcing and can be implemented with a bare bones staff. The priority the GOP has given to development activities in Baluchistan is reflected in the Special Development Plan for Baluchistan and in the Central Government's

allocation of resources to the province. This Project supports elements of the Special Plan - focusing on the geographic area of the province which has received the least assistance to date, Makran, and support to overall planning at Quetta.

The activities to be supported through this Project fall within three major areas: roads; water; and planning, management, and human resource development.

Roads: Segments of the primary road network will be improved through new construction, upgrading and maintenance to increase the flow of goods and services into, within and out of the Makran Division.

Water: In view of the crucial importance of water resources in an area where water, not land, is the most important limiting factor to increased agricultural production, the Project will support water activities ranging from improving the efficiency of existing facilities to construction of small and medium scale diversion structures and dams.

Planning, Management and Human Resource Development: Strengthening the capacity to plan, prioritize, select and implement development projects for Baluchistan as a whole, and Makran in particular, is the third critical element of this project. Support will be provided to the Baluchistan Planning and Development Department in Quetta and to a newly created Planning, Management and Implementation Unit in Turbat.

The Project strategy reflects the limited integration of Makran with the rest of Pakistan. It recognizes the need for quality improvements in both physical and human resources in the area. The Project also draws on the past experience with area development projects: They must be manageable - both by limiting the number of discrete activities undertaken and by phasing them over time so that new activities are begun only when and if they can build on a firm foundation.

The cost of Project activities will be met through an AID grant of \$40 million to the GOP and additional support financed under existing AID projects*. The GOP's contribution will be approximately \$5.768 million, largely in additional personnel costs. The main inputs will be construction and personnel (including technical assistance), with lesser amounts needed for commodities and Project operations, including participant training, monitoring and evaluation, and special development activities. The GOP will provide supplementary supervisory staff in addition to continuing its current programs in the area and financing the operation of some facilities built under the Project.

* The Ag Commodities Equipment project is expected to provide \$ 2.3 million in commodities and the On-farm Water Management Project will provide technical assistance funded by that Project.

C. Summary Findings

The Project is technically feasible, socially sound, and can be effectively administered as planned. The analyses further demonstrate that the financial plan is sound and that the Project is economically justified.

D. Project Checklists and Mission Director's Certifications

1. Checklists

The Project meets all applicable statutory criteria. Appropriate checklists are included in Annex 2.

2. Certifications

Two certifications signed by the USAID/Pakistan Mission Director are included in Annex 3 to this Project Paper: (a) an FAA 611(e) certification that the GOP has the capability to implement and maintain project-funded facilities and programs; and, (b) a 612(b) certification that it is necessary to disburse dollars in lieu of U.S. owned rupees to finance local costs of this Project.

E. APAC Concerns and Design Guidelines

APAC concerns are addressed in this section in summary and in the relevant sections of the Project Paper in detail, as indicated.

1. Project Focus

Planning, management and human resource development has been made one of the three major components of the Project. The primary interventions are technical assistance to the Baluchistan Planning and Development Department at Quetta and the establishment of a new project planning and management unit at Turbat. These are supplemented by appropriate support to key line ministries and government institutions in the Makran area. See Section III-C (Project Component), Section IV-B (Administrative and Monitoring Arrangements) and Section V-B (Administrative Analysis).

2. Project Complexity

The Project has been designed to minimize the number of activities necessary to achieve the Project purpose and to phase the start up of activities so that management overload is avoided. Range management and experimental energy activities are excluded. See Section III (Project Description).

3. Focus on Roads

Activities planned for the roads component are designed to minimize follow-on cost and maintenance. Road improvements are varied depending on priorities for upgrading. See Section III (Project Description).

4. Collaborative Assistance Mode for Design and Implementation

Rather than this approach, which was considered initially, the contractual mode has been used during design and is planned for implementation. See Section IV-C (Procurement Plan).

5. Design of Roads Component

A work order under an IQC was used to obtain the engineering services required for design. See Baluchistan Area Development Project - Road Component - Consultants Report on file at USAID/Pakistan and AID/W.

6. Environment

Environmental factors were carefully considered during Project design. The activities to be implemented under the Project will not have a negative environmental impact. When feasibility studies are undertaken for a specific activity, environmental impact will be specifically analyzed. See Section V.F. Environmental Analysis for environmental criteria and guidelines.

7. Social Analysis

Since Project activities are concentrated in Makran, that Division has been the focus of the social analysis. Additional analyses will continue to be carried out during project implementation in conjunction with research, monitoring and evaluation. See Section V-C (Social Soundness Analysis).

8. Economic Analysis

With an overall Benefit Cost ratio of 1.8 and an IRR of 28.2 the Project is an excellent investment in economic terms. Both roads and water activities are economically sound and should be undertaken. Cost per beneficiary has been considered for both road and water activities. See Section V-D (Economic Analysis).

9. Financial Analysis

The water projects proposed meet all legal requirements. When necessary and appropriate, specific detailed feasibility studies will be carried out for individual medium-sized water projects. See Section V-E (Economic Analysis).

10. Narcotics

A limited number of small fields of poppies are reported in Baluchistan from time to time, mainly in the north. While the Government of Baluchistan normally eradicates known fields, a poppy clause will be included in the Project Agreement.

F. Project Issues

1. Is an Area Development Approach Appropriate?

Experience has led to a healthy skepticism of area development projects, particularly complex, multi-faceted ones. Experience also shows that if the problems discussed below can be minimized or avoided, area development projects can bring rapid development benefits to a limited, contiguous geographic area, such as Makran. Previous reviews of area development projects have suggested the following problems:

The project is often placed within an organization that cannot insure coordination or assign activities to line agencies over which it has no control. The Planning and Development Department of Baluchistan is the appropriate coordinating agency, performing this function for all development activities within the province. As Chairman of the BALAD Provincial Steering Committee, the Additional Chief Secretary (Planning and Development) has a formal means of coordination as well. As overall project manager, he will reserve for himself all necessary authority to direct project activities in Quetta and will delegate to the Commissioner of the Makran Division, as field project manager, all necessary additional power and authority to direct project activities. A project working committee in Turbat will provide a means of regular coordination at the division level. These powers and authority combined with a quarterly review process will ensure that the line agencies take action necessary for accomplishing the project's objectives. The Project Planning and Management Unit in Turbat will be staffed to ensure that project activities will be carried out effectively, giving the Commissioner an action arm to exercise his existing and delegated authorities over line divisions.

Integrated approaches require timing and execution beyond the capacity of the implementing authorities. Each activity proposed will contribute to the overall set of objectives. When coordinated activities are possible, the impact may be greater, but the interdependence of Project components has been minimized so that delays or changes in procedures in one component will not hold up other components.

Integrated area development projects are often unimplementable as too many activities are started at once or in sequence, in too many places. By strictly limiting the activities to be undertaken, concentrating the Project in a limited area, and phasing activities carefully, the Project has been designed to move with organized and deliberate speed to allow a controlled expansion in a few planned, targeted activities as capacity and experience are gained.

Conclusion. A practical, limited, time phased area development approach focusing on basic economic infrastructure is most appropriate to achieve real development momentum in Makran. This approach recognizes fully that the activities undertaken in any one project are necessary but not sufficient to achieve the overall development of a given area. Nevertheless the focus on a limited number of specifically interrelated factors can be the most efficient and effective way to proceed. The Project design maximizes the economic impact of minimum number of interventions in an area development approach.

2. Why the proposed mix of infrastructure with improved planning, management and human resource development?

Because Makran is almost totally undeveloped and isolated, the Project design had to focus on basic socio-economic interventions that would be complementary and, given appropriate attention to human resource development, would be sustainable and would set in motion a process of continuing development and integration of Baluchistan, especially Makran, with the national economy.

In the desert of Makran, the economy is based on oasis agriculture and water is the key limiting factor in agricultural production. Improving and expanding irrigation systems is thus an inescapable element of any strategy to develop Makran. Likewise, in isolated Makran, restricted access to markets depresses incentives for agricultural production and raises the cost of modern inputs. Thus, without an improved internal road network and a reliable land route to Karachi, Makran's principal market, the returns to investments in irrigation systems would be considerably reduced. Therefore, the two critical, complementary physical requirements needed to initiate development and integration in Makran are water and roads. Together they are the irreducible minimum requirements. To derive the full measure of benefits from water and roads a planning, management and human resource development element is essential. In the short run, planning and management make the roads and water elements feasible and, for the long run, puts in place the human resources needed to sustain the development process.

3. Should AID's resources be focused on Makran, or instead be directed toward the whole of Baluchistan?

Most development efforts to date by the GOP and the donors in Baluchistan have been concentrated in northern Baluchistan where altitudes are higher, rains are less erratic, more infrastructure is in place and institutions are stronger. (The major exception is the ADB's port and fisheries project along the Makran coast.) Why shouldn't USAID join the others and put resources where success appears much easier to achieve?

Attention to Makran carries out the GOP's and USAID strategy to assist least developed areas. Furthermore, focus on Makran is in direct response to GOP and GOB requests. Moreover, the importance of developing the Makran area and strengthening overall provincial planning reflects the need to integrate Makran more into Pakistan as a whole. This is particularly essential in view of the relationships of people in Makran with their neighbors, and often fellow tribesmen, in Iran and Afghanistan. Finally, the Project's components are economically sound, which means that not only are the political, social and equity objectives satisfied but development is efficiently served.

4. Should agriculture be emphasized more?

The activities in support of human resource development in agriculture are designed to be simple, practical steps toward building a better foundation for later expansion. There is full recognition of the importance of improving the income of farm households through higher value added crops and other measures. However, more experience is needed before a major effort would be practical. This Project therefore will take on only those activities that can be done in the current situation. Follow-on activities can be undertaken by USAID or other donors once a clear, comprehensive course of action is identified and after the constraints on water and access to markets are eased.

G. Contributors to Project Development

See Annex 12

II. BACKGROUND

A. USG-GOP Negotiations

The United States Government and the GOP are completing the third year of a renewed and strengthened effort to increase their economic and development cooperation. High level USG-GOP consultations in 1981 culminated in the negotiation of a \$3.2 billion package of military and economic assistance, which the U.S. agreed to provide to Pakistan between FY 1982 and FY 1987. This assistance package is an indispensable contribution to a new U.S.-Pakistan relationship and to the critical role that Pakistan plays in the region.

The economic assistance component was designed to promote long-term development while providing as much support as possible to Pakistan's balance of payments. The economic assistance program, which continues a 30 year tradition of cooperation between the two countries, seeks to help Pakistan fulfill the basic human needs of its people. At the same time, it is designed to address the country's foreign exchange needs through quick-disbursing activities that lay the foundation for economic growth and stability.

The program agreed upon will:

1. reactivate a long-term development assistance relationship, which is important because of Pakistan's size, levels of poverty, strategic location, and other multi-faceted USG and GOP interests;
2. provide balance of payments support to help address short and medium-term foreign exchange shortfalls, thereby reducing development constraints and strengthening the economy;
3. address key economic problems, which will help Pakistan to achieve self-sustaining growth and manage its debt burden;
4. complement and support IMF, IBRD, and other donor initiatives and program assistance and accentuate their overall impact; and
5. expand resource availability for local cost financing.

The BALAD Project has been developed in the context of the ESF program in Pakistan. It supports the objectives outlined above, particularly with respect to the need to address key economic problems and to complement multilateral initiatives. It also supports the GOP's efforts to give priority to development activities in Baluchistan as reflected in the Special Development Plan for Baluchistan. In this sense, BALAD is a Nation-Building Project.

B. The Project Area

1. The Geographic Setting

Makran is one of the four administrative Divisions of Baluchistan. It borders Iran to the West, Kalat Division of Baluchistan to the North and East, and the Arabian Sea to the South.

Makran has three principal mountain ranges: the Coastal Range, the Central Makran Range, and the Siahan Range. It contains parts of two river basin systems. In the Northern part of the Division, the Rakhshan River flows from northeast to southwest, and provides water for the Panjgur Oasis. South of the Rakhshan River Basin is the Kech River Basin, flowing from northeast to southwest between the central Makran range and the Coastal Range. This river basin system is primarily confined to Makran and includes the Kech, the Nihing, and the Dasht rivers. The two river basin systems contain most of Makran's irrigated and irrigatable land.

There are three administrative districts within the Division that generally are aligned with the mountain ranges and river basins:

-- Gwadar District includes the south facing slopes of the Coastal Range.

-- Turbat District follows the Kech and Nihing River Valleys to the Iranian Border.

-- Panjgur District includes the valley between the Siahan and Central Makran Mountain Ranges, and includes all of the Rakshan River basin system that is found within Makran Division.

Makran has limited land resources. The total area is 13.5 million acres or 21 thousand square miles. Of this area, however, less than one percent is irrigated. Between 35 and 40 percent of the total area of Makran is essentially bare, exposed rock. Rainfall ranges from 3 to 7 inches per year. The average in most parts of the Division is about 5 inches per year.

With a total population of approximately 650,000 people, Makran has about 15% of Baluchistan's total, divided up among the three Districts as follows:

<u>District</u>	<u>Population</u>	<u>Households</u>	<u>Percent of Population</u>
Gwadar	112,385	17,177	17%
Turbat	379,467	46,315	58
Panjgur	160,750	18,845	25
Total Makran	652,602	82,337	100

Source: 1981 District Census Reports

People are highly concentrated within the Districts. About 95 percent of the population live on less than 5 percent of the land area. This population is concentrated around the irrigated oases in the two Northern districts, and along the Coast.

Most of Makran's land is unused and unuseable by most standards. However, the primary constraint to development is water, not land. For people to survive in an area as parched as Makran, the land has to be irrigated. More than 95 percent of the irrigated acreage in Makran is irrigated by karezes or kaurjos. A karez is a long horizontal underground water carrying tunnel while a kaurjo is an open ditch carrying water diverted from a stream. Of this irrigation, 90 percent is by karez and 5 percent by kaurjo. Only a small fraction of land is irrigated by tube wells because of the relatively high cost of diesel fuel and the absence of electricity. Within the three districts of the Division, most of the karezes are concentrated in two areas. The Greater Panjgur Oasis area has approximately 150 karezes, and the Greater Turbat Oasis area has more than 200 karezes.

Outside of the Kech River Oasis but still within Turbat District there are two additional small oasis areas: Pidarak and Bit/Buleda. Pidarak has approximately 19 karezes and Buleda has about 35 karezes. Within karez associations, the ownership of shares of water follow a normal bell curve, and is relatively evenly distributed. (The ownership, structure, operation, and maintenance of a karez is described in some detail in a case study in Annex 14.) On balance, although land resources are poor and water resources are limited, the people of Makran have resourcefully capitalized on what they have. They have a relatively egalitarian, non-tribal social system which has permitted them to develop their water resources, and the benefits of this development are widely and equitably shared among the small holders throughout the Division. Those who do not own irrigated land sometimes practice dry land farming or work as laborers, tenants, or shareholders on the irrigated farms. Others work in various services or businesses that generally provide services to the agricultural sector.

2. The Economic Setting

At present, karez agriculture and fishing -- either directly or indirectly -- provide the economic base for most of the people of Makran. A small number of people work in dryland agriculture. There are no statistics for the area dry farmed, but the low level of rainfall suggests that this is a very marginal undertaking. A larger number of people work in livestock or a mixture of dryland farming and livestock. However, the opportunities for livestock are also limited by the low rainfall. Along the coast, the people rely primarily on fishing and fish processing for their livelihood, together with some limited herding and dryland banded

(controlled flood run off) agriculture. Of the population of Gwadar District, 60 to 70 percent directly or indirectly rely on fishing as a primary source of income.

In addition to fishing and small-holder agriculture, there is the usual mixture of small shopkeepers and service groups. There are no industries of note except for a date packing cooperative in Turbat.

Besides the normal agrarian pursuits, the people of Makran have one other resource: their mobility. In the British Chronicles of the late 19th Century, it is reported that, in times of bad harvest, the people of Makran would migrate temporarily out of Makran looking for work. Today this process continues, but in a slightly different fashion. Because of its historical ties with Oman and other parts of the Arabian Peninsula, Makran is a favored place for the Omani Army to recruit its soldiers. At present, there are estimated to be 10,000 Makrani men serving in the armed forces of Oman. Perhaps an additional 10,000 Makranis are working as policemen, guards, laborers, or tradesmen in Sharja, Abu Dhabi, Dubai, and other parts of the United Arab Emirates and Kuwait. Much of the income earned abroad by these workers is repatriated in the form of consumer goods and investments in land and farm improvements. Among these investments, karazes are favored. Such investments serve as a kind of savings bank or credit union.

3. The Socio-Political Setting

Makran has been a quiet backwater of Baluchistan which, in turn, has been a backwater of Pakistan. It has been isolated and all but forgotten since Alexander the Great marched through the area in 321 B.C. It is two days overland travel by road to Quetta, the Provincial Capital, as well as to Karachi, the principal market center. There are only a few miles of paved road in the entire Division. The electrical supply is limited to a few of the towns, a few hours a day, when it works. The medical services for the area are limited. In Turbat, there is one hospital bed per 18,000 people.

According to the 1981 census, the literacy rate for the people of Turbat District was 5.8 percent; for Gwadar District it was 6 percent; and for Panjgur District it was 7 percent. Students represent less than 3 percent of the total population.

The people of Makran are not at present well integrated with the rest of Pakistan. They are alone in a corner of an isolated province and sometimes are more closely linked with Oman, Iran, and the Arab Gulf than they are with the rest of Baluchistan or Pakistan.

Externally, Makran is buffered from the outside world. To the West, Iranian Baluchistan serves as a kind of mini-buffer state between Iran and Pakistan. To the North, Makran is buffered by the deserts of

Southwestern Afghanistan, as well as by the desert wastes of Kharan and Chagai Districts between the Afghan border and Panjgur District.

Makranis have a strong identification with their home area, and most of them would prefer to live and work in Makran. They have a relatively egalitarian social structure. The means of production -- fishing craft and karez water -- are widely owned and distributed. The people of the area have a strong stake in the further development of the region, through improved roads, expanded karezes, new dams, new crops, and other interventions that will evolve over the course of the next few years.

4. The Institutional Setting (Government Services in Makran)

All the normal departments of Government are found in Makran. The following principal governmental organizations related to the Project are in place.

a. The Civil Authorities are presided over by the Commissioner. He is assisted by three Deputy Commissioners -- one for each of the three Districts -- and by six Assistant Commissioners, and nine Tehsildars. The Civil Authorities are primarily responsible for the preservation of law and order. In Makran, as elsewhere in Pakistan, they double as magistrates in civil, criminal, and revenue cases as well. All other government agencies except the Martial Law Administrators fall under the Commissioner's Office.

b. Communications and Works (C&W): There are 1,436 sanctioned staff in the professional/semi-professional and labor ranks in the C&W Makran circle. Of these only 65, or 4 percent are professional or semi-professional posts. Sixteen of them are currently vacant. Some posts remain vacant for weeks or months because of the non-availability of trained staff to fill them.

c. The Irrigation Department has staff in all three Districts to undertake larger projects like dams and weirs, as well as smaller projects like water supply schemes. It has a sanctioned staff of 311, with 17 reported vacancies. Of these 311 staff, 37 are professional staff. To date this department has not established a strong record of success.

d. The Agriculture Department: There are five Extra Assistant Directors of Agriculture in Makran, one for each of the Districts, a fourth for the Government Research Station Date Farm, and a fifth who is designated as the Assistant Horticulture Officer. These staff are assisted in their work by field assistants in each of the three Districts. There are 37 sanctioned field assistantships, of which 33 are filled, and 4 are vacant. At present there are 6 field assistants in Gwadar, 14 in Turbat, and 13 in Panjgur.

In addition, the other "Nation-Building" departments such as Local Government and Rural Development, Education, Health, Forestry and Livestock have limited administrative and technical staff in Makran.

Beyond these departments there is a range of other offices, e.g., Excise and Taxation, Malaria Eradication, Locust Control and Meteorology.

The Nation Building Departments are much weaker in Baluchistan than they are in the other Provinces of Pakistan. And they are weaker in Makran than they are in the other Divisions of Baluchistan.

The principal Departments of the Division which are key to the success of the BALAD Project are: Communications and Works; Irrigation and Power; and, Agricultural Extension. These are described in Section V-B.

C. Relevant Experience Gained During Project Design

The remoteness of Makran and the difficulty of moving around efficiently (to visit potential water sites, for example) were major impediments to completing the Project design, highlighting the need for an improved road system. Roads are not only needed for improving farm income through more efficient transportation of inputs and marketing of produce but a necessary part of making it possible for public and private services (including those in the BALAD Project itself) to be delivered more efficiently and, in some cases, to be delivered at all.

The bleakness and brownness of the area, and the wind and sand of the desert areas make the oases and river banks stand out in such sharp contrast that the preciousness of water in Makran is much more real than the cold phrase --"the key constraint". Yet, the key constraint it is. For this reason, the second component focuses on increasing the supply and improving the use of water. The vitality of the Karez Owners' Associations (KOA), many functioning for centuries, is a very welcome finding of the design team, an opportunity to build on strength, to help people who are already helping themselves and to do so with technical help bringing relevant technology.

The scarcity of well qualified people in government positions in the Makran Division is also striking. There are capable, hardworking people, but they lack material support, guidance and supervision. The difficulty of getting people to serve in the area is reflected in vacancies and shortages of staff generally. This makes the Project Planning and Management Unit a necessity to achieve this project's purpose. Not only is it essential to project implementation but it will permit practical experience in the project planning and management of development activities for the Planning and Development Department of Baluchistan (P&D Quetta) and the line agencies. At Quetta, some very able people are coping amazingly well with a

staggering development project workload. Support to the P & D in Quetta and establishing the PPMU in Turbat are both useful and necessary, and mutually reinforcing.

D. Lessons Learned Elsewhere With Applications To This Program

1. AID's Impact Evaluation series has fully documented the positive effect that improved roads can have in shifting a previously isolated area toward a much more dynamic pace of development. The study of Colombia's "pico y pala" road-building program, for example, demonstrates the role that a better road network played in increasing the external marketing activities of the small farmers.

Experience with delivery of social services to rural areas has also shown that lack of ready access effectively cuts these areas off from the services of qualified professionals. In many cases, such professionals are unwilling to live in isolated villages, but will work in such locations if they are able to commute from a larger town or city.

2. Over the years, it has been increasingly clear from numerous AID evaluations that building water infrastructure, while a challenge in itself, is necessary but not sufficient to achieve improvements on the farm. By far the most difficult tasks are getting water to the farm efficiently and combining increased water availability with improved farm systems to increase value added at the farm and cash income for the farm household.

3. Experience with area development projects in Egypt (the Development Decentralization and Basic Village Services Project), Thailand (the Decentralized Development Management Project), and Indonesia (the Provincial Development Project) has also demonstrated that area development projects are very difficult to design and carry out -- by their very nature -- compared to simple, one activity projects. This experience has already been discussed as issue # 1 on page 6.

4. Numerous attempts have been made in capital cities to formulate plans for projects without having permanent staff in the project area who speak the same development language and have a project planning and management capability. The results have shown that without key planners and implementers on the spot, in daily contact with the development process, the entire system suffers -- planning, design and implementation. Comparable problems occur when line agencies are expected to perform functions and carry out activities beyond their capacity.

The Project design takes these lessons into account. It incorporates proven elements -- roads and water and provides for improving farming systems to make effective use of irrigation water. It puts planners

and implementors directly into the Project area to grapple with the daily problems of area development, increases the capacity of line agencies and provides for alternatives to line agencies in implementation, as necessary.

E. Other Donor Assistance

The GOP has given high priority to Baluchistan and has formulated a Special Development Plan to attract international donor community support for efforts aimed at accelerating the development pace in the province. At present, IBRD, ADB, UNICEF, Japan, CIDA, FAO/UNDP, and Kuwait are supplementing GOP development efforts in Baluchistan, primarily in the North. These donors are engaged in major development activities such as agriculture, education, rural electrification, fisheries development, and water supply schemes as described below.

1. World Bank (IBRD) and International Development Association (IDA)

The World Bank is providing assistance to develop 28 minor irrigation schemes, but none in Makran. IBRD is also involved with IDA in two other projects, namely, a Primary Health Education Project, to enhance the standard of primary level education, and the establishment of a Teacher Training Institute. IDA is also supporting an On-Farm Water Management Project and co-financing, with the U.K. and CIDA, the extension of a 132 KV grid line from Khuzdar to Sibi to the north of Makran.

2. Asian Development Bank (ADB)

The ADB is financing the Baluchistan Fisheries Development Project with a \$35.4 million loan, alongwith a grant for technical assistance. The ADB Project, which is centered around Pasni, is intended to develop fisheries resources along the Baluchistan coast. The main components of the project include: (1) construction of a new fisheries harbor; (2) provision of fishmeal plants; (3) provision of marine engines and improved fishing gear; and, (4) provision of credit facilities, training and extension services. An estimated 9,400 fishermen are expected to benefit from increased catches and income under the project, which is scheduled to be completed in 1988. The ADB also is providing a loan of \$7.5 million for livestock development in the northern part of the province.

3. UNICEF

The only other donor activity taking place in the Makran Division Project Area is the \$35 million Baluchistan Integrated Area Development Project (BIAD) 1981-87 sponsored by UNICEF. This is a province-wide program to provide potable water systems, health education, basic literacy training, income generation (for females)

and construction of community centers. The BIAD Project emphasis on health and potable water supplies complements the activities proposed under the BALAD Project. Coordination of program activities will be effected through the USAID Regional Affairs Office and the UNICEF Office in Quetta.

4. Kuwait Fund

The Kuwait Fund is providing a soft loan of \$15 million to electrify an estimated 300 villages in Baluchistan (none in Makran). The Fund is also financing a \$15 million Quetta Water Supply Scheme.

5. Japan

The Government of Japan is contributing \$8.8 million in grant funds to purchase road building machinery. Some of this equipment is already in Makran and will be used in BALAD road activities. Roads will be built from Sibi through Tali, Kahan, Kohlu and Rakhni (north-south). The total length of the roads will be about 322 km. In addition, Japan has agreed to provide a \$9.2 million loan to install a micro-wave radio relay system on the coastal areas of Baluchistan and is also providing a \$8.8 million loan for expansion of the Quetta Power Station.

6. Canadian International Development Agency (CIDA)

CIDA is providing \$3 million to finance a rural electrification scheme which will electrify 62 villages in the province which lie within the national grid system, mainly in the northeast.

7. UNDP/FAO

The UNDP/FAO is financing a Deciduous Fruit Development Project at Quetta. The second phase of the project will continue for five years and a total of \$3 million has been sanctioned for it. Three permanent and about six short-term expatriate advisors will be provided. The main activities include the overall development of the deciduous fruit industry in Baluchistan, including the establishment of demonstration plots and the introduction of high-yielding disease resistant varieties of various deciduous fruits. The areas of Baluchistan which will primarily benefit from the Project are the northeastern highlands.

F. Programmatic Considerations

1. GOP Policy

The GOP has made national integration a paramount objective and this objective is reflected in many ways. Developmentally it has given rise to a specific budgetary approach to the lagging regions of Baluchistan and the Northwest Frontier in the form of extra allocations which are provided to accelerate development in these two areas. Stability and development in Baluchistan are particularly important given the fact that it borders on Soviet occupied Afghanistan and revolutionary Iran.

The GOP has formally issued a Special Development Plan for Baluchistan and the provincial government has recently (March, 1984) issued its own more detailed plan for the 6 years 1983-88. Both establish policy guidance, priorities and possible project proposals. The BALAD Project is consistent with the policy articulated in both plans.

2. Relationship to AID Policy, Strategy and Other AID Projects

The BALAD Project has been designed to carry out A.I.D. policy, as articulated in world-wide, as well as Asia-specific, policy statements. The Project will also support the development objectives of the six-year (FY 82 - FY 87) package of U.S. economic assistance to Pakistan, and will complement and draw upon other USAID/Pakistan projects as they relate to Baluchistan.

a. AID "Cornerstones"

i. Policy Dialogue

BALAD will provide an opportunity for USG and GOB officials to expand their dialogue on policy issues related to Baluchistan's development. The very process of assisting P & D to improve planning and management in Baluchistan with a focus on a specific geographical area will raise many possibilities for a meaningful policy interchange over a broad range of development issues. Such discussions will also arise in the course of carrying out the road and water activities as well. Periodic joint reviews in the Provincial Coordinating Committee and the Makran Working Committee will present similar opportunities.

ii. Technology Transfer

Technology transfer will occur in the planning management and techniques applied to road improvement and maintenance; water irrigation system design, construction and management and in planning road and irrigation systems and, to a lesser extent, in agricultural technology.

iii. Institution Building

A major effort to strengthen human resources will contribute to the success of this Project and the GOB's overall development performance. It would be completely unrealistic to undertake this Project otherwise. The PPMU will be fully capable of managing this project's activities for the Makran - it must be. The process of carrying out this job provides the most appropriate means of learning for most officials in Makran -- practical experience. Formal and informal training is by far the most important "soft" element of the project. The roads will be built and upgraded and water accessibility improved but for the long-term, attracting, developing and retaining qualified professional and semi professional people will have a greater impact. The PPMU will also be a prototype for Baluchistan of an expanded unit which performs many of the same functions at the divisional level in Punjab Province. Training activities (both formal and informal) will improve Baluchistan and Makran institutions' most vital resource -- their people.

iv. Private Sector

Improved roads and an increased supply of water will benefit the private sector directly -- both farmers and non-farmers. Roads will, of course, benefit all businesses in the area. Rationalization of the planning process should lead to more effective projects carried out more efficiently which will benefit the private sector as a consumer of services. The private sector will also benefit from the numerous Project activities which will be implemented by contract.

b. USAID/Pakistan Development Strategy

The FY 82-87 strategy places special emphasis on two "lagging areas", Baluchistan and the Northwest Frontier, areas which received disproportionately low public investment in the past. AID's strategic concerns are reflected in the current and planned financing within the six year FY 82-87 program which consciously weights AID investments in favor of the two lagging provinces. Since the BALAD Project is exclusively in Baluchistan it is the main element in USAID's efforts to emphasize development in that province.

c. Other AID Projects in Pakistan

The BALAD Project is one of three area development projects concentrated in the priority areas of Baluchistan and the Northwest Frontier. The other two, the Northwest Frontier Area Development Project (391-0485) and the Tribal Areas Development Project (391-0471), are in the NWFP.

USAID projects that will benefit the inhabitants of Baluchistan include the following:

i. The Arid Zone Research Institute (AZRI), which is located at Quetta and is mandated to carry out dry land agricultural research, will be strengthened under the Management of Agriculture and Technology Project (MART). AZRI research benefits Baluchistan more than other provinces since it has very little irrigated agriculture. Other components of MART will indirectly benefit Baluchistan by strengthening other agriculture research institutions located in the Province, providing additional amounts of technical assistance, training and equipment.

ii. Under the Transformation and Integration of Provincial Agricultural Network (TIPAN) Project the Agricultural University at Peshawar will set aside 25 seats per year for students from Baluchistan.

iii. Provision has been made under the Irrigation Systems Management Project for the rehabilitation of small irrigation works similar to those proposed for the southern Baluchistan region under the BALAD Project. In addition, a full time design engineer and workshop advisor will be assigned to the Baluchistan Irrigation Department at Quetta.

iv. Under the Development Support Training Project special efforts are being made to locate and train individuals from Baluchistan.

v. The technical assistance team under the On-Farm Water Management Project will include a water management specialist who will be stationed in Quetta to support extension activities.

vi. The Rural Electrification Project is an example of a project where Baluchistan will benefit both directly, through the distribution system expansion and energy loss reduction components and participant training activities, as well as indirectly from the institutional strengthening of the Water and Power Development Authority (WAPDA).

vii. Baluchistan will receive a portion of the fertilizer and equipment to be imported under the Agricultural Commodities and Equipment Program and some of the edible oil imported under the PL-480 Title I program.

viii. Baluchistan will directly benefit from commodity assistance to be provided under the Malaria Control II, Population Welfare Planning, and Social Marketing of Contraceptives Projects and, indirectly, through the institutional strengthening components of the projects which will improve the delivery of goods and services.

ix. Newer, more energy efficient equipment such as transmission lines, transformers and connectors will be provided through the Energy Commodities and Equipment Program to the Province.

G. Project Rationale

The AID Mission during the PID design reviewed potential development opportunities throughout Baluchistan. From this review, the Mission selected Makran as the primary focus for AID assistance. This was based on the following considerations:

1. Need

AID and other donors will work primarily in other areas of Baluchistan and Makran is scheduled to receive far less development assistance than other parts of the province. In terms of infrastructure Makran is the least developed division in Baluchistan. From a nation-building point of view, Makran is the area most in need of integration with the rest of Baluchistan and Pakistan. Selection of Makran is responsive to AID's and the GOP's policy objective to give priority to "least developed areas".

2. Opportunities

Project design activity identified interventions which were socially feasible, technical sound, administratively doable, and promised attractive returns.

3. Interest

Officials at both the provincial and divisional levels have consistently encouraged AID's attention to Makran and have taken a strong interest in the Project. They demonstrated this by maintaining this interest over a lengthy (2 year) design period and by agreeing to necessary increases in staff and in contracting and approval authority at the divisional level.

4. Location

The area is important politically and economically. It borders on Iran and the Arabian Sea and is close to Karachi, a major population center and Pakistan's principal port. The potential for trade between Makran and Karachi is limited only by the undeveloped transportation network and Makran's production base.

This Project focuses on planning, management and human resource development as well as roads and water to begin a process of long-term development in this important part of Baluchistan. To this end, it will establish a Project Planning and Management Unit at the Divisional level for Makran and strengthen the provincial capability to plan and to extend the project planning and management process down to the divisional level. It will adapt a successful P&D model used by

Divisions in the Punjab to the Baluchistan environment. The Makran sub-unit will also serve as a right hand to the Commissioner at the Divisional level to help him direct and coordinate the activities of the Nation Building Departments. By creating a Project Planning and Management Unit, BALAD resources, over the life of the Project, will generate increased experience in planning and management at the divisional level as a prototype for replication in the other divisions of Baluchistan.

The rationale for working with roads is simple. The road network is a byproduct of old caravan trails that came to be called roads. Little has been done to maintain it or to improve it. Improved roads are the sine qua non to overcoming the isolation of Makran. This is particularly true of the area's only road to its principal external market center (Karachi) which will be upgraded. Connections between principal towns within the area will also be upgraded to facilitate trade and commerce.

The rationale for activities in water is also clear. Water is central to people's lives in Makran. After roads, it is the principal physical constraint to development there. Neither the Government nor the local people have the capability to work with large water structures like dams at the present time. Most people work with karezes and with banded agriculture. Karez owners associations are strong, viable institutions and BALAD will begin by working with them on karez improvement and other simple water projects. Then, as the project staff at PPMU develop more familiarity with the technical and management constraints to working in Makran, the Project will move on to larger water structures.

Both road and water components support expanded agricultural activity. Therefore the Project is providing assistance to the extension service and to the OFWM Directorate. These institutions will be responsible for assisting the farmers take better advantage of increased water supplies.

The Project proposes to concentrate activities in the two Northern agricultural districts of Makran to focus the project geographically as well as with respect to activities. The focus is on activities that support agricultural production. The coastal area economy is based primarily on fisheries, and this requires a completely different strategy for development which the ADB is underwriting. In addition, the World Bank is working in that area on harbor improvement for fishermen and commerce. Therefore, with the exception of road improvement, all project activities will be in the two northern districts. The BALAD Project will, however, compliment the Dutch-financed UNICEF project which provides potable water systems, health education and basic literacy training and the ADB Makran Coastal Area Project and thereby the BALAD Project will both enhance the results of these projects and will be favorably affected by them.

III. DETAILED PROJECT DESCRIPTION FOR ROADS, WATER AND PLANNING, MANAGEMENT AND HUMAN RESOURCE DEVELOPMENT

A. Project Goal and Purpose

1. Goal

The goal to which the Project contributes is the socio-economic development of the lagging areas of Pakistan.

2. Purpose

The purpose of the Project is to accelerate the integration of the Makran Division of Baluchistan into the socio-economic mainstream of Pakistan and to improve the quality of life in Makran through improving roads, water and agricultural infrastructure and strengthening Provincial and Divisional planning, management and human resources.

B. Project Outputs

The Project will produce the following outputs:

1. Improved primary road system serving Makran and linking it to its principal market through new construction, upgrading of existing roads and improved maintenance methods.

2. Increased availability of water for agricultural production in Makran through a range of water activities, from improving the efficiency of existing karezes to constructing small and medium scale diversion structures and dams.

3. Improved planning and management capability and human resource availability for the GOB and Makran through on-the-job experience and formal training.

These three outputs can be measured by the following indicators:

a. Roads

- i. Improved maintenance of 900 kilometers of roads.
- ii. Rehabilitation of 600 kilometers of roads.
- iii. Survey, design, and construction of 55 kilometers of paved road.
- iv. Training of 143 staff in the C&W.
- v. Establishment of a rolling multi-year road improvement planning process.

b. Water

- i. Vertical bores drilled in 95 karez wells.
- ii. Improved maintenance (capping) of 95 karez systems.
- iii. Construction of 35 gabion small delay action dams.
- iv. construction of 12 small delay-action earthfill dams.
- v. Improvements in 144 watercourses under on-farm water management activities.
- vi. Land levelling of 4,175 acres under OFWM activities.
- vii. Construction of Kil Kaur Dam.
- viii. Construction of the Goberd Diversion Structure.
- ix. Establishment of a rolling multi-year water resource planning process.

c. Planning, Management and Human Resource Development

- i. Improved capability for designing and reviewing new development projects as well as monitoring, managing and evaluating them.
- ii. A prototype divisional P&D Unit evolved from the PPMU at Turbat that meets Baluchistan's needs.
- iii. Long-term academic training (M.A.) provided for 4 individuals.
- iv. Short-term technical training in the U.S. provided for 6.
- v. Third country training in Agriculture and Engineering provided for 6.
- vi. OJT provided for 30 Agriculture Extension Field Assistants.
- vii. In-country undergraduate training in Agriculture and Engineering for 12 people.

- ix. In-country training and OJT provided to line agency and PPMU personnel in project planning/design/appraisal/implementation techniques for 50 people.
- x. Undergraduate training for 4 Makranis in Civil Engineering.
- xi. Graduate level training for 4 Makranis in such areas as economics, planning and hydrology.
- xii. Initiation of 10 demonstration farms using farms of leading progressive farmers of the area. (4 in Turbat, 4 in Panjgur, 2 in Gwadar.)
- xiii. Ten travel fellowships per year for leading farmers and appropriate government officials to observe improved farming techniques in other locations.

C. Project Components

The Project will focus on high visibility activities of direct benefit to the local people. Initially it will focus on projects that are relatively simple to design and easy to implement, taking advantage of institutions which are already in place, such as karez owners associations, and of proven technologies. The Project will increase private participation in development activities and the capacity of line agencies.

Project activities will concentrate on: (1) road construction, upgrading and maintenance; (2) water sector improvements; and (3) improved planning, management and human resources. The latter will also focus on the creation of a Planning and Management Unit in Turbat which will establish a Divisional capability to plan, coordinate, and supervise the implementation of sub-projects. This concept is being adapted from the Punjab where has been in use for 6 years.

Several specific road and water activities already have been identified. It is expected that others will be identified during project implementation as a function of the planning process. The criteria for selecting additional activities will require that the activity: (1) be consistent with the GOB's Special Development Plan; (2) is acceptable to Makran authorities; (3) complements existing or planned infrastructure; (4) is self-sustaining without requiring major changes in local social practices or technical skills; (5) enhances the government's ability to provide services to the area; (6) contributes to strengthening the private sector; (7) is socially and technically sound; and, (8) is economically justified.

The AID evaluation system will be followed to permit refinements in priorities as the Project progresses. One formal evaluation will be scheduled approximately 12 months after the field staff is in place. A second evaluation is planned after another 18 months. Practical experience assimilated during the course of implementation will be incorporated into the road plan and the water plan.

The strategy is to limit the number of activities undertaken and to contain the geographical spread in order to facilitate management. In year 1, the water activities will be concentrated primarily in the Turbat oasis area and focus on small simple projects that build on existing institutions. In years 2 and 3, as the PPMU gains experience these activities will be expanded to the Panjgur District and more complex activities will be taken on. The road related activities will be concentrated in the Makran Division and Khuzdar Districts of Kalat Division, where the major transportation bottleneck to Karachi is located.

1. Road Component

The Makran Division is isolated from the other areas of the Province and the market center of Karachi. The road network is seriously deficient, as what are shown on maps as roads are in reality stone, gravel, and silt tracks with no bridges and few improvements through hills and mountain passes. The roads were not designed on any engineering principles; they simply emerged from centuries-old caravan routes. In mountainous areas, the roads tend to follow, and are in the drainage channels of, river beds. Traffic is thus immobilized on most of the roads after rains, sometimes for days at a time, due to high runoff or virtual destruction of the road bed.

Maintenance of the roads is currently limited to grading. However, the technique used has resulted in trenching of the roadbed which aggravates drainage problems. In addition, maintenance operations in general are seriously deficient due to the lack of sufficient and properly trained staff, insufficient budget resources, lack of supervision and improper planning and design. Where small road sections have been recently designed and constructed by the Communications & Works Department, road drainage is noticeably under-designed and washouts frequently occur.

Because deficient transportation infrastructure represents the most serious constraint to development in the Makran, the Project proposes to improve and rehabilitate priority roads to assure adequate access into, out of and within Makran. In addition, it will strengthen and improve the road maintenance capability of C&W, which has headquarters in Turbat and Bela.

Based on field reconnaissance information, the road network is divided into two classifications (see Figure 1): priority one roads (900 km) and priority two roads (700 km). Priority one roads are: (a) principal roads connecting District centers with Division centers; (b) principal roads connecting major population and agriculture production centers with Karachi; (c) principal roads carrying the largest traffic volumes; and (d), roads that are geographically central to the Makran Division. Project activities will concentrate on priority one roads, which includes work in two Divisions in Baluchistan; Kalat Division and Makran Division. The headquarters offices of the C&W Department responsible for the priority roads are in the towns of Turbat and Bela.

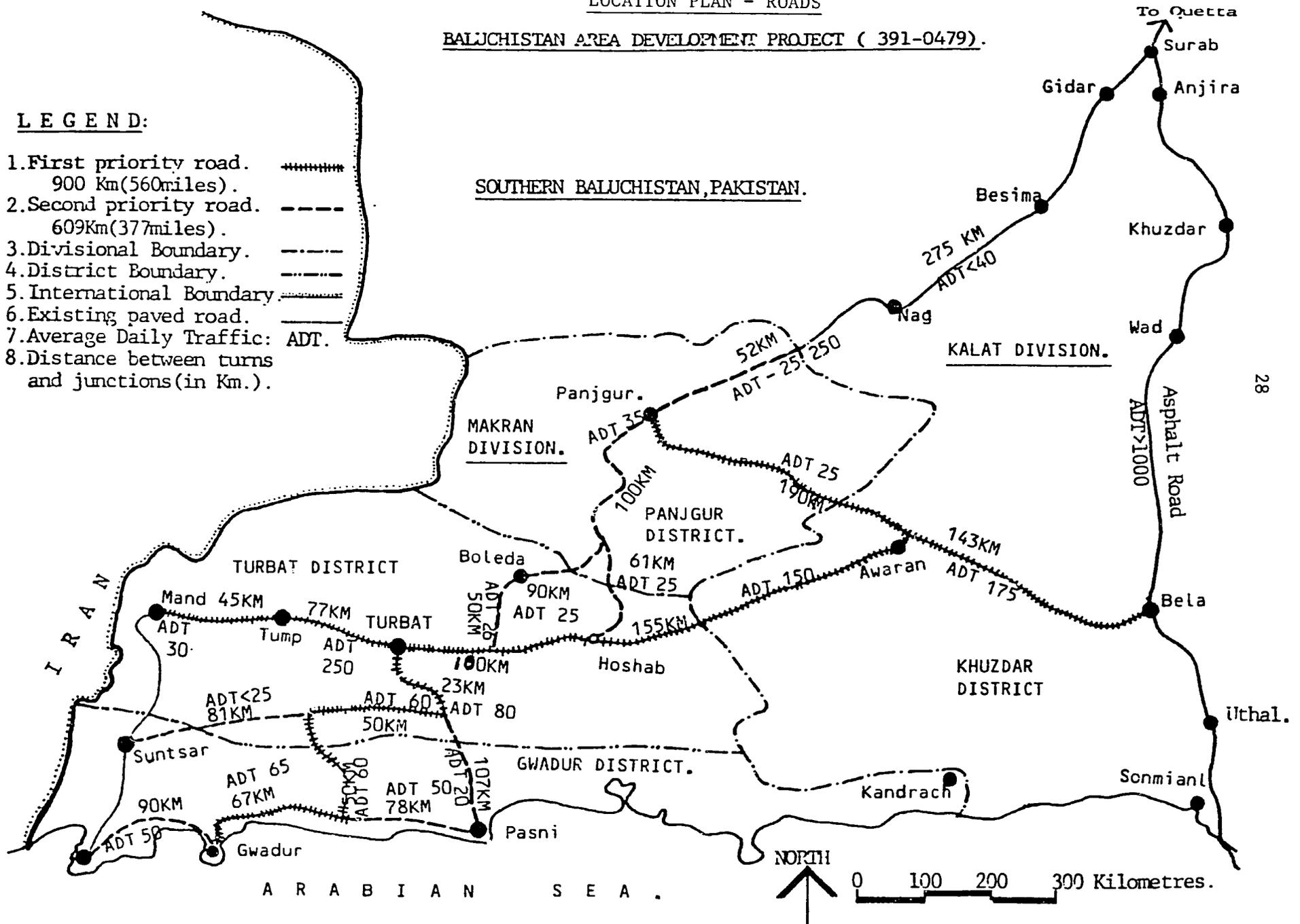
FIGURE 1

LOCATION PLAN - ROADS

BALUCHISTAN AREA DEVELOPMENT PROJECT (391-0479).

LEGEND:

- 1. First priority road.  900 Km (560 miles).
- 2. Second priority road.  609 Km (377 miles).
- 3. Divisional Boundary. 
- 4. District Boundary. 
- 5. International Boundary. 
- 6. Existing paved road. 
- 7. Average Daily Traffic: ADT.
- 8. Distance between turns and junctions (in Km.).



Five principal activities are planned for the road sector. These include:

- Road rehabilitation and upgrading of 600 kms. of priority one roads;
- Maintenance of the 900 kms. of priority one roads;
- Paved construction of a 55 km. Bela-Awaran road section through two mountain passes;
- Equipment maintenance improvement, and training of Communications & Works staff and equipment operators; and,
- Improvement of planning systems for C&W operations, maintenance, and new road development.

A brief discussion of these activities is given below. Further details are given in Section IV, Implementation Plan, and Section V.A., Technical Analysis.

a. Road Rehabilitation and Upgrading (600 kms.)

A reconnaissance of the 900 kms. of priority one roads revealed that up to 600 kms. of priority roads require rehabilitation that goes beyond maintenance for a proposed design speed of 50 kms. per hour (31 miles per hour). The basic rehabilitation needs include: (1) road widening; (2) cutting down vertical curves to provide safe sight distances; (3) widening the radius of horizontal curves; (4) improving approaches to low-water crossings; and, (5) re-alignment of short lengths of road.

The C&W will do the work with Project funds under a force-account system based on an agreed program of work. A force-account system is proposed since the nature of the improvements is impractical to attempt to define in terms of units of distance or quantities (cubic meters of excavation); the work is piecemeal over the entire 900 km priority one network. The Project will fund consultant planning and supervisory services to work directly with the C&W Department to maintain qualitative and quantitative oversight of progress and approve payments. The Quetta C&W Office will provide new bulldozers for the activity from an allotment of new equipment and spares obtained from a Japanese grant. This will be combined with new C&W grading equipment already on hand and some additional USAID-funded Project equipment. Four C&W work groups (spreads) of heavy equipment, personnel, and miscellaneous equipment will be established to execute the work.

Based on an estimated work progress rate of 7 kms. per month per equipment spread, at 70 percent efficiency with three months down time per year for Ramazan, Eid Holidays, and rain, the rehabilitation of 600 kms. is estimated to require two and one-half years.

b. Maintenance of Priority One Road (900 kms.)

Maintenance operations on the 900 km of priority one roads generally consist of periodic grading of unpaved roads. Considering the relatively low-traffic volumes on the network, grading is sufficient to maintain a traffic design speed of 50 km per hour. There are only two paved sections on the priority one network; one is 33 km long starting from Bela towards Awaran; another is 19 km starting from Turbat towards Hoshab.

The C&W has 16 new graders on-hand for the grading required but insufficient budget resources for fuel, trained operators and mechanics prevent their full utilization. Grading operations are limited to emergencies for the most part, with equipment standing idle and traffic speeds on roads substantially reduced due to poor road conditions.

The Project will provide financial assistance, training and supervision for the C&W to use the grading equipment effectively and efficiently for grading maintenance of priority one roads. This maintenance work which is separate from the road rehabilitation work, will require eight graders covering a specified area. A system will be established to provide water for equipment operation and maintenance and protection of equipment and personnel during severe dust storms and extreme summer heat. The C&W Quetta office has 25 percent parts on-hand for the graders. The Project will establish a system to assure timely provision of these spares.

The maintenance activity will be done under a Fixed Amount Reimbursement (FAR) agreement. One Master FAR agreement with provision for annual amendments if necessary, will be developed, with the C&W providing all necessary equipment and personnel for specified passes or gradings. The Project roads staff in the PPMU, Turbat, will retain a strong hands-on responsibility for continual inspection and monitoring of the maintenance work. For acceptance of kilometers of bladed road work, the work must conform to the standards to be prescribed in the FAR Agreement.

c. Paved Road Construction (55 kms.)

The principal road section from Bela to Awaran is the major traffic bottleneck from the Makran to the Market center of Karachi. Two mountainous sections of 20 km and 35 km constitute the bottleneck. At present the roadway through these mountains generally follows the drainage channels or riverbeds that bisect the mountains.

In order to allow all-weather traffic through these sections, the road will have to be relocated, constructed, and paved. Under the Project, the two mountain stretches will be properly surveyed and a new road alignment will be established. The 110 km roadway between Bela and Awaran will be surveyed to establish a proper alignment, but only the 55 km in the two mountain stretches will be designed and constructed. The 55 km stretch of mountainous road begins where the paved road ends, 33 km west of the town of Bela. The road will be constructed to the standards of 50 km per hour design speed. No major bridge or culvert construction is planned during initial construction as an adequate hydrological data base must first be established. Instead, gabion causeways will be constructed. Any necessary retaining walls will also be built with gabions. To stabilize the roadbed and protect the embankments, grade, and wearing course from flood flow damage in the mountainous areas, the road will be asphalted.

Under the Project, USAID, after appropriate consultations with the GOP and GOB, will contract directly for design and construction services and will have full authority and responsibility to monitor, inspect, and approve all phases of these services, including direct disbursement of payments.

The location, design, and construction work will be implemented by competitively contracted U.S., Pakistani or joint venture engineering and construction firms. It is estimated that the design services and pre-qualification of construction contractors will require one year to complete. Construction work will require four more years for execution.

d. Training and Equipment Maintenance

In order to implement the road rehabilitation and maintenance activities of the Project, training of staff is required. Training in drainage design and construction, general construction practice in the field, quality control, staged construction practices, planning and maintenance of roads and equipment, and equipment operation will be provided.

C&W staff ranging from gang foremen to Executive Engineers will be given formal short-courses and on-the-job training to enhance their capability to continue proper road maintenance and repair work upon completion of the project. The training of equipment operators and mechanics will be provided under an equipment dealer service contract. One week of training four times a year for operators and greasers will be provided and followed up with on-the-job training by service teams to assure maintenance of equipment. The training shall cover operation and preventive maintenance, system operation and field repairs. The service contractor will serve two principal functions; training, and provision of maintenance as the C&W improves its

capability. The Project will provide limited financial support for C&W maintenance operations through the force-account and FAR rehabilitation and maintenance activities.

The Project-funded technical consultant team under the PPMU (including short-term and long-term staff) will provide short courses and on-the-job training to other C&W staff to improve road maintenance planning, implementation, and quality control. (See Training Plan, Section IV.D.

e. Road Planning

Considering the overall C&W problem of limited budget resources for road rehabilitation and maintenance after the Project is completed, and the need for efficient use of available resources, the Project will provide assistance to improve the capacity of the C&W Department for planning and implementation. The Project will focus on three distinct, but related, activities; (1) road maintenance and development plans, (2) exploring ways to generate income or increase budget resources, and, (3) introducing cost-effective drainage techniques.

The Project will provide assistance through the PPMU technical consultants to the Makran C&W Department to help set work priorities and to plan and schedule systematic maintenance work and road upgrading. Planning systems will be developed and started during Project implementation to establish a minimum of data collection and analysis of hydrological data, road classification and traffic counts, equipment maintenance procedures, improved design standards and techniques and prioritization of continued road maintenance and improvements on the entire road network. This will entail the establishment of a rolling multi-year plan to deal with road development implementation more systematically and efficiently.

The city of Turbat and the all coastal area to the south is separated from the most populous and agriculturally active portion of the Turbat Oasis-Awaran-Turbat-Mand road by the Kech River. Most of the time vehicular traffic is able to pass through the riverbed at Turbat; however, with rain, the water flow is too deep and too strong to permit fording. This situation can persist as long as ten days. Vehicles regularly attempt crossing the Kech during flood-flows, with loss of life. In one case, in 1983, a truck carrying 18 persons was washed away, resulting in eight killed.

Some years ago, a type of causeway or low water crossing was partially built, but it was poorly designed and washed away. Detailed studies will be made to determine the type of structure and location that would best serve the area. This work will be host-country contracted by the PPMU using local A&E and construction contracts.

Regarding C&W budgetary constraints after the Project is completed, the technical consultants, working with the C&W will explore ways to place tolls on the Bela-Awaran road and the Turbat bridge to generate resources to augment annual budgets. Toll receipts deposited in a maintenance fund could partially defray periodic maintenance costs and there is agreement in principle with the GOB to consider imposing tolls.

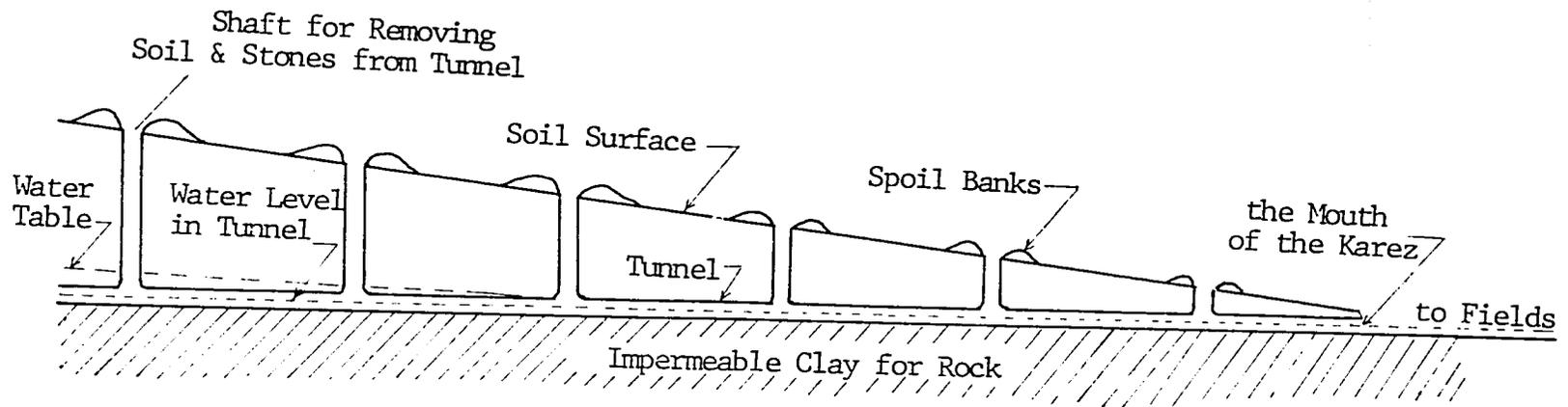
Finally, the roads component of the Project will finance the construction of a select number of gabion wire causeways, modified box culverts and modified river causeways and approaches. This activity is important because road drainage is a major problem in the Makran. New road drainage techniques will be introduced to demonstrate the design and construction of water course crossings as cost-effective investments and to reduce the failure rate of culverts and causeways. Up to 30 causeway drainage structures will be constructed over the life-of-project. The designs will be prepared by the PPMU technical consultants and the work will be done by small contractors.

2. Water Component

Water is the principal constraint to increased crop and livestock production, and to upgrading of the environment and to the improvement of living standards in the Makran. Rainfall is erratic with periods of drought as long as three to five years. To speak of the existing water resource development in Makran is to speak of the karez. A karez is a long, almost horizontal tunnel which collects groundwater. (See Figure 2).

Other types of water development exist -- there are tubewells, some direct diversions from major rivers (kaurjos) and some dike (bund) systems for collection of infrequent surface runoff from small tributaries. The 457 karezes in Makran, however, produce more than 90 percent of the irrigation water supply. The importance of the karez from the perspective of the local people is perhaps best indicated by the frequent location of mosques at the site where a karez flow reaches the surface and makes a startling change from bare soil to lush green vegetation. Most of the karezes are in the Turbat and the Panjgur Districts (See Figure 3).

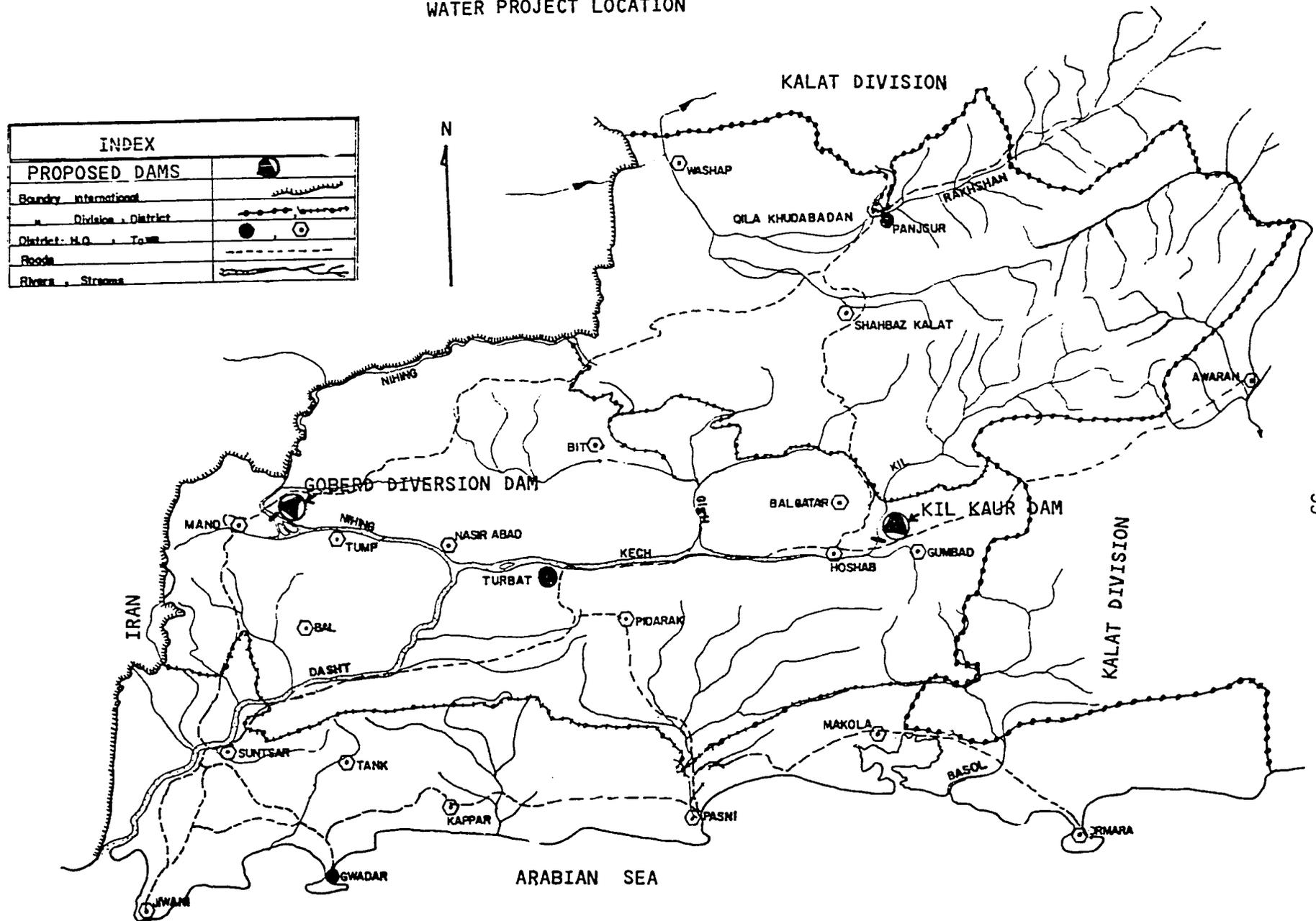
FIGURE 2
BASIC COMPONENTS OF A KAREZ



Water seeps into the tunnel below the water surfaces and through seepage faces of the tunnel, flows through the tunnel by gravity and is used to irrigate fields lying at lower elevations.

FIGURE 3

BALUCHISTAN AREA DEVELOPMENT PROJECT (391-0479)
WATER PROJECT LOCATION



There is no reason to conclude that future water development should focus only upon the karez since there are sites with good potential for a surface water development (given capital resources which have previously been lacking); however it is clear that the karez will continue to dominate in the foreseeable future. New karezes are currently being constructed by local Karez Owner Associations (KOA's) which are viable, well organized, water development institutions. This project proposes a balanced selection of both karez and surface water development activities which can be categorized as:

- Activities related to underground water utilization and karez improvement;
- Activities (namely, dams and diversion structures) for the retention, storage and use of surface runoff; and
- On Farm Water Management

A description of each activity is given below:

a. Karez Improvement (activities related to underground water)

Based on detailed field investigations, the following three means of improving the flow of water from the karezes have been chosen:

- i. Drilling to connect existing mother wells to deeper aquifers, thereby increasing water flow;
- ii. Capping of karezes to reduce maintenance expenses, prolong operational life and free up scarce, specialized labor for development of additional groundwater; and
- iii. Construction of small delay-action dams to increase recharge into the karezes

The three activities are discrete but related activities as described below.

i. Drilling Inside Mother Wells

The water producing component (the mother well) of a typical karez is developed by digging a hole deep enough to intercept a shallow aquifer. Techniques for increasing the rate of water supply include expanding the area of aquifer contact by digging horizontal tunnels or by drilling a small, vertical, 4 inch diameter hole up to several hundred feet in depth as required to intercept a deeper confined (artesian) aquifer. The former technique is used by the karez owners using traditional hand labor and is not included or

financed in this project. The latter approach requires a tripod cable drill rig and skilled labor. The Irrigation Department has had a very high success rate where this has been tried in the Turbat area. Of the 30 holes drilled by the Department, 23 produced significant additional discharge from the mother wells.

The technique requires no preliminary engineering. Once a contract is signed, a drilling contractor can proceed rapidly and produce benefits in the first year. A few holes in each karez region would verify the existence/non-existence of an artesian aquifer. If none exists, the operation would move to another area. The cost of this procedure averages Rs 25,000 (\$ 1,900) per well.

The targets for drilling vertical holes are:

<u>Year:</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>FY 89</u>	<u>Total</u>
Number of mother wells in which vertical bores are drilled	5	12	24	24	30	95

The drilling will be done by contract with local drillers. The PPMU/Turbat will develop a simple contract, accept bids, make awards and monitor contracts. To evaluate the impact of this activity, karez flows before and after drilling will be measured by installing flumes at appropriate points in the delivery channels.

Selection priority will be based upon location of artesian aquifers -- and therefore upon maximizing the increase in water supply.

ii. Capping Karez Wells

Currently, on a typical karez, farmers spend between 25,000 Rupees and 100,000 Rupees per year to maintain a karez in operating condition. When they are new, they require relatively little maintenance. But as the sides of the open, vertical wells are left exposed to the elements, they erode and more and more spoil falls into the well. Over time, large mounds of dirt several feet high build up around the open well, resembling craters on the moon. These craters concentrate the water further, accelerating erosion and eventually ending the utility of the karez.

One component of this Project will derive a series of cost effective techniques for minimizing erosion, thereby reducing maintenance costs. This work will be conducted primarily through the existing KOA's. All materials and technical assistance will be provided by the Project and all labor and transportation will be provided by the KOAs.

There are several hundred karezses with several thousand vertical wells in Makran. It is not intended that all of them be capped with AID assistance; rather, the objective is to improve several karezses in each area to provide a demonstration for neighboring karez owners of how much continuing maintenance labor can be saved, thereby freeing the specialized karez laborers who are in short supply for work on construction of new karezses.

The number of wells per karez varies but is considered to average 70. The targets for karez capping are:

<u>Year:</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>FY 89</u>	<u>Total</u>
Karezses:	0 capped	5 capped	20 capped	30 capped	40 capped	95

The initial screening criteria for allocation of karez improvement assistance will involve inviting Karez Owner Associations to apply to the Project Office in Turbat (and/or Panjgur). The application will include a list of individual stockholders and the quantity of water and land they own as well as the number of wells at their karez. These applications will then be ranked initially by using the number of individual farmers who will be benefitted as the controlling factor. The Project staff will visit the highest ranked karezses, determine the number of wells to be capped, prepare a cost estimate, and estimate the type and quantity of labor required to be furnished by the KOA. Based on this technical and cost information, the Project staff and the KOA leader will then determine the precise scope of work to be undertaken. The selection criteria will therefore be on two levels. Applicants will be ranked by number of individuals benefitted and applications will be processed sequentially. However, once an application has been processed, the decision to proceed will be made according to availability of local labor and transportation. This means that if a smaller KOA does a better job of organizing local labor, or demonstrates more interest in complementary improvements, they may proceed before a larger, but poorly managed, KOA.

iii. Delay Action Dams

A third intervention point for underground water resource development involves the construction of small check-dams upstream from the mother wells of karezses. From the reconnaissance work of the design team, it appears that a significant part of the recharge into the aquifers that feed the karezses comes from water that is concentrated on the hills above the karezses, and then drains down small washes or nullahs before flowing into the main rivers of Makran. Because of the arid nature of the area, and the limited vegetative cover, most of the rain water is lost as runoff. The project proposes to construct some delay-action dams, or small check dams, to slow this run off, and enhance the recharge into the aquifer.

Two alternative designs are to be employed: (1) wire cage gabions; and (2) earthfill dams. The gabion approach is usually less expensive but performance under controlled engineering supervision needs testing. In the beginning, both concepts will be tested. Three gabion dams and one earthfill dam will be constructed in Turbat District.

Based on the reconnaissance of potential sites in the Makran Division, the first earthfill dam will be located in the Muskeen Nullah near Turbat, and first gabion will be constructed at Niwan Kaur near Panjgur.

The numbers of dams constructed under this project will depend upon performance during the initial years. The projected numbers reflect the best current judgements as to probable success but will change based on experience.

Targets:	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>FY 89</u>	<u>Total</u>
a) Gabions	3	10	10	12	35
b) Earthfill dams	1	3	4	4	12

This work initially will be done under the auspices of the PPMU, working with local contractors and the Agriculture Department. Later, as the line agencies improve their capacities, it will be turned over to the appropriate agency.

The selection criteria will be the availability of firm abutments, availability of permeable strata and potential to recharge the largest possible number of karez mother wells. Since initially, the value of dams will not be apparent to the beneficiaries and because they will be designed to affect a number of karezes, they will be treated as public goods. Beneficiaries will not share the costs.

b. Activities related to surface runoff

Two medium sized surface water development activities will also be undertaken -- the Kil-Kaur storage dam and the Goherd diversion dam. The survey, design, and construction of these projects will be contracted out to establish Pakistani or joint-venture Pakistani/American construction firms. This work will be monitored by the PPMU/Turbat, in conjunction with an A&E firm whose services will be contracted.

i) Kil Kaur Dam

The Kil-Kaur dam will impound a reservoir of approximately 10,000 acre feet. The site is located on the Kil Kaur river approximately 10 miles North-East of Hoshab as shown in Figure 3. The 5,000 acre command area is close to the main road connecting Hoshab and Awaran. The large watershed above the dam site will require a large emergency spillway capacity to handle the infrequent

but heavy floods. The river is perennial and will provide approximately five cubic feet/second dry season base flow in addition to flood flows which will fill the reservoir twice during an average year. The preliminary cost estimate (\$2.5 million) is based upon a 65 foot, over flow type dam with radial gates. Details of the technical and economic aspects of the Kil-Kaur concept are given in the Technical and the Economic Analysis sections.

The command area has excellent soil. Ownership by about 1,000 local families is already established. A small fraction of the area is currently being dry farmed on a very marginal basis. The Project cost estimate includes constructing primary and secondary canals within the command area. There are no downstream water users who will be negatively affected by the proposed diversion.

ii) Goberd Diversion Weir

The proposed site is located 113 km east of Turbat on the Turbat - Mand highway beyond the village of Goberd. Of the 20 sites investigated by the PP Design Team throughout Makran Division, Goberd was in the category of the most feasible and economically rewarding medium scale schemes. The site has a number of existing irrigation channels and a large 2 mile canal, constructed by the farmers themselves, which begins at the dam site. The approximately 1,320 acre command area is very fertile and flat and compares with some of the best agricultural lands in Pakistan. A generally homogenous population group lives in the Goberd command area. Some farmers have installed high cost diesel pumps.

The supply of irrigation water to the area will not be entirely new. Waters from Nihing have previously, on many occasions, been diverted and used for irrigation purposes in this same area. No new land or human settlements are involved. Therefore, no new social problems, conflicts among cultural, tribal or other types of groups or any other social problems to hinder the success of the project are likely to arise. There are no downstream users who would be adversely effected by the construction of the weir. The beneficiaries are small land owners already formed into an informal cooperative society. The well-defined distribution of land and water rights and the existance of the basis of a cooperative society contribute to feasibility. The channel previously built from the river to the fields is a good example of the spirit of cooperation among the local people.

The object of this diversion weir is not to impound water but rather to capture the river's base flow plus a small fraction of storm runoff for direct diversion into the existing canal, which will require a new concrete lining.

iii. On-Farm Water Management

The small scale water resource development activities envisioned for the Makran Division will be complemented by technology developed under the On-Farm Water Management Project (391-0413). The OFWM technology will be adapted to renovate watercourses from karezes, kaurjoes, bunds and other water sources to the farmers field and to introduce precision land leveling of farmers' plots to improve soil and water use. The BALAD Project with assistance from the OFWM Directorate will train water management field teams to be formed during the first project year and Field Assistants (FAs) already in place and also will organize and train KOA members in water management. The institutional capability of the Makran Division to effectively provide water management services to the farmers will be strengthened by the BALAD Project with assistance from the Baluchistan OFWM Directorate.

(a) Watercourse Improvement

The average karez delivers approximately one cfs (cubic foot of water per second), and irrigates between 100 and 150 acres. It is estimated that the conveyance losses in the total command area are between 40 and 60 percent. The watercourses have varying unfavorable water velocities leading to silting and erosion and overtopping of banks, and narrow unstable banks because of poor alignment, cross-section and gradient. Poor maintenance and inadequate cleaning has led to vegetative growth, breaches and overtopping. Rodent holes, cutting banks for turnouts, and borrowing soils from adjoining fields to build checks in the watercourses at junctions has also contributed to the deterioration of the watercourses, resulting in considerable water loss. The watercourse improvement program will rebuild the earthen water courses according to proper engineering design and provide improved structures for turnouts and checks.

(b) Precision Land Leveling

This activity will consist of grading and smoothing fields to eliminate slopes and high and low points. Done correctly, this will improve soil fertilizer and water use. The precision-leveled or slightly sloping fields will provide for a more uniform crop stand and growth. Improved crop yields and savings of irrigation water, labor and other variable expenses will result.

The combination of both technologies (watercourse improvement and precision land leveling to an appropriate minimum slope) would save water which is critical in Makran, increase crop yields, and permit expansion of the irrigated area.

iii. Training

One of the major constraints in the development of the Makran Division is the lack of trained technicians to deliver water management technology to small scale farmers. There is a lack of trained field assistants to promote the increased productive use of water and to provide guidance to farmers on various cultural practices which, if adopted, would result in increased yield per acre and per unit of water. Also, there is insufficient knowledge among farmers on agronomic and water management techniques. Therefore, the BALAD Project through the OFWM Directorate, will train a five member field team for each of the Turbat and Panjgur Districts. A third team will be trained next for Gwadar district. The field teams will consist of: a Team Leader/Assistant Director of Agriculture; an agriculture officer for surveys, designs and extension; a sub-engineer; and two FAs who will be trained in watercourse improvement, precision land leveling and water management extension -- which includes agronomic inputs, irrigation water management and maintenance of water-courses.

The FAs from the Department of Agriculture's OFWM Directorate who will serve as the link between the OFWM field teams and the karez owners association will be trained in improved crop and water management techniques. The FAs will set up demonstration plots in areas where farmers renovate the watercourses and level the land utilizing the new techniques. Training will also be provided to FAs to monitor watercourse maintenance and assist the field teams in organizing KOAs for project purposes.

The organization and training of the water users is an essential ingredient in promoting water management activities within the project area. The members need to be organized to provide the necessary supervision for the improvement of the watercourses and trained to maintain the watercourses after they have been improved. The members may obtain individual loans for such improvements as land leveling, structures and production credit. On a joint (common signature guarantee) basis, the members can obtain loans for watercourse improvement and agricultural inputs. No financing is included here for such an activity, since there are currently adequate sources for such credit.

The training of water users will be done informally in their own social environment. The members will cooperate with each other to improve watercourses because of perceived personal benefits and long-standing habits of cooperation. However, the advantages of maintenance of watercourses and obtaining loans to improve water management practices may not be obvious at first. Thus, seminars, workshops and/or audio visual programs within the command area are required to educate and motivate the farmers to cooperate with OFWM field teams and FAs.

The OFWM Provincial Directorate will assist the BALAD Project staff in fostering a multi-disciplinary farmers service organization to give farmers the necessary assistance in water management at the field level if (as will rarely be the case) an ongoing active organization is not already in place. The BALAD Project, in conjunction with the OFWM Directorates, will provide technical assistance to KOA or Water User Association (WUA) members in the design and construction of improved watercourses and precision land leveling and will give guidance in water management techniques, water course maintenance and cultural practices. The recruitment of OFWM personnel, development of training programs, procurement of equipment and vehicles, development of standards and technical guidelines and the establishment of program procedures will be done in consultation with the OFWM Directorate.

These activities -- karez improvements, small delay action dams, and management improvements -- will be done under the auspices of the PPMU, working with local contractors, KOAs and the line Agencies for agriculture and irrigation.

3. Planning, Management and Human Resources Development Component

Strengthening the capacity to plan, prioritize, select and carry out development projects for Baluchistan as a whole, and Makran in particular, is the most difficult and important long term element of this project.

Included in this component are the following major elements: (1) technical assistance and staff support to the GOB's Planning and Development Department at Quetta which has development responsibilities throughout Baluchistan; (2) the establishment of the PPMU/Makran; (3) activities complimentary to those carried out by the PPMU designed to improve the performance and effectiveness of human resources in irrigation, agriculture and roads in Makran; and, (4) a special development fund.

a. Technical Assistance to the Planning and Development Department at Quetta

The technical assistance planner/systems specialist will work with the Planning and Development Department in order to improve systems for design and analysis of new development projects for Baluchistan. Assistance will also be provided to improve monitoring, reporting and evaluation systems within the Department and simultaneously to support activities of the PPMU, Makran Division as a prototype development unit at the Divisional level.

During an initial phase of twenty-four months, the same contractor/consulting firm employed to provide technical assistance at the PPMU-Makran Division will also provide an expatriate planner/

systems specialist to the Planning and Development Department - Quetta. This individual will serve as a consultant to the Additional Chief Secretary (Planning and Development) who will be the BALAD Project Manager, and to the Secretary, Planning and Development Department. The expatriate planner will participate in the Provincial Steering Committee and the Divisional Working Committee in order to facilitate the development of improved project appraisal and monitoring methods.

The technical assistance contract will contain provision for obtaining short term Pakistani or expatriate personnel to perform short-term, specialized, technical tasks approved by the steering committee, related to planning, implementation, monitoring, evaluation of development projects and improvement of GOB institutional arrangements for these purposes.

Technical assistance will concentrate in three areas. In coordination with appropriate staff of the P&D Department, the expatriate will develop systems for processing and reviewing new development projects for the Province. Included will be such tasks as inventorying available economic and social data, and introducing techniques for gathering and analyzing new data to strengthen the design/appraisal of development projects. Introducing other methodologies for facilitating reviews of development projects such as visual, graphic or fiscal analytical techniques will also be a major part of the work.

Working with assigned P&D Staff, the consultant will also develop systems for improved management and implementation of development projects, with particular reference to the PPMU Makran as a prototype. Included in this effort will be such tasks as installation of an O & M system to support the Divisional PPMU; planning, training, and monitoring activities; and design and use of reporting systems to identify policy and management issues in BALAD Project activities.

The third major area of concentration will be development of systems for monitoring and evaluating development projects. Included in this activity will be the design and testing of periodic performance indicators and the budgeting and reporting system, using the Makran PPMU as a test case.

Working with designated P&D staff, assistance will also be provided to develop evaluation techniques applicable to the full range of Provincial development activities. Here again the techniques will be tested in connection with the BALAD activities in the Makran Division and other areas of Baluchistan.

The expatriate advisor will be provided a minimum local contract staff. It is anticipated that the services of a local hire systems analyst, secretary and driver will be necessary. The P&D Department will provide the majority of technical staff required to develop, test and introduce the new systems.

After the consultant has been in Quetta for 18 months, the results of the technical assistance and support to the P & D provided up to that time will be evaluated. On that basis it will be decided whether revision, continuation, expansion or reduction of this assistance is justified.

b. The Project Planning and Management Unit (PPMU) Makran

The GOB has made a policy decision to begin establishing a Divisional level Planning and Development Unit starting in FY 1984. The PPMU is both an end and a means. It is specifically designed to develop into a major instrument of practical project prioritization and selection, design, monitoring and, when necessary, hands-on management, at the Divisional level. At the same time, it must be staffed to ensure that BALAD is carried out effectively and efficiently. Fortunately, these purposes are highly complementary, since learning by doing, on-the-job training and developing necessary skills in the process of implementing BALAD will achieve major improvements in the Division's planning and management capacity and lay the basis for future development. The spread effects of lessons learned, experience gained, personnel trained and systems established will likely have significant impact beyond the PPMU itself because it will affect the functioning of the nation-building departments in Makran through training and intensified supervision.

The PPMU will possess appropriate authority and staff capacity to work with the 'line' agencies and the private sector in planning, coordinating, monitoring and, in some cases, managing BALAD inputs. Ultimately, based on experience, the PPMU, with suitable modifications, should become a model divisional planning and development unit to be replicated in the other Divisions of Baluchistan. A Divisional level P&D Unit has been used in the Punjab Province with considerable success for the last six years. (see Annex 11, Report on Divisional P&D Units).

The problem of recruiting experienced staff for such a unit, especially for such a remote location as Makran, has been mentioned. Because of the importance of bringing development to the Makran, a two pronged solution has been designed. The GOB has committed itself to recruit new personnel to work in the Makran -- initially in the PPMU as trainees and then as the core staff for the Divisional P&D unit which will emerge as BALAD is completed. BALAD will provide training opportunities as incentives to GOB employees who are willing to work

in the Makran. The Project also provides some scholarship assistance to young Makrani students with prospects for a position in the GOB, should they be successful in their studies. GOB recruitment and assignment will not be sufficient for the short run however. The urgent need for a fully trained and qualified staff to implement BALAD from the outset, makes necessary the contracting of a core staff for this unit. This contract staff, working under the GOB Project Director, with expatriate and Senior Pakistani Engineers, and with the newly hired GOB staff, will carry out the bulk of implementation activities for the Project. At the same time, the new GOB P&D staff will be a part of the project PPMU and will have the opportunity for OJT and learning by doing for extended periods. At the end of the project, the GOB Planning and Development Unit that remains in the Makran will be smaller than the PPMU, and its scope of work probably will be narrower. However a small trained unit will be in place to assist the Commissioner to plan, monitor, supervise and conduct evaluations of development programs.

The PPMU will have five basic functions.

- (i) It will develop all quarterly work plans and schedule project activities. The Unit will undertake or commission pre-feasibility studies in coordination with technical line agencies in the Makran Division, when appropriate.
- (ii) The Unit will do small design and survey work independently or in coordination with the technical line agencies. It is expected most of the designs will be for small scale projects such as karez improvements, check dams, drainage improvements for roads and road maintenance and rehabilitation.
- (iii) Through research studies and training, the Unit will transfer technology to the people of Makran. Working with line agencies such as Agriculture Extension Department, the Unit will conduct pilot tests of new technologies and develop and distribute technical information.
- (iv) Management of a wide variety of activities is the fourth function of the PPMU. This includes activities from basic administrative and logistical support to financial operations such as payment, purchasing and budget preparation and review. The Unit will also undertake bid preparation, contractor selection and contracting where necessary and deemed desirable by Project management.
- (v) Monitoring and evaluation is the final major function. The Unit will be the first line of functional monitoring and evaluation for BALAD and will be responsible for developing base-line socio-economic, physical and management data regarding Project activities and the Project area.

During the design and the pre-implementation phase (before mobilization of the long-term consultant team) an expatriate roads engineer and water engineer will be employed. Coordinated by the USAID Regional Affairs Officer - Quetta and in consultation with the Additional Chief Secretary (P&D) and the Commissioner of the Makran Division, these engineers will facilitate preparations for the start-up of the project. They will also suggest organizational arrangements and operational procedures for undertaking road maintenance and rehabilitation and water sector activities.

Through the end of the Project in Makran, an expatriate Chief of Party (engineer/planner) and two other expatriate personnel (water engineer) (irrigation agronomist), together with Pakistani professional, semi-professional and support staff employed by the expatriate contractor/consultant firm, will organise and support the implementation, technical assistance, and training functions required by the PPMU-Makran. This contract team will be responsible to the Commissioner of the Makran Division (the field project manager).

Any GOB positions in the PPMU (with the exception of the Director and any technical support staff assigned to assist him) may be training positions during an initial phase of two years starting from the date of field mobilization of the single contract. Six-month reviews by the Steering Committee will determine the pace of staffing GOB and contract positions. Thus, a deliberate process of gradual staff increases will be in place to assure that management capacity is adequate as Project activities increase.

Depending upon the results of evaluation and experience, the initial mode of staffing may either continue or a schedule for the replacement of contract personnel by GOB staff may be put into effect.

In order for the PPMU to be operational, the following actions are required:

- (i) The PPMU will be sanctioned and formally attached to Office of Commissioner, Makran Division.
- (ii) The Commissioner, Makran Division, will be named Field Project Manager - Baluchistan Area Development Project.
- (iii) The PPMU, Makran Division will be operationally responsible to the Commissioner, Makran Division, and will be directed by a qualified and responsible officer selected by P&D - Quetta.
- (iv) Policy guidance and quarterly work plan approval of BALAD activities developed by the PPMU will be exercised by a Provincial Steering Committee chaired by the Additional Chief Secretary, Planning and Development.

- (v) Appropriate necessary additional powers and authority will be delegated by the Provincial Steering Committee to the Field Project Manager and the PPMU to enable planning and implementation of individual BALAD schemes.

c. Human Resource Development in Agriculture

To assure maximum economic benefits from roads and water elements of the Project, initiatives must be taken to improve the quality of agricultural skills and the level of support given to agricultural officers.

Activities to accomplish this will include: (1) training FAs; (2) use of model farmers in a farming systems approach; (3) observational travel for leading farmers and FAs; (4) improved support, including transportation, for Agriculture Department professionals e.g., and, (5) appropriately prepared technical information for professionals and client groups.

The GOB's change agents for extending agricultural "know-how" to farmers are FAs. Unfortunately, they have difficulty obtaining the latest know-how to extend and are often short on practical experience. Virtually all of FAs are native to the village where they are assigned. They know the people, the language, and the problems. They usually are high school graduates with some additional technical training in agriculture. However, they lack sufficient training and materials to provide effective assistance to farmers. In addition, their effectiveness is reduced because they lack transportation.

Two means of making the FAs more effective will be employed:

i. Short intensive training courses and materials for the FAs will be prepared by the expatriate irrigation-agronomist of the PPMU, working with the staff of the GOB Department of Agriculture. These materials will be geared to the cropping and planting season in Makran. For example, in a particular time span (week, month) FAs will be given short workshops or field training on, e.g., proper budding and grafting. In another work cycle, training will be directed to cultural practices such as proper fertilizer and pesticide usage, efficient water application, or tillage. The intent is to give the FAs more practical knowledge on relevant technical matters and more confidence to work with farmers.

ii. A technique often used in areas where improved packages of technology have difficulty taking hold is that of working with the more progressive farmers, exploring and testing technical ideas on the farm site. With proper direction and a good mix of technical innovation it is a very appropriate and cost effective way of introducing productive technology. Further, it sensitizes field workers to farm problems. This farming systems

approach of identifying successful farmers in an area and using them as leading farmers will be followed. Their farms will, in effect, become demonstration farms. Various improved cropping practices will be introduced in this way. This will include use of improved seeds and cultivation practices such as better weeding techniques; new tools; and better water management applications. Local farmers will be encouraged to visit these neighborhood farms. The FAs will work with less efficient farmers to see that they become aware of their neighbor's techniques.

Further, to broaden the exposure of progressive farmers to new farming strategies, the Project will nominate 6 to 8 leading farmers and a few of the civil authorities and staff of the nation building departments for invitational travel within Pakistan and to other relevant countries in the region, to observe more efficient farming practices.

Up to ten candidates from Makran who have finished two years of college will be nominated to complete their undergraduate training in agriculture. They will begin to meet the shortage of Makranis who have been educated as professionals in agriculture.

BALAD will provide vehicles to improve the mobility of the staff of the Department of Agricultural Extension, and motorcycles for the FAs.

d. Special Development Activities (SDA)

Resources will be available to the Makran Division officials and the PPMU to enable them to deal with current development problems in the Project area. One million dollars is included in Contingencies for this purpose. Approval for Special Development Activities (SDA) will be carefully controlled and coordinated with local line departments to prevent duplication of effort and, at the same time, to obtain local inputs and experience. The SDA will permit rapid response to opportunities which develop during implementation of the Project. An example of special development activities would be initiating small-scale development projects such as construction of schools, health facilities or housing for teachers or health workers from outside the area. The initial phase of a comprehensive plan for water resource development should be initiated as an SDA (see Annex 16). A marketing study to identify profitable crop alternatives in the agriculture sector will be started as soon as practical, as will a base-line survey of socio-economic conditions. Additional examples could include processing and marketing or initiating other experimental technologies such as test plots of arid land crops, solar pumps combined with trickle irrigation, or wind mills. Other types of projects may be added as more data on potential development activities evolve.

The SDA will act as a catalyst to encourage local investment in small economic projects and encourage participation of the local people in development activities, thereby widening the visibility and impact of the Project. The use of this fund will also add a small but visible component to the BALAD Project activities which will be largely community based and directly involve the people as participants and beneficiaries.

With the exception of studies and surveys, Special Development Activities will not begin until the other main Project activities are launched and adequate management capacity is available. At the earliest, this will be in the second year of the project when the PPMU has become fully operational.

The upper limit for individual SDA activities will be \$100,000, but the average will be considerably less. Activities will be identified on a quarterly basis and included in quarterly work plans for review by the working committee. Individual activities will be the result of careful screening against specific criteria.

Once activities are approved in principle, appropriate staff of the PPMU will be assigned to examine them in enough detail to determine technical feasibility and costs. The activities then would be incorporated into the Divisional Working Committee quarterly work plans which will be forwarded to the Provincial Steering Committee for review and approval. Approved activities would then be implemented by either the PPMU or a combined PPMU/technical agency effort under the guidance of the Divisional Working Committee consisting of the Commissioner, the PPMU Chief, a USAID representative, The Chief of Party, and line agency representatives. The specific manager of the activity will be assigned by the Working Committee and will be responsible for it from start to finish. He will obtain support from the PPMU staff and/or line agency personnel as appropriate. To be sure that these projects are properly managed, two PPMU personnel will be assigned full time to administer/implement SDA.

IV. IMPLEMENTATION PLAN

A. Implementation Timetable Major Events

<u>PROJECT EVENTS</u>	<u>ACTION</u>	<u>DATE</u>	<u>RESPONSIBLE AGENCY</u>
	<u>FY 84</u>		
IQC equipment specialist contracted		April 1984	USAID
PIO/Ts completed for roads and water pre-implementation PSCs		April 1984	USAID

Preliminary plans and PIO/T completed to contract local A&E firm for completion of final design and construction plans of project headquarters	June 1984	USAID
Complete lists/specifications for roads and waterequipment procurement	June 1984	Contractor
Local prequalified A&E firm contracted for final design/plans of Project Headquarters	July 1984	USAID
Advertise for pre-qualification of contractors for construction of Project Headquarters	July 1984	USAID
PP completed	July 1984	USAID
Roads and water pre-implementation PSCs on board	Aug. 1984	USAID
PP approved by AID/W	Aug. 1984	AID/W
PC-1 for BALAD submitted	Aug. 1984	GOB
Project Agreement signed for BALAD	Aug. 1984	USAID/GOP
Roads and water equipment procurement started under ACE project	Aug. 1984	USAID
PIO/T for long-term consultant contract completed and advertised	Sept. 1984	USAID
Final construction plans, specifications and IFB completed for project headquarters	Sept. 1984	USAID
<u>FY 85</u>		
IFB for construction of Project Headquarters	Oct. 1984	USAID
Construction Firm contracted for Project Headquarters	Dec. 1984	USAID
PC-1 for BALAD Project approved	Dec. 1984	GOP
Project Headquarters construction started	Jan. 1985	Contractor
Long-term consultant contract signed	March 1985	USAID
Long-term consultants on-board	April 1985	Contractor

Project Headquarters housing completed	Aug. 1985	Contractor
ACE-procured equipment starts arriving	Aug. 1985	USAID
<u>FY 86</u>		
Project headquarters offices completed	Jan. 1986	Contractor
Project headquarters compound completed	March 1986	Contractor
1st Project Evaluation completed	April 1986	USAID/GOP/GOB
<u>FY 88</u>		
2nd Project Evaluation completed	Oct. 1987	USAID/GOP/GOB
<u>FY 89</u>		
3rd Project Evaluation completed	March 1989	USAID/GOP/GOB
<u>ROADS COMPONENT</u>		
<u>FY 84</u>		
PIO/T completed for A&E firm(design/ supervision 55 km road)	July 1984	USAID
<u>FY 85</u>		
A&E firm contracted for design/ supervision of 55 km road	Nov. 1984	USAID
Scope of work prepared for Kech River crossing prefeasibility study	Dec. 1984	Contractor
55 km road design work started by A&E firm	Dec. 1984	Contractor
Long-term consultants (Roads and Water) arrive	Apr. 1985	Contractor
Pre-feasibility study contracted for Kech River Crossing	May 1985	Contractor
Complete prequalification for 55 km road construction firms.	July 1985	USAID
Pre-feasibility study for Kech River crossing completed (go, or no go, decision)	Sept. 1985	Contractor
Maintenance service contract executed/ operators/mechanics training started	Sept. 1985	USAID/PPMU

FY 86

IFB Documents completed and issued for 55 km road construction	Oct. 1985	USAID
Maintenance FAR agreements prepared for LOP with provision for annual amendments if necessary	Oct. 1985	USAID
Road rehabilitation plans prepared for start-up. Agreements signed for LOP	Nov. 1985	Contractor/GOB
Road maintenance FAR signed for FY 86 (based on LOP Plan)	Nov. 1985	USAID/GOB
Contract awarded for 55 km road construction	Dec. 1985	USAID
OJT for road maintenance and rehabilitation underway	Jan. 1986	Contractor
Road maintenance and rehabilitation starts	Jan. 1986	PPMU
156 kms of roads rehabilitated in FY 86	Sept. 1986	PPMU

FY 87

Amendment (if necessary) for roads maintenance FAR for FY 87	Oct. 1986	USAID/GOB
176 km of road rehabilitated in FY 87	Sept. 1987	PPMU

FY 88

Road maintenance FAR amendment signed (if necessary)	Oct. 1987	USAID/GOB
176 km of roads rehabilitated in FY 88	Sept. 1988	PPMU

FY 89

100 km of roads rehabilitated in FY 89	Sept. 1989	PPMU
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FY 90

Construction of 55 km road completed	Dec. 1989	Contractor
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WATER COMPONENT

FY 84

PIO/T completed for soils and level
survey and hydrological study of Kil Kaur
and Goberd dam sites

June 1984 USAID

FY 85

Local A&E firm contracted for survey
and hydro study of Kil Kaur and Goberd
dam sites

Sept. 1984 USAID

Water PSC completes drilling specifications
for karez development schemes

Nov. 1984 Contractor

Karez drilling contract advertised

Jan. 1985 PPMU/Contractor

Start detailed planning for karez
capping component

Jan. 1985 Contractor/PPMU

Survey and hydro study of Kil Kaur
and Goberd dam sites completed

April 1985 Contractor

Karez drilling contract awarded
and work started

April 1985 PPMU

Complete scope of work for A&E design
of Kil Kaur and Goberd dam sites

June 1985 Contractor

Advertise for A&E design of Kil Kaur
and Goberd dam sites

July 1985 USAID/PPMU

A&E design of Kil Kaur and Goberd
dams contracted

Sept. 1985 USAID/PPMU

FY 86

Contract for precast slabs for
Karez capping advertised

Oct. 1985 PPMU

A&E Firm for design of Kil Kaur and
Goberd dams contracted

Oct. 1985 USAID

Contract awarded for karez precast slab
construction

Dec. 1985 PPMU

Karezes for capping selected (5) and
agreements with KOAs negotiated/executed

Dec. 1985 PPMU

Capping of karezes starts

Feb. 1986 KOA/PPMU

Construction firms prequalified for dam construction	July 1986	USAID
Plans/specifications completed by A&E firm for Kil Kaur and Goberd Dam sites	July 1986	Contractor
5 karezes capped in FY 86	Sept. 1986	KOA
12 Mother wells drilled FY 86	Sept. 1986	Contractor
<u>FY 87</u>		
Construction contracts awarded for Kil Kaur and Goberd Dam sites	Oct. 1986	USAID/PPMU
Karezes for capping selected (20) and agreements with KOAs negotiated/executed	Dec. 1986	PPMU
20 karezes capped in FY 87	Sept. 1987	KOA
24 mother wells drilled in FY 87	Sept. 1987	Contractor
<u>FY 88</u>		
Karezes for capping selected (30) and Agreements with KOAs negotiated/executed	Dec. 1987	PPMU
24 mother wells drilled FY 88	Sept. 1988	Contractor
30 karezes capped in FY 88	Sept. 1988	KOA
Kil Kaur and Goberd Dams constructed	Sept. 1988	Contractor
<u>FY 89</u>		
Karezes for capping selected (40) and Agreements with KOA negotiated/executed	Dec. 1988	PPMU
40 karezes capped in FY 89	Sept. 1989	KOA
30 Mother wells drilled in FY 89	Sept. 1989	Contractor

PMHRD COMPONENT

See detailed Training Plan (Annex 17)

B. Administrative and Monitoring Arrangements

1. AID Responsibilities:

Three contractors will be responsible for implementing the work under the BALAD Project. There will be a roads construction contractor chosen for the road work between Bela and Awaran and a separate A&E contractor to monitor construction performance. There will be a third contractor chosen for the planning, management and human resource development work focused in Makran and at Quetta.

The USAID Regional Affairs Officer in Quetta will act as the Mission's Project Officer and will have overall responsibility for Project monitoring and implementation. This officer will spend up to 10 days a month of his time in Turbat to oversee the Project. He will be assisted by the USAID/Pakistan Liaison Officer for Baluchistan stationed in Quetta and by USDH and FSN staff of USAID Offices with expertise in such areas as water management and agriculture. The USAID Office of Engineering (O/ENG) will have technical monitoring responsibility for the engineering aspects of the roads and water civil works components of the Project and will review and approve construction plans, specifications and cost estimates of planned activities. O/ENG will also monitor and inspect construction to administratively approve USAID disbursements. USAID will be directly responsible for contracting and monitoring the A&E design and supervision services and construction of the proposed 55 km road between Bela and Awaran and the PPMU housing/office facilities. For the balance of the road activities, as well as the water related civil works activities which will be implemented or managed by the PPMU, O/ENG will assist the Project Officer with the technical requirements and documentation of Project implementation activities. This will include attending the quarterly meeting of the Divisional level working committee, and review and approval of the technical engineering components of quarterly work plans, construction plans, cost estimates and FAR agreements. O/ENG will conduct periodic on-site inspections of construction activities implemented by the PPMU and will review and administratively approve completed construction work for USAID disbursements.

The engineering backstopping and monitoring requirements for the project will be met by assignment of a USDH, an FSN roads engineer, and an FSN irrigation engineer to the project on a part-time basis, equivalent to up to one full-time professional staff member's time.

The Office of Agriculture and Rural Development (ARD) will support the Project Officer with professional backstopping in all agricultural activities in BALAD and will assure effective linkages with the OFWM Project.

The Office of Project Development and Monitoring will assist the Project Officer in all contracting and procurement transactions under this Project and act as a liaison between the Project Officer and the USAID technical offices located in Islamabad.

The Executive office will have responsibility for providing initial logistical support for USAID activities in Turbat and Quetta. However, as the technical assistance team comes on board, the logistical support will diminish and the contractors will be expected to secure support from local sources.

2. Federal and Provincial Responsibilities:

At the provincial level, overall planning, coordination and approval will come from the Provincial Steering Committee, working through P&D Quetta under the Additional Chief Secretary. The Steering Committee will be chaired by the Additional Chief Secretary (Development) and will also include representatives of the line departments and the USAID Regional Affairs Office. P&D Quetta will be responsible for setting up the PPMU. The PPMU will be made up of key professional staff designated by the GOP to serve in Makran. This staff will include the Director of the Unit and, to the extent feasible, section heads for agriculture, roads, water, survey, design and costing, planning/economics and statistics, and administration and finance. If necessary, these positions may be designated as training positions, with younger, less experienced personnel backstopped by PPMU contract staff. The PPMU will be under the overall direction of the Commissioner who will be the Field Project Manager in Makran. Also within the Division, a Working Committee will be established which will be responsible for providing routine operational direction for BALAD. This Committee chaired by the Commissioner will include: PPMU and Contractor Representatives, USAID and Technical Agency Chiefs. Quarterly Work Plans will be prepared by the PPMU, and presented for review and comment to the Working Committee. Small scale Project activities will be implemented directly through the PPMU/Turbat. More substantial activities will be implemented through private sector contractors as well as through the line agencies for Communication and Works; Irrigation and Power; and Agriculture as appropriate. Working under the direction of the Provincial Steering Committee for policy guidance and the divisional Working Committee for operational guidance, the PPMU will determine whether a specific project should be channeled through a line agency like C&W, or whether it should be contracted with private sector contractors under the Commissioner's contracting authority.

3. Contractor Responsibilities

For design and supervision of 55 kilometers of paved road, an A&E Contractor with demonstrated road building experience in arid areas of Asia and the Middle East will be chosen. Another

contractor will do the actual construction. It is expected that the construction contractor will be a joint venture involving a Pakistani and an American engineering firm.

For the other Project activities in Makran and at Quetta, another U.S. contractor with international experience in planning and management will be chosen. This contractor will be responsible for providing the contract personnel required in Quetta and the non-GOB personnel required at the PPMU at Turbat. This contractor will be responsible for helping PPMU develop the necessary contracting and construction management and monitoring capability to successfully implement BALAD and to provide OJT opportunities for GOB direct hire personnel. See Annex 10 for a detailed description of the types of personnel to be provided by the contractor.

As directed by the Provincial Steering Committee and the Divisional Working Committee, the technical assistance contractor with GOB and contract PPMU staff will work with KOAs, private sector contractors and the line agencies to supervise and monitor Project activities.

C. Procurement Plan

1. Technical Assistance

Technical assistance will be provided by one contractor. Since there will be only one technical assistance contractor - preferably a joint venture - providing technical assistance, the contract mode will be competitive with a U.S. institution/firm separately or as part of a joint venture.

2. Small and Minority Business Participation

Activities under this project may be appropriate for participation of small and minority businesses particularly on a sub-contracting basis. In order to assure that maximum consideration is given to the use of small and minority businesses in the implementation of this project, the Mission will include in all CBD notices/RFPs language similar to the following:

The GOP and A.I.D. encourage and welcome in this activity the participation to the fullest extent possible of small, minority and women-owned businesses as individuals and as members of contracting or sub-contracting firms. In this respect, the Mission will urge that the prime contractor make efforts to identify and make maximum practicable use of such personnel and firms.

The Mission will also work with ASIA/PD, ASIA/TR and the Office of Small Disadvantaged Business Utilization (OSDBU) in identifying firms potentially qualified for and interested in participating. Firms identified as having capability of performing required services will receive a copy of the RFP.

Involvement of small, minority and women-owned businesses will be discussed with the GOP.

3. Construction Services

Both the A&E and construction contracts will be let using standard competitive methods.

4. Commodities

An illustrative list of commodities is included as Annex 18. With the exception of motorbikes and some spare parts, all of the commodities will have their source and origin in the U.S. or Pakistan. In all cases, either AID directly or the long-term technical assistance contractor will procure the required commodities.

a. Vehicles

The following vehicles will be required for this Project:

i. 40 motorbikes (125 cc twin cylinder, dual purpose road and trail, with capacity for up to two passengers and some limited equipment) for FAs and construction supervisors.

ii. 14 four-wheel drive carryall type vehicles for the long-term advisors and other project staff.

iii. 5 Pick-up Trucks, 1/2 Ton, 4WD.

iv. Two - 2-1/2 ton trucks.

Since the motorbikes are not manufactured in the U.S., the Mission requests that AA/Asia approve a source/origin and nationality waiver from Code 000 to Code 935 and a waiver of FAA Section 636(i) to permit procurement of vehicles from a Code 935 country (most probably Japan). (See Vehicle Waiver Request in Annex 7.)

b. ADP Equipment

A total of four micro computers will be purchased, together with appropriate power sources, peripherals, software, and an inventory of expendable supplies (diskettes, and the like). To facilitate service and to ensure that all are fully compatible, all of the equipment to be purchased in the first year will be tendered as a single lot. The ability to provide in-country service and technical support will be a key consideration in making the award. Micro-computers are becoming increasingly common in Pakistan, as shown by the fact that computer tractor-feed paper is now manufactured locally, and the additional micro-computers to be supplied do not pose a potential problem with regard to service or availability of necessary supplies. Review and approval, as well as technical assistance, from M/SER/IRM will be requested early on in project implementation to ensure that all AID regulations with respect to the purchase of computers are fully met and that the ADP equipment procurement plan is feasible and appropriate.

c. Other Commodities

In addition to the vehicles and computers mentioned above, project funds will be used to procure hand and desk calculators and typewriters, limited research commodities and supplies and household and office furniture and equipment/supplies.

D. Training Plan

Training under BALAD is concentrated during the first three years following arrival of the contract technical assistance team. In general, the types of training planned include on-the-job, short-term formal, and long-term academic training. While it would be most desirable to train only persons from the Project area, such a rigid application of criteria is not possible. A major consideration in the recommendation for training by government agencies will be the willingness of the candidate to either return to or begin work in, an appropriate position in the Makran Division, preferably one directly related to BALAD Project activities.

A description of the kinds of training proposed to be financed by the Project is contained in Annex 17 and summarized below.

Given the remoteness and problems with recruiting and retaining well qualified personnel, training will be focused on providing appropriate skills or upgrading the skills of existing personnel. The line agencies which are involved with the Project will be encouraged to hire new personnel to fill existing vacancies and Project resources will be used to train these new hires. For example, in the analysis of the personnel requirements for implementing the road component it was found that few trained equipment operators, mechanics and foremen are available at this time for road maintenance or rehabilitation work. During the pre-implementation phase prior to the arrival of the TA Team, staff requirements and training needs for C&W in the following year will be determined. New staff will be hired or existing staff will be identified for training. These personnel will be trained at appropriate in-country training centers and later will receive OJT from the PPMU personnel. Road staff requirements for each succeeding year will be determined and appropriate training will be provided in similar fashion. The majority of GOB personnel required for the water component will be provided by Agricultural Extension and the Provincial On-Farm Water Management Directorate. The Directorate will recruit and train three teams to operate in the three districts of Makran Division. The Project will provide resources to these teams operating in the Project area to train farmers and undertake pilot/demonstration activities in water management.

The planning, management and human resources component will provide primarily short term training in development administration and development planning. A relatively small amount of long-term training in technical areas where a shortage of skills is evident is also planned. Such areas as agronomy and hydrology have been identified.

The Project will also support up to 12 Makrani students in the completion of their undergraduate training in agriculture and engineering. They will be recruited through various technical agencies and will be sent on full scholarship to appropriate institutions. In addition to the general selection criteria to be applied for candidates under the training mentioned above, specific criteria will be applied to undergraduates, including:

1. Successful completion of two years of baccalaureate level study.
2. Willingness to serve in Makran.
3. Post academic record.

Commitments will be made to these candidates that, if they do well in their training, appropriate positions in the C&W, Irrigation, or Agriculture Department will be available for them upon completion of their training.

E. Construction Plan for the Administrative Complex

The Makran Division Headquarters has extremely limited office and housing facilities. As a result, BALAD must construct both offices and housing for expatriate and Pakistani employees in Turbat. The rugged physical conditions of the Makran with up to 125 degree heat for most of the year and frequent sand and dust storms makes adequate housing an absolute necessity to attract and retain well qualified personnel for the PPMU. Upon Project initiation, USAID will proceed with final designs and construction of the office and housing complex in order to have it ready for occupancy as soon as possible. Housing will include six units of 1100 sq ft which will be for expatriates, lead Pakistani engineers and the Director of the PPMU. Twenty-four studio units with attached central living room, dining room and kitchen facilities will be provided for professional and technical staff in the PPMU. An additional barracks will also be built for Project support staff. The office and housing facility will have its own source of electricity and a self-contained water system, as these utilities are not available on a reliable basis in Turbat. The office block will be constructed adjacent to the Makran Division Commissioner's headquarters. The housing complex will be nearby. The land on which these units will be constructed is GOB property and will be committed for USAID's use. At such time as AID has no further anticipated use for the facilities they will be turned over to the GOB.

F. EVALUATION PLAN

Three formal external evaluations are planned over the life of the Project: 3rd Quarter FY 86, 1st Quarter FY 88 and 2nd Quarter FY 89. During the initial stage of implementation, the PPMU will contract with a Pakistani firm or entity to develop appropriate economic and social base-line data for use in later impact evaluations. With this in mind, the Mission will submit to AID/W a monitoring and data collection plan which will provide the mechanism, time schedule and impact indicators to be measured during the three planned evaluations. Data collection for impact evaluations will be incorporated into the project implementation activities, supplemented with short-term contracting for specific data gathering requirements. The data collection plan will be prepared in coordination with ASIA/DP prior to the contracting of the initial base-line data collection team.

The data collection effort will focus on the goals and objectives of the project in general with special emphasis on gathering data to provide informative documentation of the project's impact on

individuals and communities in one of the least developed regions of Pakistan. The data collection effort will also provide statistical information to the GOB, GOP and USAID as to the current state of development in the province and gains made over the life of the project. Road sector indicators such as traffic patterns, levels of trade and transportation costs will be used to examine the impact of road construction on the local economy. With respect to water resources, data collection will provide information on changes in such indicators as water availability and utilization, water use efficiency, cropping patterns, increased acreage under cultivation, karez water association effectiveness, and crop yields. The overall impact of the project on the people and communities of the project area will be evaluated in terms of such indicators as migration trends and income and employment opportunities measured by a small stratified sampling frame. Efforts will be made to draw as much as possible on data already maintained by project participants or institutions--agricultural agents, karez associations, local lending institutions, and so forth. A special attempt will be made to provide information of a quantifiable nature on the impact of the project on women. If possible, given the cultural constraints of the project area, data will be collected on a sex disaggregated basis.

The first evaluation will be a process evaluation which reviews implementation schedules and focusses on identifying problems and recommending solutions. This evaluation will be an internal evaluation using primarily Mission and project resources. The review will require approximately four person weeks of effort by a team to review the regional planning, roads, water and agriculture

activities. This team will travel to the Project site, conduct interviews and make field visits. The second evaluation will be a combination impact/process evaluation. This review will focus on accomplishments and begin to measure impact. It will also contain an element of process evaluation to review implementation schedules, identify problems and recommend solutions. The second evaluation will also require approximately four person weeks of effort by a team of experts in regional planning, roads, water and agriculture to review secondary source data, conduct interviews and make field visits. The final impact evaluation will entail about eight weeks of effort by a team with a composition similar to the above and will include the collection and analysis of primary source data. All evaluations will involve representatives of the GOB P&D, USAID and the Project-financed technical assistance teams.

The regularly scheduled meetings of the Steering Committee, which will take place throughout the Project, as well as scheduled conferences and workshops will also serve as forums for Project monitoring and informal evaluations. A variety of data will be generated and available for all formal evaluations as a result of data gathering, data analysis, and reporting activities which will be continuous throughout the life of the Project.

The following outlines the overall objectives of each of the three formal external evaluations which are tentatively scheduled to take place under this project.

1. 3rd Quarter FY 1986

This evaluation is scheduled approximately 12 months after the contract personnel are to be on the job at Quetta and Turbat. All technical consultants and the required commodities should have arrived in country by this time. Sufficient implementation progress should have been achieved to permit an evaluation at the end of the year to be useful.

The evaluation will be a project management and process "audit" with the overall objective of examining: (1) the adequacy of institutional arrangements, systems of operation, and work plans; and, (2) progress achieved in providing the required inputs. Recommendations for necessary modifications in the implementation schedule, institutional arrangements, and the financial plan will be made at this time. In particular, the following aspects of the Project will be examined:

- a. the adequacy of the approach to technical assistance to the P&D, Quetta and the PPMU, Turbat -- with a specific focus on staffing.

b. institutional roles and working relationships between and in the P&D Department, the line agencies, the Steering Committee, the Working Committee, the PPMU, the long-term contractors, AID and the relevant GOP and provincial agencies.

c. GOP/GOB implementation arrangements and progress.

d. functioning of financial management arrangements.

e. the status of commodity procurement activities.

f. the results of meeting CPs and covenants.

2. 1st Quarter FY 88

This evaluation is scheduled to coincide with the projected two and one half year's experience in full implementation. In addition to reviewing progress on findings of the first evaluation, assessing progress under all three Project components and identifying constraints and recommending solutions; this review will also identify quantifiable impact indicators and measure against previously collected baseline data the impact of the roads and water activities on income and access to services in the Makran. Composition of the evaluation team will consist of one general engineer, one economist/regional planner, one anthropologist and a financial analyst, all of whom will be contracted from external sources. Additional Mission resources will also be used. Lessons learned from this evaluation will be incorporated into program plans for the remainder of the Project.

3. 2nd Quarter FY 1989

This final impact evaluation is scheduled to coincide with the projected completion date of all project activities, except the paved road construction which will still have 9 months to completion. The evaluation will measure the impact of the Project in meeting its objectives and will include an examination of lessons learned and progress achieved in meeting the goal and purpose of the Project as well as the end of project status (EOPS) indicators. Prior to this evaluation, clearly defined and quantifiable impact indicators will have been developed for all Project components and sub-components. Evaluation of the training program, for example, will include such indicators as the quality of the participants, the extent to which course material is being utilized, and the relevance and appropriateness of post-training assignments. The impact of the Project planning and management improvement activities of the planning management and human resources development component will be examined. And finally, the impact of the PPMU in contributing to the evaluation of a prototype divisional P&D unit will be assessed.

V. PROJECT ANALYSES

A. Technical Analysis

1. Roads Component

a) Background

The road component is based upon first-hand reconnaissance by consultants, USAID/Pakistan engineers and C&W Department engineers in Baluchistan. The consultant reports entitled "Baluchistan Area Development Project - Road Component", prepared by David Gephart, TransCentury Consultants, and "Baluchistan Area Development Project Road Component and Irrigation Equipment," prepared by James Watson, TAMS consultant, are on file at USAID/Pakistan and at the AID/W, ASIA/PD/ENGR Office.

The reports highlight the critical land transportation situation in Makran. The area certainly has the worst network of roads in Baluchistan, and the Communications and Works (C&W) Department does not have the technical capacity, equipment, and budgets to deal with the problem effectively or efficiently. The fact that most roads have simply emerged from caravan trails without so much as a nod to drainage and soil conditions poses a challenge to rehabilitation and maintenance. Traffic is low on the entire 1600 km of principal roads and this traffic is severely hampered by the poor condition of the roads which limits safe speed to an average of 20-30 km per hour. A major problem on the road network is drainage, as the roads tend to follow drainage channels or riverbeds in mountainous areas. Most streams and rivers are crossed by fording and, after heavy rainfall, traffic delays of three to ten days are common. In addition, flash-flood erosion destroys the fords and roadway, making the roads impassable for long periods.

b) Strategy and Technical Considerations

Considering the road network and the existing C&W institutional capability in Makran, the following strategy was developed for providing assistance.

1) Priorities - A priority one network of roads which serves the heaviest traffic flows, connects the important agricultural production areas and population centers, connects district and divisional administrative centers of Makran, and links Makran with Karachi was identified. Based on the criteria described in the Project Description, Section III, the following roads were classified priority one:

	<u>Road Section</u>	<u>Distance (km)</u>	<u>Average Daily Traffic (ADT)</u>
a)	Bela-Awaran	43	175
b)	Awaran-Hoshab	155	150
c)	Hoshab-Turbat	100	150
d)	Turbat-Mand	122	250
e)	Turbat-Gwadar	190	80
f)	Panjgur-Awaran	190	25
	Total	900	

These six road sections meet the selection criteria with the exception of the Panjgur-Awaran road which does not carry the volume of the traffic required to economically justify major road improvements. However, due to its position as a link in the network and its potential economic importance, it is included.

The balance of the principal roads, 700 km connect outlying towns and agriculture production areas with District centers. The average daily traffic on these roads is 25 vehicles or less.

2) Needs Assessment and Standards: Construction and maintenance activities proposed under the Project, as described in Section III, Project Description, will upgrade and maintain priority one roads to a standard design speed of 50 km per hour. This design speed is appropriate for the road network, considering the low volume of traffic. The geometric design for rehabilitation and upgrading will be based on secondary road standards recommended in the AID-financed Transportation Research Board Compendum 1, Geometric Design Standards for Low-Volume Roads, pp.121-146. The design of the 55 km paved road section will include a 6-inch sub-base, 6-inch crushed stone base, 12 ft. wide asphalt roadway surface, and 10 ft. wide shoulders.

Considering the limited funds available, the large number of kilometers involved for rehabilitation and improvement, and the lack of adequate hydrological and runoff data, the rehabilitation work will not involve construction of drainage structures except for a limited number of demonstration low-water crossings using gabion. The drainage work on the 55 km paved section also will be limited to low-water gabion crossings as much as possible. A considerable amount of funds has already been wasted in Makran on water crossings that wash out due to inadequate culvert designs and generally low construction standards. Retaining wall structures and grade separations will be designed and built using the gabion wire technique instead of rigid and expensive stone/concrete mortar designs. The Project will fund limited hydrological gauging equipment to establish runoff characteristics for future use as the roads are further improved after the Project.

3) Mode of Operation: The terrain of Makran consists of heavy gravels, cobbles, and alluvial deposits. The arid conditions, low population density, labor shortages and long distances, prevent the use of labor-intensive methods for road maintenance and rehabilitation. Harsh climatic conditions do not allow hand excavation and shaping of roadway sections by labor gangs. Mechanized equipment is required for this type of work.

The Province has received a substantial amount of new graders, mobile workshops, and bulldozers, with 25 percent spare parts, from a Japanese grant. Sixteen graders financed by this grant are already located in Makran. Additional equipment, including bulldozers and mobile workshops will also be assigned to Makran. Based on field inspections and review of equipment requirements by an equipment specialist, equipment needs for the rehabilitation and maintenance activities have been identified. The needs include new C&W equipment and AID-financed equipment. The details are contained in the equipment specialist's report. The core equipment for Project maintenance activities includes 8 graders for the 900 km of priority one roads. For road rehabilitation and overall equipment maintenance activities, four equipment spreads consisting of a bulldozer, a grader, a front-end loader, and related transport and equipment maintenance and fuel vehicles will be set up. Each spread will be able to provide food, water and shelter for equipment and operators, especially during severe heat and dust storms.

The initial maintenance activities proposed under the Project will include limited grading, using improved techniques to keep the roads open and as smooth as possible. As the rehabilitation activities progress, the grading maintenance work will increase until all rehabilitation work is completed and grading maintenance will become the principal activity. The grader equipment will be capable of providing up to 8 grading passes per year on the priority one network, sufficient to keep the network in good condition. Four rehabilitation spreads are necessary to complete 600 km of road upgrading in about 2.5 years, based on a 70 percent efficiency and three months down time per year due to Ramazan, Eid Holidays, and rain. In addition, the C&W Department has maintenance labor gangs of five to six men spaced about every ten to fifteen miles on the priority one network. These gangs are composed of people from the vicinity. However, their utility and effectiveness has been almost nil because of lack of supervision and the physical conditions. The Project will employ these gangs more effectively for improving roadway drainage and constructing low-water crossings. As the Project proceeds, an improved equipment/labor mix to meet the needs of Makran will be developed.

Regarding the proposed construction of the Kech River crossing at Turbat, the considerations for its inclusion under the Project are social as well as economic. All traffic from the heart of the city of Turbat and the entire coastal area to the south is cut off from the road to Quetta and Karachi periodically due to high water and flooding of the Kech where traffic normally crosses the riverbed. There is currently no causeway or

bridge. Lives are lost every year as people attempt to cross the flooded Kech and traffic is halted for days at time. Traffic at the present crossing is about 700 vehicles per day, because the river divides the heart of the city from the large, populous Turbat oasis to the north.

A preliminary survey and investigation has been conducted by the USAID Office of Engineering which shows the technical feasibility of a bridge near the present crossing. A bridge, with related flood-flow retaining levees would serve two purposes: It would provide a safe all-weather water crossing for traffic and pedestrians and protect crops in the oasis from extreme flood flow damage. Some flood-flow data are available at the site, which would have to be confirmed with additional gauging and flood-flow modelling. For preliminary estimates, the river basin hydrology was derived from a complete engineering study of another similar area in the vicinity. The construction of a bridge, road approaches, and protection levees do not pose significant problems. However, lower-cost alternatives, such as a properly designed causeway, may be feasible. A detailed analysis based on a thorough investigation of the site and alternative sites will be contracted from a Pakistan A&E firm before a decision is made to finance a crossing.

4) Road Planning and Equipment Maintenance

Throughout the Makran and also at the provincial level, the scheduling and budgeting for road improvements, equipment maintenance and related activities lack long-term planning and a system of priorities. Decisions often are made without considering traffic volumes, physical constraints, and effective use and operation of equipment. The Project's road rehabilitation and maintenance activities will assist the C&W Department to plan and conduct maintenance and improvements. In addition, the long term technical consultants will assist the C&W Department to develop and establish systems to improve equipment operation and maintenance, and road planning.

The C&W Department has little equipment maintenance capability at this time. Workshop facilities, spare parts and accounting systems are basically non-existent. The Project therefore, will fund support systems to ensure supplies of spare parts and appropriate facilities where needed for field operations and assist the C&W in proper maintenance. An equipment service contractor will be funded to provide training and will assist with maintenance of Project equipment for a period of three years. The C&W Department will build up its resources and capacity with this assistance to continue equipment maintenance after the Project.

The road planning activities proposed under the Project will include the following:

1. Review and analysis of alternatives for increasing budgets for road operations. This will include analyzing the feasibility of establishing toll stations at different points along priority one roads to generate operating revenue.

ii. Mapping and classification of roads and establishing traffic count systems.

iii. Developing minimum road design and drainage standards for the terrain and conditions.

iv. Progress monitoring, reporting and accounting systems for all Project work.

v. Recording hydrological data and developing improved design standards for small water crossings.

vi. Analyzing road support requirements for agricultural areas and developing annual maintenance and improvement priorities to meet periods of heavy traffic demand. This planning would assist in determining GOP fiscal year budget requirements for road development and maintenance.

Project funds are budgeted for the procurement of equipment required for data collection. Short-term and long-term technical assistance budgeted under the PPMU will work with the C&W Department to develop road planning systems throughout the life of the Project.

2. Water Component

a. Introduction

The Project will implement a range of ground and surface water projects, representing the most feasible interventions in economic, technical, and social terms. They were selected after reconnaissance visits and preliminary analysis of some 40 possible project sites. The karez-related activities were selected because they can produce rapid results without sophisticated construction techniques and will enhance the modalities which dominate the water resource system in Makran. The Kil-Kaur and Goberd storage and diversion dams will produce significant economic benefits and, perhaps even more importantly, each will demonstrate the feasibility of a type of surface water technology which is urgently needed in Makran to go beyond the Karez concept.

b. Karez Improvement

For centuries karezes have formed the backbone of the irrigation system in Baluchistan. Some karezes in Makran have been in use for centuries. It is estimated that in Turbat and Panjgur districts of Makran division about 80 to 90% of the total population is directly or indirectly supported by the 457 operational karezes for irrigation.

A karez consists of a main well (generally called the mother-well), 4 to 10 ft. in diameter, excavated to tap an aquifer, and a series of open wells connecting an underground tunnel through which the aquifer water is delivered to the agricultural lands. The depth of the mother-well is seldom more than 100 ft. and the number of open wells in a karez averages 70. The average discharge from karezes range between 0.5 cfs to 6 cfs. Most of the karezes have a discharge of less than 2 cfs.

Two principal problems with karezes in Baluchistan are the depletion of aquifers resulting in reduced discharge, and erosion of the open wells which reduces flow and results in high maintenance costs. Both problems pose economic survival problems for karez users. The PP Design Teams identified the following interventions to minimize the above mentioned problems:

- i) Drilling vertical holes to connect existing mother wells to deeper artesian aquifers, thereby increasing karez flow;
- ii) capping karezes to reduce maintenance costs; and,
- iii) constructing small, delay-action dams above the mother wells to increase karez recharge.

The following discussion reviews the technical feasibility of these interventions.

1. Drilling of Vertical Holes in the Mother Wells

The existing water supply from most karezes is obtained by excavating a mother well to a depth which intercepts the water table. Flow from this unconfined aquifer can usually be supplemented by drilling a much deeper, small diameter hole to intercept an artesian (confined) aquifer. The technical feasibility of this intervention is fully demonstrated by the fact that the Makran Irrigation Department drilled 30 wells in and around Turbat during the past two years and, at 23 of these sites, a significant increase in flow was obtained. The confined artesian aquifers in Makran Division are from 100 to 400 feet deep. The sedimentary rock overlying these deeper aquifers is medium to modestly hard. In such rock, drilling can normally be done using percussion methods. The Irrigation Department hired local contractors in Makran to drill the aforementioned 30 wells and they successfully used manual rigs to complete the holes at a cost of Rs. 20,000 (\$1500) per well. Thus, for this activity heavy rotary type rigs will not be required.

The well drilling design will consist of a 4" diameter hole cased with a threaded steel pipe for the upper 10 feet. A 2 1/2" diameter uncased hole will then be drilled to a depth of upto 400 feet in search of a deeper aquifer. The threaded 4" pipe is essential for two reasons: (1) in the event that substantial increase in flow is produced it may be desirable

to install a control valve to conserve water during low demand and/or high runoff periods; and, (2) it is possible that some locations may be underlain by unsaturated material, in which case the upper (pierced) aquifer may drain into the drilled hole causing a loss rather than a gain in karez flow. It is clearly essential to cap such a hole.

Experienced drilling contractors with sufficient number of manual rigs are available in Makran. This intervention should therefore face no significant problems. Based on estimates of existing drilled wells, it is estimated that this intervention can increase the flow in selected karezes by at least 15 percent.

ii. Capping of Karezes

The objective of this activity is to place a cover over the normally open wells to stop weathering and rainfall erosion. This intervention is expected to reduce the average maintenance cost per karez from Rs. 55,000/- (\$4,100) per year by 90% to Rs. 5,500 (\$ 400) per year. Capping will prolong the life of the karezes by virtually eliminating the erosion of open wells.

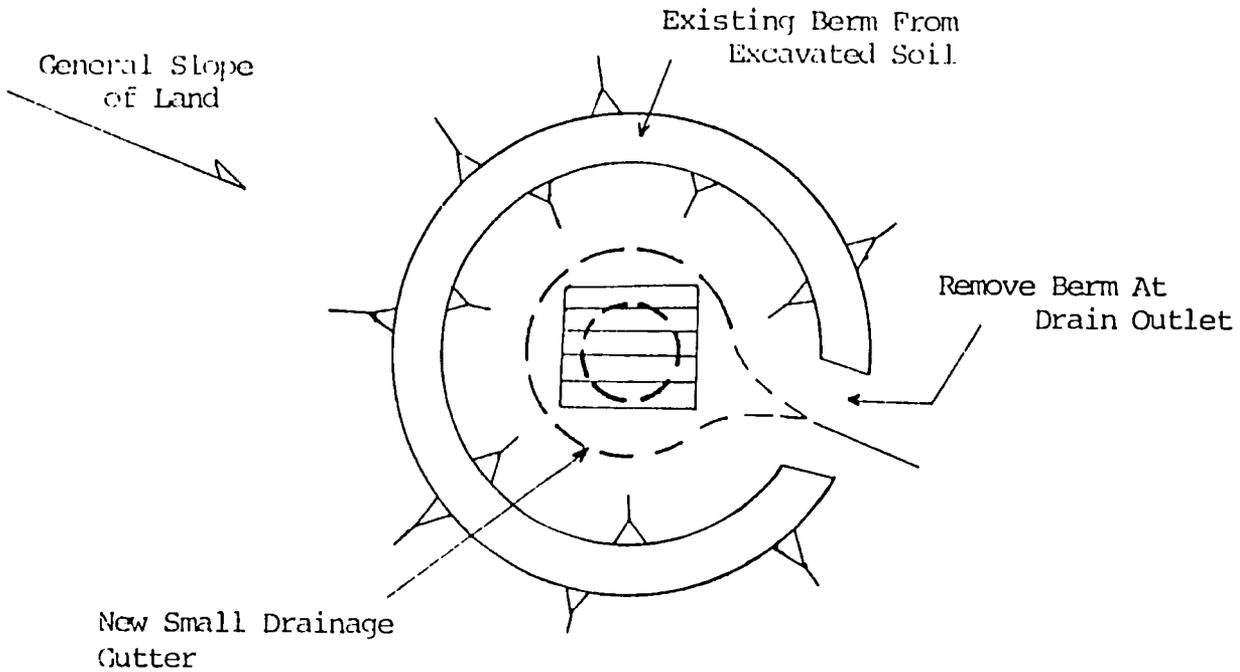
The main capping activity will involve the covering of wells with appropriately designed precast concrete slabs, however, the more eroded wells will require a poured in place cap. Three possible designs are illustrated in figures 4,5 and 6. The cost of each cap design (at an average site) is estimated as follows:

<u>Design</u>	<u>AID Contribution</u>	(Cost per well) <u>Owner Contribution</u>
a	Rs. 180	in kind
b	Rs.2,700	in kind
c	Rs.4,000	in kind

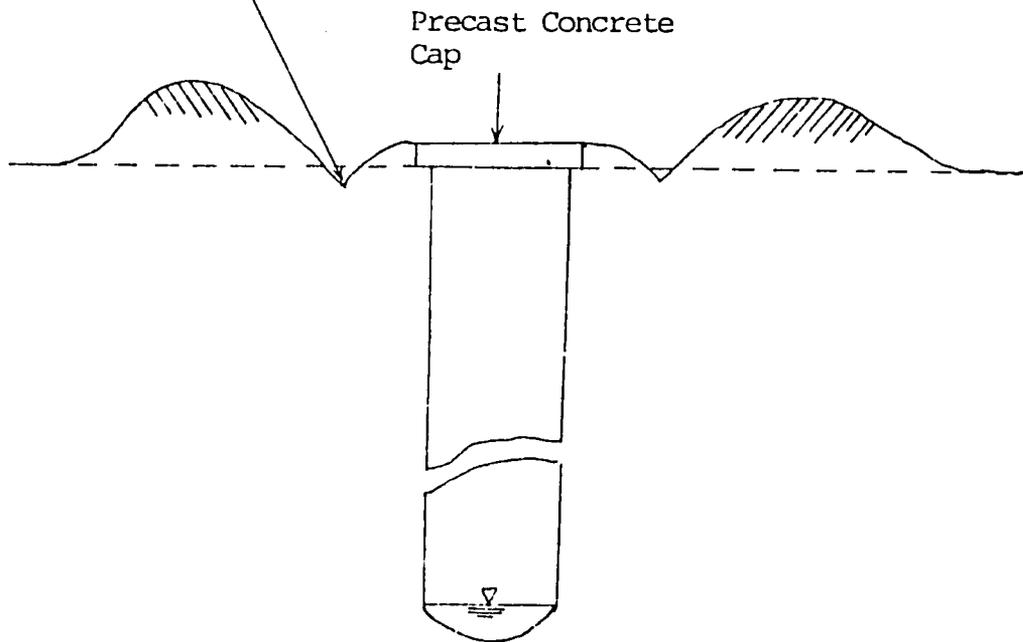
The KOAs will implement this element of the Project. There are no unusual construction techniques required and the karez capping activity clearly is technically feasible.

FIGURE 4

CAP FOR NON ERODED WELL (TYPE A)



PLAN VIEW

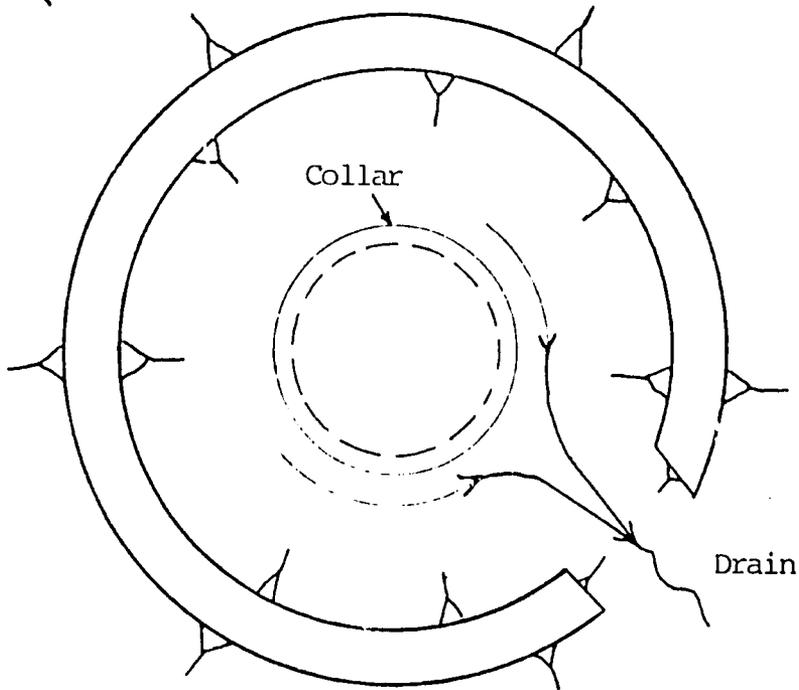


SECTION

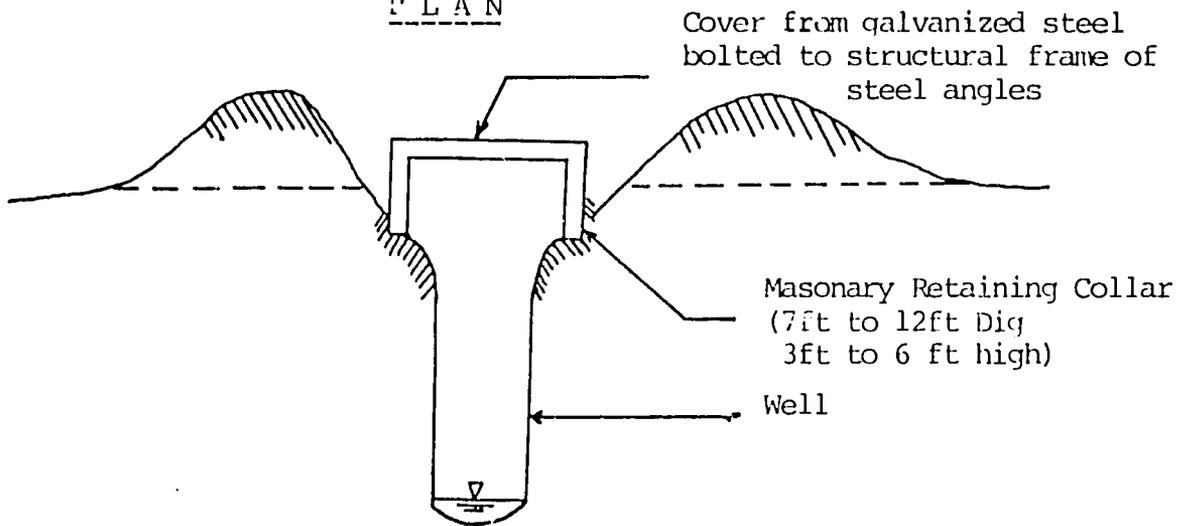
FIGURE 5

CAP FOR MODERATELY ERODED WELL (TYPE B)

Slope of land



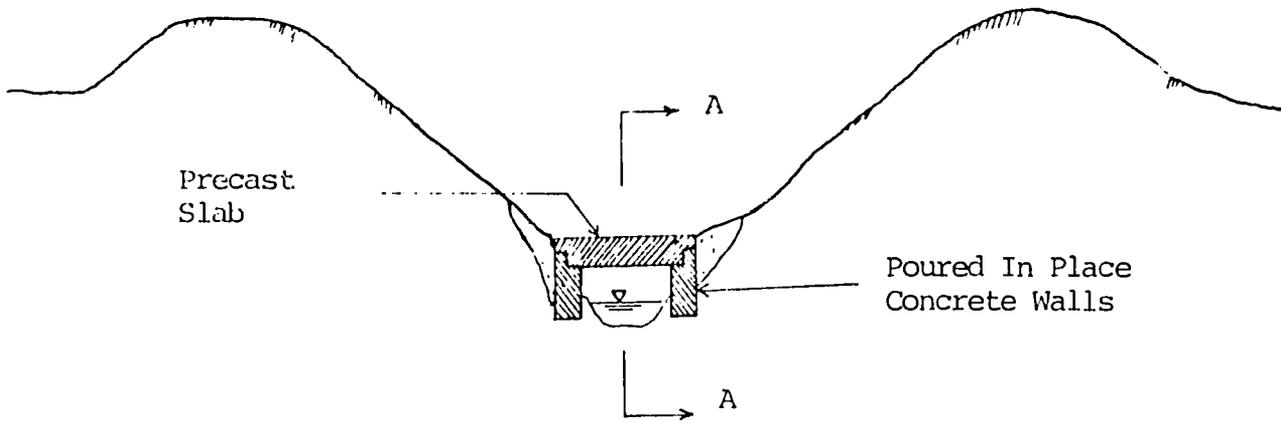
P L A N



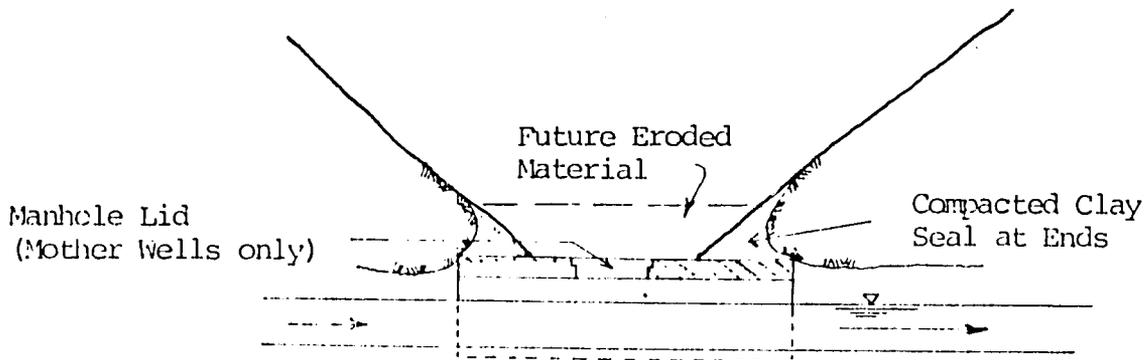
S E C T I O N

FIGURE 6

KAREZ CAP TYPE C (BADLY ERODED)



SECTION
(ACROSS KAREZ)



SECTION AA
(ALONG KAREZ)

This activity will require the manufacturing of thousands of pre-cast RCC slabs and their transportation to the sites. The slabs will be designed in accordance with the American Concrete Institute (ACI) Code of 1971 for RCC designs or the British CP 110.

In order to insure an efficient production of the large number of pre-cast units, the Project will provide batching plants to suitable contractors and recover their cost from the sale of the slabs.

iii. Small Delay Action Dams (Recharge Structures)

The karezes in Makran Division receive their water from the aquifers which are fed directly from the beds of adjoining nullahs and streams whose catchments are in the mountains. These nullahs are mostly non-perennial, and water passes through them in the form of flash floods after rainfall. The duration of such floods varies from a few hours to a few days.

Because of the peculiar topography of Makran Division, its arid nature and the limited vegetative cover, most of the flood water is wasted as run-off. In order to increase the recharge into the aquifers which feed the karezes, small structures will be constructed to delay the surface run-off in the nullahs, thereby allowing the water to infiltrate into the ground and increase the recharge into the karez aquifers.

Two alternative designs will be used and tested: (1) wire cage gabions; and, (2) earthfill dams. The gabion approach is usually much less expensive but poor performance has been experienced with that technique (for different but related applications) in other regions of Pakistan. Therefore, during the first year both concepts should be tested on a demonstration basis. Three gabions and one earthfill dam will be constructed in the Turbat district. Each of the three gabions should each be of a different design as shown in fig. 7. Depending upon results of this experiment in the Makran environment, additional gabions of one or more of these (or a modified design) will be constructed in subsequent years.

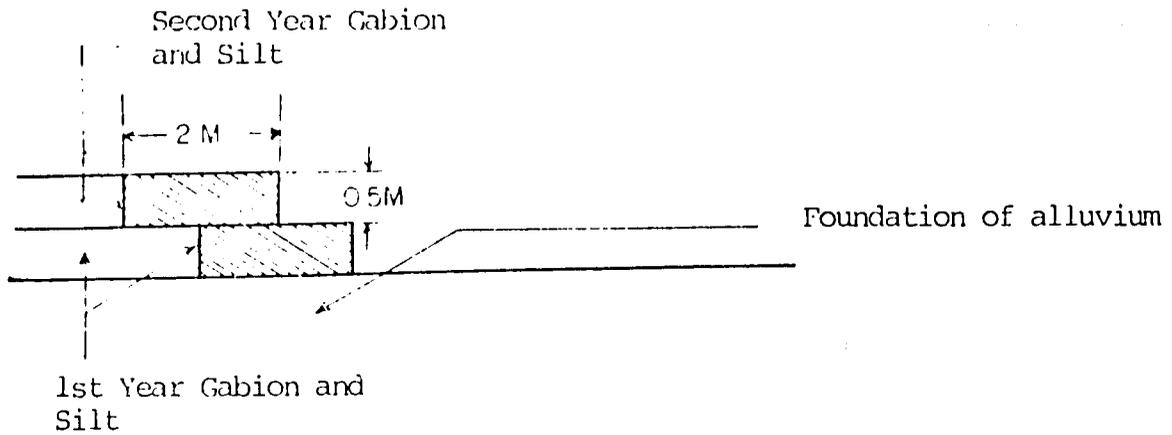
The earthfill delay action dam is a very different concept. Gabions will delay but ultimately pass all non-infiltrated flood flows through or over the gabions. Earthfill dams for this function however must never be overtopped or they may be destroyed. Construction of very expensive spillways for this scale of dam (20 to 30 feet high) is usually not justified since the nullah's slope is typically quite steep and storage volumes will be small. Therefore sites must be found where adequately sized and elevated saddles behind the dam exist and are useable as natural spills. The object is to make a dam which is pervious enough to allow seepage under and through the embankment rather than to store water for long periods. However, proper compaction and free-draining material should be provided to prevent saturation of the downstream face.

The initial earthfill dam will be located in the Muskeen Nullah north of Turbat. A site survey is required to determine proper height to make one of several possible natural spills. A moderately sized dam at this site is estimated to cost Rs. 180,000 (\$13,000). Ten karezes have mother wells potentially rechargeable from this tributary.

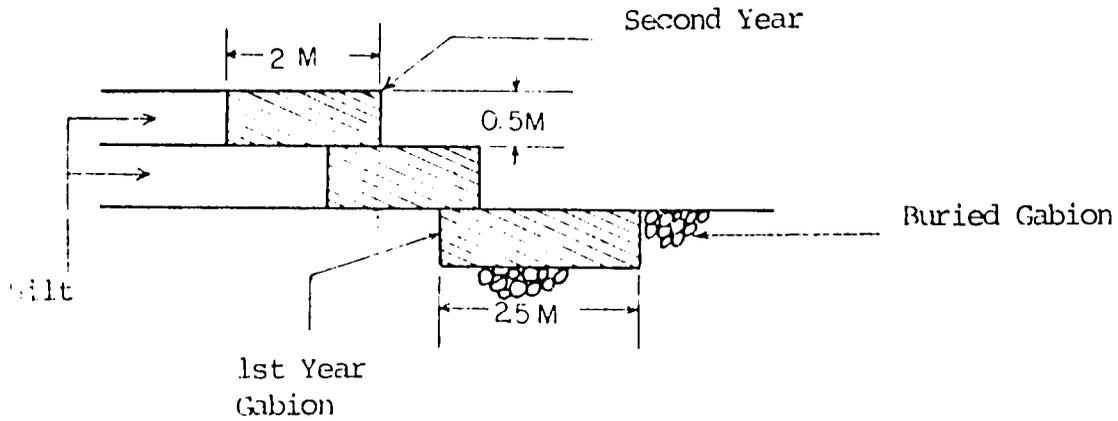
Literally hundreds of other sites suitable for delay action dams exist in the Makran region. The numbers constructed under this Project will depend upon performance and cost during the initial years of the demonstration activity.

FIGURE 7

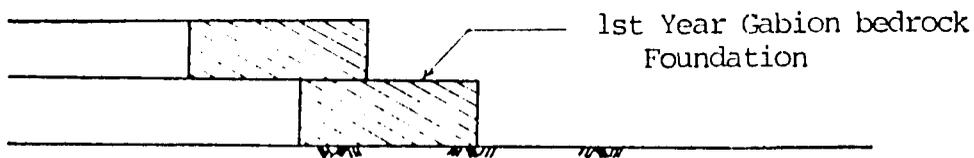
ALTERNATIVE GABION DESIGNS



7 (a): ALLUVIUM FOUNDATION



7 (b) ALLUVIUM FOUNDATION WITH BURIED GABION APRON



7 (c) : GABION ON EXPOSED BEDROCK

The underground drainage or seepage of groundwater through the bed of the nullahs, travelling through the various grades of gravel and cobbles, is estimated to move at a rate of two to five miles per year. Therefore the discharge of karezes downstream of the recharge dams, with five miles distance, should increase after one year of their completion.

The three most important factors governing the selection of suitable sites for the construction of delay action dams, both gabions and earthfill, are the availability of suitable abutments, availability of permeable strata and moderate distance from the karezes.

Reconnaissance of the Niwan Kaur site in Panjgur district shows that rock abutments are available and the soil is permeable for a considerable depth. Also there are sufficient numbers of karezes within five to eight miles distance of Niwan Kaur which will receive enhanced recharge if a gabion dam is installed there. The construction of gabions and earthfill dams will be done through local contractors in Makran division.

c. Medium Scale Water Resources Development

The several PP design teams investigated 20 different sites where medium scale dams could be constructed. These potential dam sites were prioritized into four categories. Niwan Kaur recharge structure, Kil Kaur Dam and Goberd Division Dam were placed in the first category. Of these three, Niwan Kaur has been discussed earlier in the Section dealing with 'Small Delay Action Dams'. The following provides a summary of the technical feasibility of the remaining two priority dam sites, namely Kil Kaur and Goberd.

1. Kil Kaur Dam

The largest of the proposed Projects in the water-sector is the Kil Kaur water storage dam, located approximately 70 miles downstream from the source of the perennial Kil Kaur river.

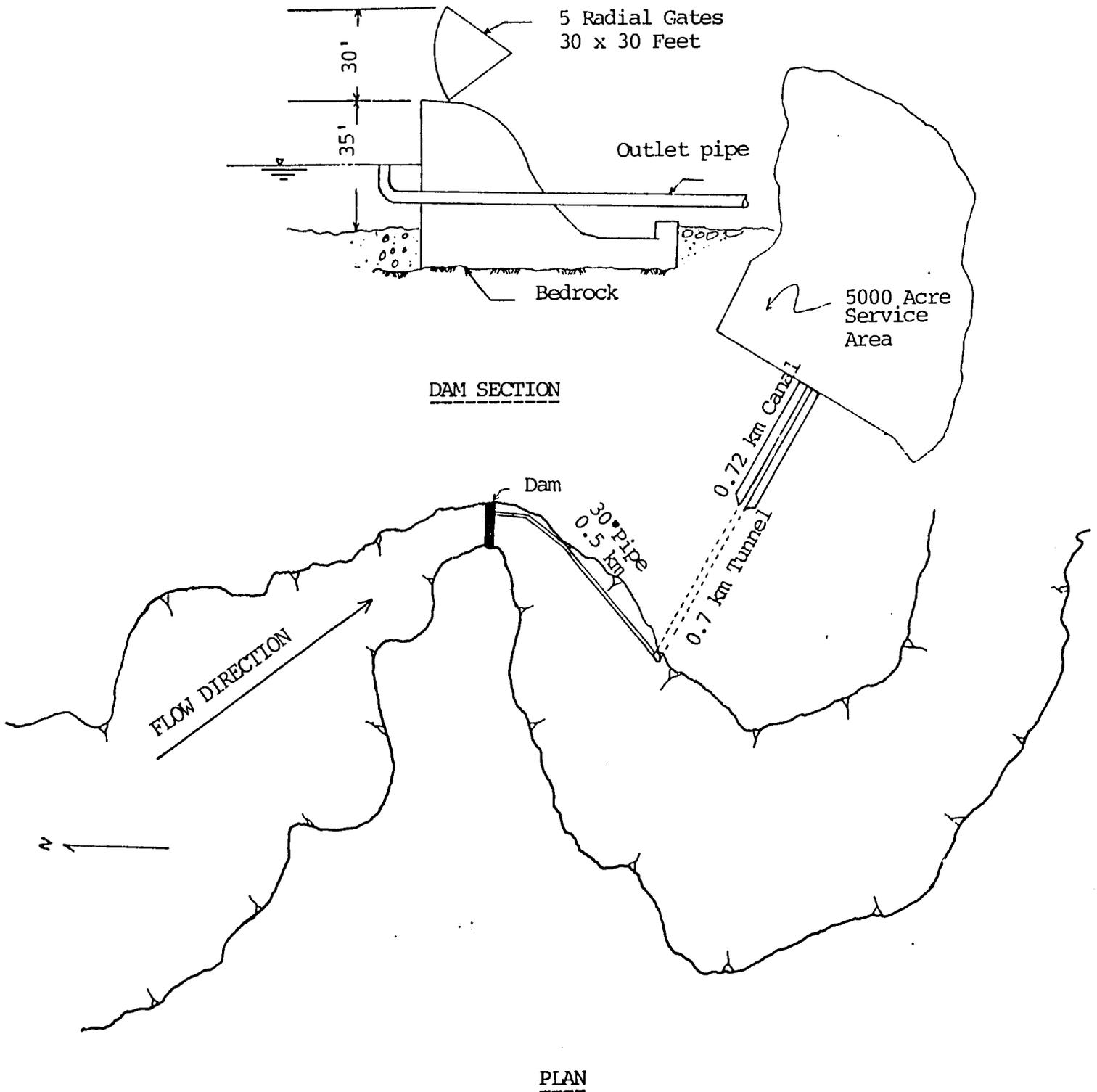
The watershed area of 1100 square miles produces floods approaching 100,000 cfs. Such flows will be substantially reduced when routed through the reservoir behind the dam but a large emergency spillway will still be required. The river's normal perennial base flow is estimated at 5 cfs. (part of which is below the alluvium surface).

A 65 foot high dam at this site will impound more than 10,000 acre feet. Because of the dual annual rainy seasons (January and July), the reservoir can be filled and emptied twice during most years (20,000 acre feet is a small fraction of total annual flow). Considering the 5 cfs base flow plus flood storage, the reservoir should yield irrigation water sufficient for more than 5,000 acres.

Based upon preliminary analysis by the Project Design Team, the site is well suited for a dam of this size. The detailed design investigation will, of course, include borings to determine the precise depth and geologic characteristics of the bedrock foundation and the abutments. The most probable design will be a concrete structure with a gated overflow spillway and stilling basin (Figure 8). In the event that the final design consultant determines that an earthfill design is best, then an offsite spill and stilling basin will be required. A suitable site for such a spillway has been identified at a saddle 1500 feet from the dam location.

FIGURE 8

KIL-KAUR DAM



Another major design consideration is the transmission conduit for delivering water to the command area and the distribution system within the irrigated area. A 30 inch diameter steel pipe is required for the first 1/2 kilometer. At this point a six foot diameter tunnel will be constructed along the route of an existing but abandoned karez tunnel for a distance of 0.7 kilometers. The final main conduit will be 0.72 kilometers of lined canal to the beginning of the command area. The Project will also construct the main trunk line and ten distribution canals (12,000 feet each) to groups of 10 individual farms within the service area.

The Kil Kaur Dam design will involve a preliminary hydrological and soils investigation to be undertaken during the pre-implementation stage of the Project. Based on those results, an A&E firm will be competitively contracted to prepare the final design and supervise construction.

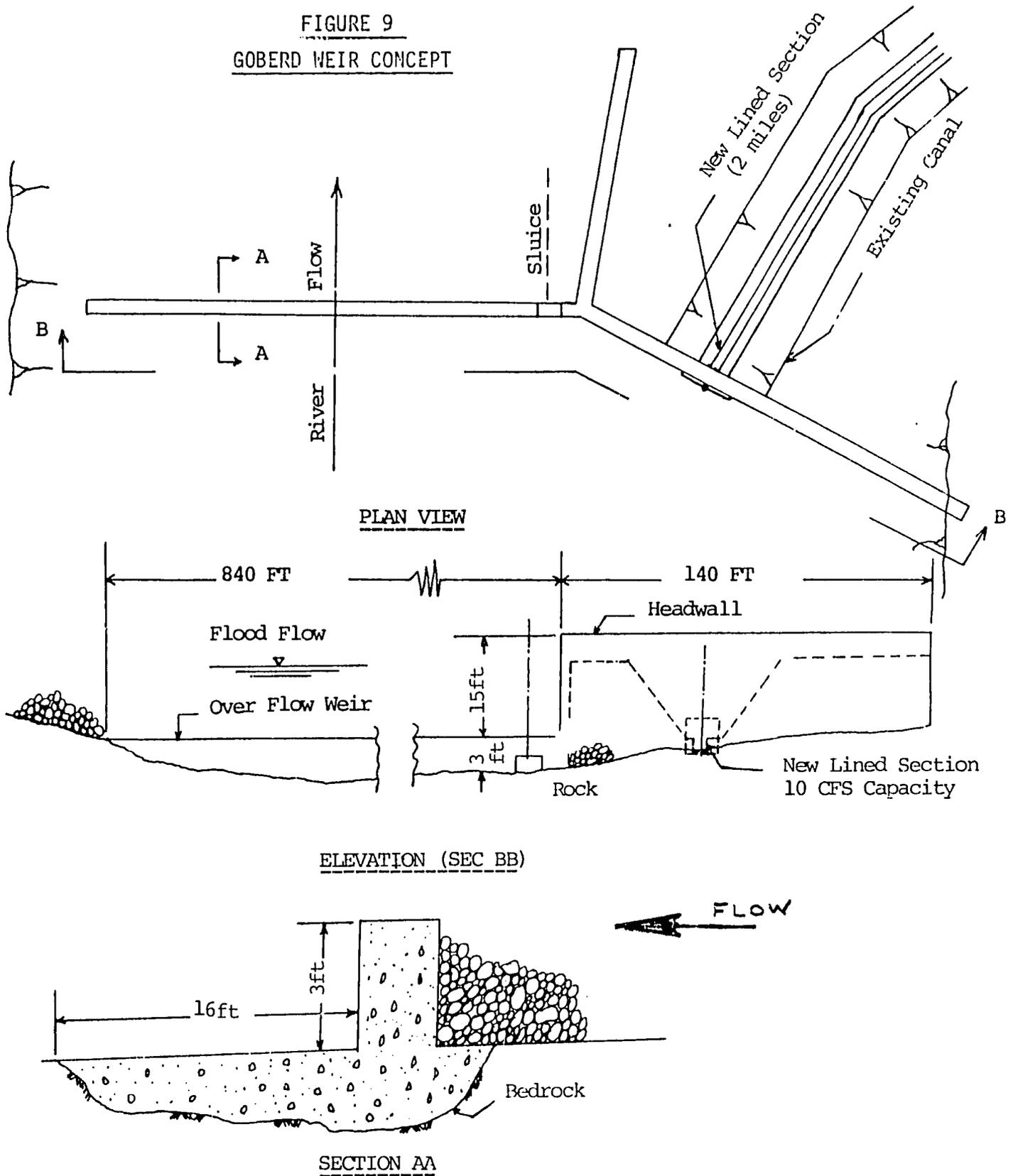
ii. Goberd Diversion Structure

The proposed diversion weir is located on the Nihing Kaur river, approximately 120 km east of Turbat. The length of the river from source to the proposed site is approximately 120 miles with a catchment area of about 2,700 square miles. Annual precipitation of the catchment area is estimated to be 3.7 inches and the mean annual runoff of the Nihing Kaur is estimated to be 118,000 acre feet. Minimum perennial discharge at the proposed site is about 5 cfs. The river bed is a firm shale/stone formation approximately 980 feet wide at the proposed site. A two mile long canal and an earthen bund was once constructed to irrigate a large area of good agricultural land, but the bund was washed-out by floods and the farmers abandoned the diversion. What is needed is a concrete overflow structure which will survive floods as high as 200,000 cfs.

The Goberd Dam will not impound water but will simply divert base flow directly into the canal. The existing canal will be modified by constructing a small 10 cfs capacity concrete or masonry lined section in the bottom of the existing canal (approximately 2 miles long). This will permit all base flow plus a small portion of flood flows to be delivered without heavy seepage losses in the very pervious canal bottom.

The critical requirement of the diversion structure is to keep its crest as low as possible to minimize energy dissipation problems as large floods pass. The preliminary design concept is shown in Figure 9.

FIGURE 9
GOBERD WEIR CONCEPT



The benefits at this site could be greatly increased by raising the dam to the canal diversion level and diverting flood waters at flows up to 700 cfs for Bund type irrigation. This would allow irrigation of at least 4,000 acres rather than the 660 acres of perennial irrigation plus 660 acres of bund type irrigation from the small lined canal section. This however, will require the very expensive stilling basin for both the flood overflow drop and silt removal at the canal inlet. This work therefore should be undertaken later. The design should proceed with this future work in mind so that the initial design can best accommodate the addition, when further construction takes place.

A largely homogenous population group lives in the Goberd command area. The supply of irrigation water to the area will not be an entirely new thing. Waters from Nihing have previously, on many occasions, been diverted and used for irrigation purposes in this same area. No new land or human settlements are involved.

d. Summary

The Project as designed is technically feasible and can be implemented as described, although detailed hydrologic and geologic data are needed before some design concepts can be finalized. The Project technical assistance budget and contingency fund will cover the cost of final design.

a) Karez Improvements:

The Karez drilling activity has already been demonstrated to be feasible and effective. The capping activity requires only standard construction methods and the results are highly predictable. The delay action (recharge) dam activity does involve uncertainty in regard to both quantity of new water produced and reliability of structures required. It is experimental and its scope during later project years will depend entirely upon measured results during initial years. The investment required is not large and the potential results are so important that the effort is clearly justified.

b) Kil-Kaur and Goberd Dams:

The two projects each represent a type of surface water development that is urgently needed in Makran and will be pilots for many smaller projects in the future. Kil-Kaur will be the only major storage dam in the region. Goberd will be the only kaurjo dam in Makran which is not vulnerable to short term cycles of breaching and replacement. Even without considering the benefits to local residents, these projects are justified as demonstrations that irrigation need not depend only upon the karez.

B. ADMINISTRATIVE ANALYSIS

The Project's focus on a Division of Baluchistan, while tending to simplify the administrative arrangements for implementation, raises a special problem: The Province has an established planning, budgeting and implementing mechanism with clear lines of authority and responsibility; districts (administrative units of divisions) have subordinate elements of nation building departments (line agencies) and are staffed to execute Provincial and local projects, programs and activities, again with clear lines of authority and responsibility. The Division, in this case Makran, has authority, vested in the Commissioner, to direct all activities in all districts. However, the Commissioner lacks the means to exercise full authority because there is no nation-building department staff attached to the Commissioner's office -- no planning, implementing or supervisory capacity. These conditions allow district level officials of the line agencies to go their own way. In theory they respond to the provincial authorities, bypassing the Division Commissioner. In practice, since Provincial authorities are 600 km away and communications are intermittent, the District offices are on their own. Supervisory visits by Provincial authorities are rare because of the distance, cost and discomfort involved.

The peculiar problem facing BALAD designers was how to make a reality of the Commissioner's authority over District officials, thereby assuring the participation of line departments in the Project, while keeping a policy role for the Provincial Government in the implementation of this major effort. Discussions were held with key Provincial officials to obtain their insights on alternative modes of project management. The problems of distance and the relative lack of experienced staff willing to be assigned to the Makran Division were of particular concern.

Initially, a Special Development Authority arrangement was considered. The Provincial officials recommended this modality not be used, as their experience with development authorities, even in the Quetta area, was only marginally satisfactory. The major problem in the case of Baluchistan Development Authority (BDA) was the lack of ability of the BDA to attract and retain well qualified personnel to head up and manage various project activities. Yet this had been one of the main arguments for a special authority.

Another approach considered was the establishment of a special project committee at the Provincial level to manage the Project. In this approach, P&D Quetta would chair the committee with the various technical departments serving as members. This is a more traditional approach and has the advantage of making exclusive use of existing line agencies and their resources. But it offers no solution to the problem of distance nor a means to supervise district operations. Since most of the Project activities would be taking place in the Makran Division, this approach was not considered feasible.

After careful consideration and consultation with concerned GOB officials at the Provincial and Divisional level the following administrative arrangements evolved to deal with both the physical constraints of distance and the need to establish a strong implementation and supervision capacity in the Makran Division. A combination of existing management and administrative arrangements was finally determined to be the most appropriate for BALAD.

The key decision was, of course, to establish a staff for planning, design, implementation and monitoring under the Commissioner, Makran Division. This staff, to be called the Project Planning and Management Unit (PPMU) will be in essence, a Divisional Planning and Development Department with operational, technical and financial implementation functions. This will be the Commissioner's principal means of exercising authority in development matters. The PPMU will be made up of: GOB officers appointed to newly established, functional positions; Pakistani specialists contracted to provide technical and management expertise and expatriate U.S. consultants assisting in planning and implementing the road, irrigation and human resource development elements of the Project. All of these individuals will be organized by the Commissioner into one unit responsible to him.

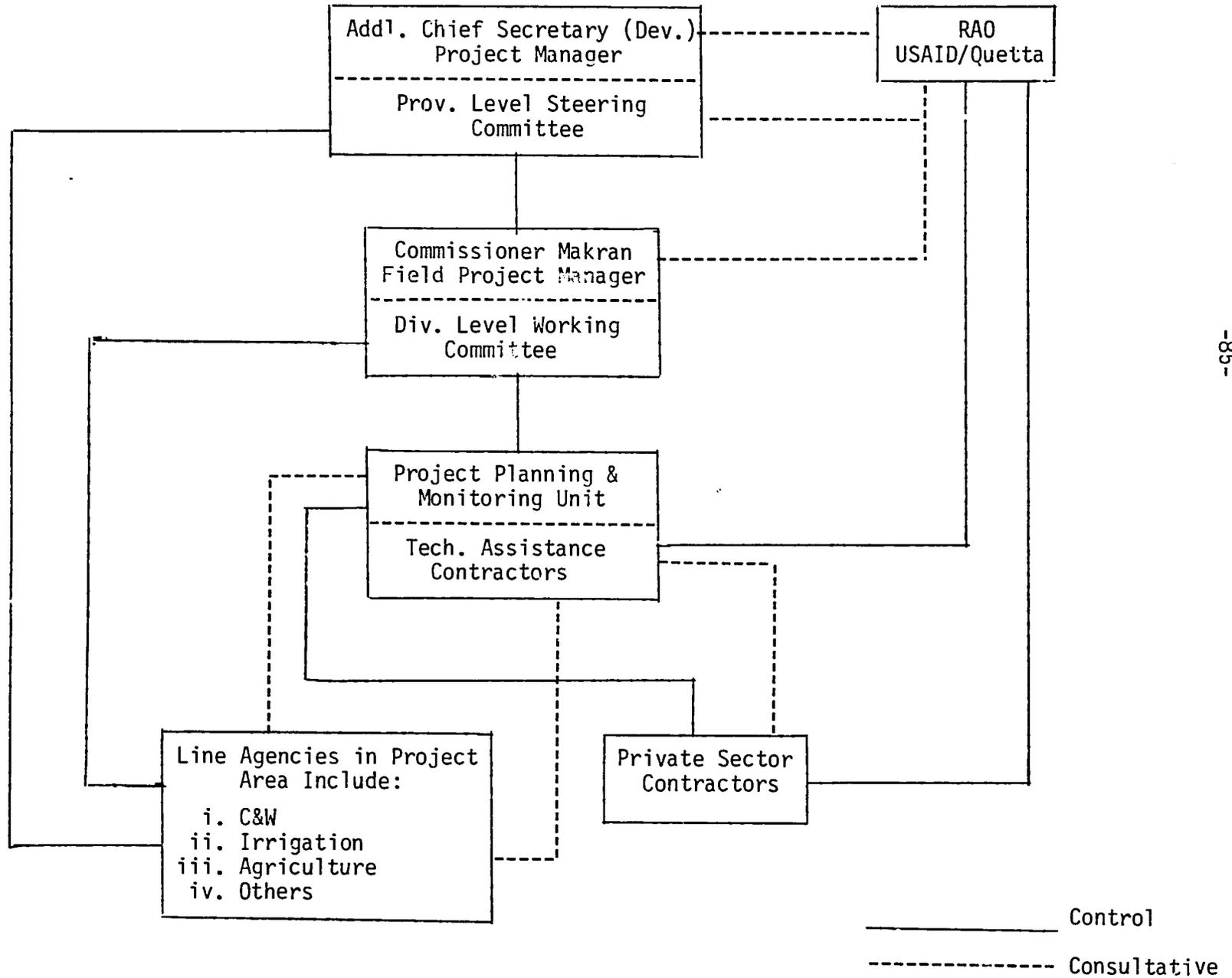
It was determined further that a Provincial Steering Committee, chaired by the Additional Chief Secretary (ACS), (Planning and Development) was necessary to provide policy guidance, and to assure timely support and to make appropriate delegations of additional authority. This committee will include representatives from line departments and the USAID Regional Affairs Office. The ACS or his designee will be overall Project Manager on behalf of the GOB. Recognizing the great distances involved between Quetta and Makran, a second committee, the Divisional Working Committee, was deemed necessary. This organizational structure is shown in Figure 10.

The Divisional Working Committee will be chaired by the Commissioner of the Makran Division, who will also be appointed Field Project Manager. This committee will include representatives from the PPMU as well as representatives of USAID. The Commissioner will be delegated all necessary authorities, including contracting authority, from the Provincial Steering Committee, and the Working Committee will oversee the implementation of all project activities in Makran, thus meeting the need for continuity in planning and supervision in the related geographic areas of the Project.

The PPMU will be responsible for day to day implementation in Makran. This Unit can be staffed initially with only a small number of GOB employees and the Project provides for adequate supplementary staffing by contract employees. The PPMU will coordinate, supervise, monitor and implement project activities directly. The GOB will provide a PPMU Director to head this Unit.

FIGURE 10

BALAD PROJECT ORGANIZATION



The PPMU will also contain a number of GOB positions such as technical section heads. If experienced GOB civil servants are not available to staff these section chief positions, the positions will be designated training positions and newly hired or other less senior GOB civil servants will be assigned. The PPMU has been designated to permit the contract staff to undertake implementation activities regardless of the status of the placement of GOB civil servants. As newly hired GOB staff are assigned to the PPMU, the contract staff will provide them on-the-job training, thereby strengthening the institutional capacity of the Division to continue development activities beyond the end of the Project. Because implementation will rely primarily on the PPMU Contract Staff, the Project will not suffer for lack of trained, experienced personnel in the PPMU.

Technical assistance has been carefully tailored to provide the minimum amount required for implementation, technology transfer and training. The planned levels represent a significant reduction from the levels recommended by early design teams, and have evolved through careful Mission review, and deliberations with the GOB. Four expatriate staff are planned for a total of 10 person-years. One economist/regional planner (2 years) will assist the P&D Department Quetta. Two engineers (total 6 years) one for road and one for water activities are planned for the PPMU. One irrigation agronomist (2 years) is planned for the PPMU during the 3rd and 4th year of the Project. These represent minimum levels of expatriate technical assistance staff and make maximum use of Pakistani staff. While the senior road engineer will be designated Chief of Party for purposes of the contract, the planner/economist in Quetta will be substantially independent of him in operational sense.

This is necessary because of the distances and organizational dissimilarities. The Chief of Party will be responsible to the Commissioner. The Planner/Economist will be responsible to the ACS (Planning and Development).

Relationships between P&D, Quetta and the PPMU will be managed by the ACS and the Commissioner in Makran.

The selection of these administrative arrangements provides the most feasible and practical administrative arrangement. These arrangements, already proven viable in the Punjab, provide both high level oversight and spot review of Project activities, taking into account the constraints peculiar to Makran. The PPMU will not put undue strain on scarce GOB staff resources. Both technical assistance to P&D Quetta and the PPMU should help the GOB plan and manage development projects other than BALAD itself, thus providing development benefits Province-wide. Administratively, the major hurdle facing the Project will be bringing the key district line departments (C&W, Irrigation & Agriculture) under the direct control

of the Commissioner. These departments are unaccustomed to either receiving or providing effective supervision, and the overall conduct of business will have to change. In the process, vested interests may be threatened and a period of adjustment will undoubtedly be needed. However, the Commissioner's authority to direct operations in the Division is clear and will be strengthened by the Steering Committee. The PPMU will expand as necessary to effectively monitor, supervise and, as necessary, implement Project activities which will be carefully planned and scheduled to allow for effective supervision.

All of the administrative managements for the Project are consistent with GOP and GOB law and practice. They are sufficiently flexible to allow for changing circumstances and to meet unforeseen problems. Sufficient authority is vested in the ACS and the Commissioner to assure the active participation of key line agencies. The Project is, therefore, administratively feasible.

C. SOCIAL SOUNDNESS ANALYSIS

Since Project activities are concentrated in Makran, that division is the focus of the social analysis. Additional analyses will continue to be carried out during Project implementation in conjunction with research, monitoring and evaluation.

1. Overview of the Makran Social and Physical Environment:

Makran is one of the four divisions of Baluchistan and borders Iranian Baluchistan to the west, Kalat Division to the north and east and the Arabian Sea to the south. Makran is one of the critical areas in South Asia. Most of Pakistan's sea coast lies in Makran. The Makran coast, including the Iranian Makran Coast across the border, constitutes about 1,000 miles of the Persian Gulf and Arabian sea coasts.

Proceeding from the sea coast -- south to north -- the three most important valleys and river systems are the Dasht, Kech and Rakhshan which are the main sources of irrigation and drinking water for most of the people in the three districts. The rivers from which the valleys take their names are the sources of sustenance for all types of life in Makran. Nearly 500 karezes and kaurjos irrigating over 70,000 acres of land in Makran Division depend on these rivers for their discharge. The majority of Makran's population lives on the banks of these rivers.

a. Ethnicity and Social Structure

Baluchistan means the country, the land or the place of the Baluch people or tribes. The present province in Pakistan (as also in Iran) took the name in the 14th or 15th century. Makran, along with the other states of Kharan, Las Bela and Kalat, were

part of the Baluchistan States Union under the domination of Khan of Kalat who himself was under British domination in the late 19th and early 20th centuries. Makran became part of Pakistan in 1947 and in 1955 it was merged with the Province of West Pakistan. It became a District of the restored Province of Baluchistan in 1970.

Most of Makran's population is of Baluch extraction. The Baluch have historically been a nomadic pastoral people. Certain tribes and individuals came to settle on the banks of Makran's rivers and engaged in agriculture by using the river waters. Makran still has descendants of almost all the major Baluch tribes, but tribalism does not hold sway.

Irrespective of tribal origin or affiliations, the remaining nomadic people, are called "Baluch" and the settled, mostly agriculturists, are called "Shahri". The Baluch are considered to be the standard-bearers of Baluch customs and traditions (Baluchi) and all other groups aspire to emulate these customs and traditions. In recent times the spread of education, emigration and availability of work and travel opportunities in other parts of Pakistan as well as in the Gulf States have weakened "Baluchi" even among the most traditional pastoralists. The forces of Islam, Pakistani nationalism and Baluch nationalism have also all affected "Baluchi", in different, mostly adverse, ways. Many concepts of "Baluchi" conflict with religious laws and Pakistani civil laws and many concepts encourage tribalism.

Besides Baluchi customary laws, the Islamic laws (Shariat) of Haddood and the government civil laws (criminal law special provision ordinance 1968) are all simultaneously operative in Makran.

b. Leadership/Authority

Although today no tribalism exists in Makran and there are no chiefs as such, descendants of the old chiefs and ruling families still constitute the most influential group socially and politically and it is from their ranks that the local leaders come. During the last 10 to 15 years increased job opportunities, particularly in Oman, have enabled former slave and poor tenant classes to buy land in Makran and pose a challenge to the existing socio-political and economic structure. In rural areas the traditional leadership still dominates but even there changes have started taking place. Many ordinary Baluch who worked and lived in the Middle East for many years have now returned to Makran to provide economic and political leadership.

The Government-introduced union council system has not provided an alternative to the traditional leadership but has tended to merge with it. In major population centers the individuals who represented Makran during different regimes in the recent past also seem to be in positions of leadership under the present union council system. Hundreds of karezes have hereditary leaders called Sarrishtas. These people provide social, economic and political leadership at the grass roots level, since it is

the social and economic power of the present or past Sarrishtas which enabled them to initiate and maintain the karez system. Any agricultural development activity in the existing oases will have to be carried out through these leaders and their associations and in the newly settled agricultural areas similar leadership patterns will emerge as a matter of long-standing customs.

c. Language and Religions

Baluchi is the predominant language spoken in the Makran Division. In this respect it is uniquely homogenous because, even the Baluchi dialect, Makrani, is the same throughout the Division. The Baluch of Makran are predominately but not exclusively Sunni Muslims.

d. Land and Water Resources

The total area of Makran is 5,457,400 hectares and has numerous fertile valleys. Soils, for the most part, are clay-silt, sandy-silt and sandy and, with irrigation, are fit for cultivation. The Division has over 500 karezes uncounted kourjos and dozens of big and small, seasonal and perennial rivers as water sources for domestic use and irrigation. The Division has 32,908 hectares currently under various agricultural crops, has an animal population of 1,676,170 and produces 66,980 metric tons of fish annually. The main crops grown under irrigated conditions are dates, lucerne and other fodders, rice and vegetables. Bunded rainfed agriculture is found throughout the Division, wheat and sorghum being the most important crops grown. Most of the valleys and mountains produce some vegetation for grazing. The Zamuran area along the Iranian border and the Rakhshan valley in the north of the Division are the most important animal producing areas in the Division.

e. The Organization of Production in Agricultural and Pastoral Areas

Nomads account for less than 10 percent of the Makran's population. Those predominantly engaged in pastoralism usually combine it with dryland, bunded agriculture or seasonal wage labor. The very low rainfall and extreme hot summer temperatures make the growth of grasses and other vegetation difficult. Either as independent operators, tenants or farm laborers, perhaps as much as sixty percent of the Makran population is engaged in some form of irrigated agriculture. Another approximately ten percent of the population is engaged in some form of dryland agriculture. Much of dryland farming in Makran is concentrated in Dasht area of Turbat and Gwadar districts and in different valleys in Panjgur district.

Except in the coastal fishing towns, the essence of Makran's livelihood is karez irrigation. In fact, Makran is one of the only few areas in the world where investment in karezes is still taking place. For example, 30% of all the karezes in Panjgur district were started and/or finished

during the last 10-15 years. The basis for the population centers of Turbat, Panjgur, Mand, Tump and Buleda is the karez organization. Karez irrigation is centered around the leadership of the Sarrishta, head man of the KOA. He is the person responsible for assessing and collecting from the members the karez construction and maintenance costs, establishing watering schedules and mediating disputes. Most Sarr'shtas keep record books recording water shares, expenses and contributions. Individuals own shares of water measured in units of time called hangams. Shares are inherited and distributed among all the children. They become sub-divided to an extent that an individual may own only 10 minutes (or even less) of water in a week. Individuals buy into karezes by purchasing water shares, either when the karez is originally constructed or from a shareholder any time after it is completed.

The majority of work on irrigated farms in Makran is done by tenants or hired laborers. Even an owner of an acre of irrigated land will normally hire others to work on his land. This is in contrast to dryland farming where mostly family labor is used. Specialized herding groups in Makran tend to be organized in small camp clusters made up of five to eight families. They usually move within a well-defined territory with a radius of 100-150 kilometers. Many herders converge on Panjgur, Turbat and other oases at the time of date harvest and supply their labor for harvest work.

f. Factors Affecting Labor Availability

There are two main trends in the past decade that have affected labor availability in Makran's rural areas. They are the increasing growth of the urban/oasis population vis-a-vis the desert areas and the exodus of male migrants to the Gulf States. Of the two, the far more significant is the Gulf migration, since it not only affects labor availability but results in considerable amounts of remittance cash entering the Makran economy. A fair estimate of the number of male Makranis working in the Gulf is 20,000-25,000 or approximately 20 percent of the effective male labor force over the age of 18. In the past two years, however, the rate of migration to the Gulf seems to have slowed down and there is some indication that Makranis are returning to their homes.

Nevertheless, Gulf migration is still significant and has had both positive and negative effects on Makran agriculture. On the positive side is the remittance factor, allowing farm families to finance agricultural investments. Negative effects are seen in relative labor shortages resulting in labor costs in Makran at least 20 percent higher than elsewhere in Baluchistan. It is reported that even farmers with sufficient cash are still unable to find sufficient labor at what they deem reasonable wages for farm work. While the impact of labor loss on karez irrigation and pastoralism in Makran has not yet been documented, evidence from elsewhere in the Middle East indicates that there may be serious costs. For example, recent emigration from Oman has resulted in a

decline in karez maintenance in Oman and in many cases in the demise of entire karez systems. Similarly the loss of labor in Pastoral areas of Iran has, in some cases, completely depopulated entire regions of Iran.

g. Social Differentiation and Distribution of Productive Assets

As indicated earlier in this analysis, there is a considerable number of landless families in Makran who are either farm or menial labors, fishermen or sharecroppers. Estimates are that this segment of the society makes up from 25-30 percent of the entire Makran population. It should be noted, however, that recent employment outside of Makran provides considerable opportunities for social mobility. In this respect, the availability of jobs in the Gulf has had a positive impact on the poorer segments of the population both in providing employment and in increasing wage scales in the local market. Because of the labor shortages in Makran, the poor are in a better bargaining position for their labor than elsewhere in Baluchistan.

Approximately twenty-five percent of the families in Makran own shares of karez water, and perhaps another five percent own shares of kaurjo water. Among those owning shares in water, the distribution tends to be accepted as fair and equitable. The figures below illustrate the typical distribution of water and land (averages of a sample of 20 karezes) in Turbat district.

IRRIGATED LAND OWNERSHIP PATTERNS IN MAKRAN DIVISION

<u>Number of individuals</u>	<u>Hangams (Time Units) owned by each individual</u>	<u>Estimated acreage owned by each individual</u>
6	0.125	0.67
9	0.25	1.34
22	0.5	2.68
11	1.0	5.36
<u>2</u>	<u>1.5</u>	<u>8.0</u>
50	28	150

h. Role of Women in Makran

Land and water rights in Makran are also owned by women, and under Islamic law they inherit these resources from their fathers. However, where land and water are owned by women their brothers, sons or husbands often represent them in the KOA. Except among tenant farmers, women usually do not work manually in agriculture.

An important source of non-farm income among women in Makran comes from palm mats, bags and other palm products made by women who earn cash from the sale of such items. After fish, dates, and labor, palm products are the most important exports from Makran. In the coastal areas, women also engage in fishing, fish marketing and other retail business activities. Outside these non-farm activities, women's access to employment and participation is extremely limited.

2. SOCIAL FEASIBILITY OF THE PROJECT

a. Water Components

In the two dam/weir irrigation schemes examined for social feasibility, the design team found that the prospective beneficiaries had the necessary community organization, traditions of cooperation, and willingness to participate to support the conclusion that these schemes are socially sound. Moreover, land distribution, as it is understood by the beneficiaries, is equitable, requiring no redistribution to meet the criteria established for selection.

The same conditions hold in KOA's where a particularly strong tradition of equity and fairness in the distribution of scarce water has evolved and proven effective over the centuries. There is no impediment in the social structure to the introduction of efficiencies through the application of proven technologies. However, in the long run with the introduction of these technologies and a wider market for Makran's products, there will be unavoidable changes in the relative shares held by KOA members. In brief, it must be expected that those who act most quickly to increase profitability will have and use opportunities to acquire a greater share of the water and lands, while those who hang back will be tempted to sell. These changes already occur but their pace will probably accelerate as a result of the Project. In economic terms such changes are desirable but the social outcome is unpredictable. By increasing the information available to all KOA members and other water users, the Project will give all beneficiaries a more or less equal chance to change and grow, thereby inhibiting the pace of social change through the buying and selling of shares. This will mitigate but not eliminate the social risks which must be taken in the interest of development.

b. Road Components

Road improvements are at a par with increased water supplies in terms of the perceived needs of the people of Makran. The improved access to markets, lower input prices and increased mobility brought about by road improvements will undoubtedly stimulate investments in agriculture and promote adoption of new technologies. Since roads will benefit 90% of Makran's population (all except the nomads) in some

degree, there are no social or cultural impediments to the successful implementation of the road component. Nor will there be any abrupt or unmanageable social changes as a result of improved roads.

The technology to be employed -- capital intensive upgrading and maintenance -- is consistent with the labor-short situation in Makran. The Project meets labor scarcity by providing for work by contractors when the C&W Department capacity is strained. The likely division between C&W force account and contracted work will result in relatively more of the road improvements being done by contractors and most of the maintenance by C&W. In this way, non-Makrani labor and management will be used in periods of peak activity on one-time efforts and C&W capacity will suffice for the remainder. Since the vast majority of the improvement work will be done in unpopulated areas, by teams working out of temporary engineering groups, there is little likelihood of conflict between contractors and the local population. Moreover, there is a long history of using outside labor in Makran.

c. Institutional Development

See Administrative Analysis, Section V.B. above.

d. Conclusion

Local conditions accommodate the Project activities well. These activities are highly desired by the population of Makran and there are viable traditions and social/economic institutions through which to implement the Project. Benefits from roads will reach the vast majority of the populace while water related activities will benefit directly thousands of farm families and, indirectly, tenants, sharecroppers and laborers, through increased employment opportunities and higher productivity. In this sense, the Project will tend to sustain the higher wage scale extant in Makran. However, this tendency may be offset to some degree by a reduction in employment opportunities for Makranis in the Gulf. Any social changes resulting from the Project e.g., higher wages, shifting land/water ownership patterns will be marginal and gradual. The Project is socially sound.

D. Economic Analysis

Road improvement and water resource development in Makran will bring significant socio-economic benefits that are essential for national integration and development. Cost benefit analysis can be done for specific Project components but total benefits also include several unquantifiable benefits including :

- Integrating Makran into the Pakistani national political and economic mainstream, thus contributing to a major GOP nation-building objective;

- Opening the area to mineral exploration and industrial development;
- Improving access to health and education services;
- Increasing incomes of farmers, businessmen and fishermen by improving the roads and communications for less costly marketing of their products and increased availability of agricultural inputs and consumer goods;
- Multiplier effects from increased production and income;
- Facilitating other donors' investments in the development of Makran and adjoining areas of Baluchistan;
- Increased political stability in the area by demonstrating GOP concern and development activity; and,
- Creating conditions for economic opportunities for Makran area people working in Oman and other Gulf States.

With respect to the water resources component, the following secondary benefits are expected:

- An increased sense of security among the project area farmers due to the availability of more reliable water supplies;
- Increased production of fruits and vegetables contributing to a more balanced diet;
- Increased availability of domestic water supplies; and,
- Increased employment opportunities in construction and maintenance of the project;

1. General Methodology for Analysis

For each proposed road and water component element, analysis of economic feasibility has been undertaken to determine if the proposed investment is sound. The economics of each element have been appraised by applying the discounted cash-flow technique. Net Present Worth, Benefit-Cost Ratio, and Economic Internal-Rate of Return have been calculated as measures of profitability of investment. A Project element is considered economically feasible if Net Present Worth (NPW) is Positive, Benefit Cost Ratio (B/C Ratio) exceeds unity or the Economic Internal Rate of Return (IRR) is high compared with the average rate of return on investment in the country (assumed to be 15% in Pakistan).

Sensitivity analysis is performed on each component by (1) Reducing benefits by 30% (2) increasing costs by 15%; (3) reducing benefits by 30% simultaneously with increasing costs by 15% and observing the change in internal rate of return.

2. The Roads Component

a. Background

The current need to improve roads for the economic development of Makran is undeniable. At the present rate population growth rate, Makran will have a population of over 1 million by the end of the century. This increased population will inevitably increase future traffic.

An estimate of existing annual food import quantity of 376,000 tons for Makran was provided by the Food and Agriculture Department/Makran at Turbat. Industrial import quantity projections of from 206 tons in 1983 to 771 tons in 2009 were given in the NESPAK Coastal Road Feasibility Report prepared for C & W Department/ Baluchistan (Oct. 1983). (USAID Pakistan determined during the Project design that this road could not be included in the BALAD project due to its high cost -- in excess of \$50 million).

With regard to exports, large quantities of dates are transported and sold out of Makran, mainly in Karachi. This is also the case with dwarf palm and fish products. Besides the roads, the BALAD Project intends to develop irrigation water resources which would result in increased agricultural production. But before anything was known about BALAD, NESPAK projected the future production of various agricultural crops, livestock, forests and marine fish in Makran. These projections provide a basis for the growth of traffic in the years to come.

Inbound and outbound historic freight movement plus growth projections for Makran are given in Table 1. The sources of all basic data are the Bureau of Statistics, P&D, GOB and the Pakistan Census of Agriculture, 1980.

TABLE 1

INBOUND AND OUTBOUND FREIGHT MOVEMENT FOR MAKRAN DIVISION
(Thousands of Metric Tons)

Year	1983	1989	1994	1999	2004	2009
Inbound	397.3	562.0	710.7	894.3	1086.8	1262.3
Outbound	59.5	86.0	116.4	151.2	197.6	241.2
TOTAL	456.8	648.0	827.1	1045.5	1284.4	1503.5

ESTIMATED TRAFFIC MOVEMENT GROWTH RATE AT FIVE YEAR INTERVALS

<u>Year</u>	<u>1983-89</u>	<u>1989-94</u>	<u>1994-99</u>	<u>1999-2004</u>	<u>2004-2009</u>
Growth rate (percent)	6.0	5.0	4.8	4.2	3.2

The background information contained in the above referenced reports and in Table 1 (as well as common sense) indicates that the traffic demand will increase substantially in the years to come. BALAD activities, dealing mainly with the development of irrigation sources and agriculture, as well as GOP and other donor efforts to develop agriculture, fisheries and other resources of Makran will certainly generate increased traffic. Accordingly, a conservative average annual increase of 5% in normal traffic has been assumed for analytic purposes.

After a detailed reconnaissance of Makran, the BALAD roads component design team members decided on the following road construction, maintenance and rehabilitation activities.

Maintenance work will be carried out over the following road sections:

1. Bela Awaran 143 Km.
 2. Awaran-Turbat 255 Km.
 3. Turbat-Mand 122 Km.
 4. Gwadar-Turbat 190 Km.
 5. Panjgur-Awaran 190 Km.
- 900 Km.

Rehabilitation work will be undertaken over the following road sections:

1. Bela-Awaran 80 Km.
 2. Awaran-Turbat 240 Km.
 3. Turbat-Mand 120 Km.
 4. Gwadar-Turbat 160 Km.
- 600 Km.

Design and construction of a 55 km. road over two bottlenecks on Bela-Awaran road will be undertaken.

The traffic counts on any section of roads are generally considered to be an important measure to justify investment on road construction. ADT counts conducted by the BALAD Project Design Team are given in Table 2. These counts were taken over a brief period and they are probably understated because truck traffic, which moves mostly at night, was not fully counted.

TABLE 2

ADT OVER DIFFERENT ROAD SECTIONS IN MAKRAN

<u>SECTIONS</u>	<u>DISTANCE</u>		<u>Average</u>	<u>ESTIMATE</u>	
	<u>Km.</u>	<u>Miles</u>		<u>Daily</u>	<u>Traffic</u>
			-----	ADT	-----
1. Bela-Awaran	143	(88)		175	
2. Awaran-Hoshab	155	(96)		150	
3. Hoshab-Turbat	100	(62)		150	
4. Turbat Mand	122	(76)		250	
5. Turbat-Gwadar	190	(118)		80	
6. Panjgur-Awaran	<u>190</u>	<u>(118)</u>		25	
TOTAL:	<u>900</u>	<u>(658)</u>			

b. Cost Benefit Analysis

Project costs include the capital cost of construction, the cost of construction equipment (commodities), technical assistance, and the annual maintenance cost of each type of road.

The economic benefits are confined to the direct savings in vehicle operation costs including savings in passenger and driver time. The basis for these benefits is detailed in Annex 15. They consider changes in traffic, POL and tire consumption, vehicle maintenance, and take into account the value of bus and truck crews' and passengers' times.

c. Economic Feasibility of Roads Component

The discounted annual cost benefit-and cash flow streams over a 20 year period beginning in 1984 are given in Annex 15. At 15% opportunity cost of capital the net present worth (NPW) is \$13.7 million. The B/C Ratio is 2.9 and the Economic Rate of Return is 29 percent which is a an excellent return considering the remoteness and general economic backwardness of Makran. These quantities are summarized in Table 3. The analysis establishes that the component, as planned, is economically feasible ensuring an adequate rate of return on the investment involved.

TABLE 3
SUMMARY OF ECONOMIC ANALYSIS
(ROADS SECTOR)
(\$000'S)

Item	Present Value	Internal Rate of Return
Costs	14,169	With estimated Benefits & Costs =28.7
Benefits	27,925	
Net Benefits	13,756	With benefits decreased 30% =21
B/C Ratio	2.9	With Costs Increased 15% =26
		Benefits decreased by 30% and costs increased by 15% =18

3. The Water Component

a. Water costs

In Makran, water for agriculture and domestic use is available from four primary sources. Traditionally people have depended upon karezes, bunds, and kaurjos. During the last 10-15 years, open and bored wells with diesel and electric pumps have been introduced although social and economic factors greatly constrained their spread after an initial popularity. Generalized estimates of water costs from these different sources are discussed in Annex 15.

b. Benefit Cost Analysis

A discount rate of 15% (the opportunity cost of capital in Pakistan) is used for calculations of B/C Ratio, IRR and NPV. Throughout the analysis it is assumed that all prices on both the cost side and the benefit side will rise uniformly in the same proportion so no adjustments for inflation are needed.

A detailed benefit cost analysis for each of the activities proposed for the water sector (annual quantities for a 20 year stream of costs and benefits -- 1984 to 2003) are given in Annex 15. A summary of these quantities is given in this Section.

1. Drilling inside mother wells of karezes:

(a) Cost Estimates:

The average cost of drilling inside mother wells is Rs. 25,000 per well. The number of wells to be drilled and the associated annual costs are given in the Annex. The totals are given in Table 4.

(b) Benefits:

The benefits from these operations is estimated as the value of the additional water produced as determined by the karez water rental market in Makran. Water transactions take place on the basis of time units, which in a 28 unit karez is a six hour water turn in a weekly rotation. The rates current in Makran are Rs. 3000 (\$222) per unit per year (\$6216 for Karez of 28 units).

If the one cfs karez flow is increased by a modest 15% due to drilling operations a benefit of \$933 per karez per year would result.* The benefit and Cost streams are shown in Annex 15 and summarized in Table 4.

TABLE 4
SUMMARY OF ECONOMIC ANALYSIS
DRILLING IN MOTHER WELLS
(\$000'S)

Item	Present Value(15%)	Internal Rate of Return	
Costs	106	With estimated Benefits & Costs=	107%
Benefits	352	Benefits Decreased 30%	= 56%
Net Benefits	246	Costs Increased by 15%	= 18%
B/C Ratio	3.3	Benefits Decreased by 30% and Costs Increased by 15%	= 15%

* Actual experience indicates that flow is often increased by 50% however, there is also a chance of no increase. A conservative 15% average improvement is therefore assumed.

ii. Karez Capping:

A karez in Makran has an average of 70 wells or vertical shafts. When there was no labor shortage in Makran and labor was available at extremely low wages, costs of periodic cleaning and maintenance of tunnels was far lower than the costs of sealing or capping the wells. During the last 10-20 years new job opportunities, particularly in the Gulf, have attracted labor from Makran, resulting in labor scarcity. Moreover, the specialized laborers from Iran and Afghanistan who used to clean and dig karezes are also in short supply and the annual cost of traditional karez maintenance is approaching a prohibitive level (Rs. 25,000 to 100,000 per year).

(a) Karez Capping Costs:

Capping requires one of three designs, depending upon the degree of erosion. In order to determine a weighted average cost for capping karezes of various ages, it was assumed that 20% would be type A (little erosion), 40% type B (moderate erosion) and 40% type C (badly eroded). This implies a cost per average karez (70 wells) of Rs. 190,000. The detailed schedule of total annual costs is given in Annex 15 and are summarized in Table 5.

(b) Karez Capping Benefits:

The benefits of karez capping are subsequent savings in costs of cleaning and maintenance. The karez flow is reduced as a result of debris accumulation in the tunnel if cleaning is delayed. Besides the labor costs savings the karez water flow will increase and is expected to be more regular and dependable as a result of well capping. But such benefits may vary drastically and are not included in the estimate of benefits which are confined to savings in maintenance labor costs. The average annual karez maintenance costs are estimated as Rs.55,000 (\$4,075). It is estimated that 90% of this average cost, or \$3,668 per karez, will be saved every year after capping.

The benefit cost and sensitivity analysis in Table 5 indicates that this activity is economically sound.

TABLE 5
SUMMARY OF ECONOMIC ANALYSIS
CAPPING OF KAREZES
(\$000's)

Item	Present Value(15 %)	Internal Rate of Return(%)
Costs	789	With estimated costs & benefits = 33
Benefits	1268	Benefits decreased by 30 % = 20
Net Benefits	479	Costs increased by 15 % = 27
B/C Ratio	1.6	Both benefits decreased by 30 % and costs increased by 15 % =16

iii. Delay-Action Dams

As discussed in the technical analysis, the project will construct small check dams or delay action dams to enhance the recharge into the aquifers that feed karezes. Wire cage gabions of various designs and small earthfill dams will be constructed.

(a) Costs of delay action dams:

The cost estimates of each type of structure along with their numbers and years of projected construction are shown in Table 6.

TABLE 6
COST OF DELAY ACTION DAMS

Fiscal Year	<u>Number of Structures</u>		Cost of Gabions	Cost of Earthfill	Total Cost (1000 \$)
	Gabions	Earthfill			
86	3	1	33	15	48
87	10	3	111	44	155
88	10	4	111	59	170
89	12	4	133	59	192
Total	35	12	388	177	565

(b) Delay Action Dam Benefits:

The gabion structures will be located to recharge an average of at least four karez. It is assumed that an average karez now produces one CFs, and that each of the structures will result in an increase of 10% in the flow of each karez. Using current water rentals we get the following figures:

- Annual value for one CFs 28 unit karez = \$6,216
- Value of additional water due to a recharge structure in a karez = \$621.6
- Value of additional water due to a gabion recharge structure in four karezes = \$2,486 = annual benefits due to a recharge structure.

(c) Economic Analysis for Delay Action Dams:

The detailed economic analysis is given in Annex 15. The summary given in Table 7 establishes the economic soundness of this activity.

TABLE 7
SUMMARY OF ECONOMIC ANALYSIS
DELAY ACTION DAMS
(\$000's)

Item	Present Value(15 %)	Internal Rate of Return(%)	
Costs	330	Estimated benefits & costs	= 25.3
Benefits	441	Benefits decreased by 30 %	= 15
Net Benefits	111	Costs increased by 15 %	= 21
B/C Ratio	1.3	Benefits decreased by 30 % and costs increased by 15 %	= 12

iv. OFWM activities: Under on-farm water management activities the Project proposes to include watercourse improvement and land levelling. Along with developing new water resources BALAD will also finance activities to reduce water loss in existing irrigation systems. The design team, in its reconnaissance survey of karezes, estimated as high as 60% losses of water due to defective and inefficient water courses. These losses can certainly be reduced by improving the water courses. The Project proposes to undertake the improvement of 144 water courses in Makran.

(a) Cost of Watercourse Improvement:

The average cost of improving a watercourse is estimated at \$9,000 and land levelling at \$15 per acre. The number and yearly distribution of this work is given in Annex 15.

(b) Benefits of On-Farm Water Management:

Improved watercourses will reduce seepage and costs of maintenance of the watercourses. Reduced losses translate into increased water supply so that more area can be irrigated. It is estimated that improvement in an average karez (one cfs) watercourse will result in a 10% increase in the area under cultivation. The additional 17 acres of land, assumed to have an opportunity cost of zero, will produce \$202 per acre (net value of production) as determined through surveys and interviews in Makran. The benefits per improved watercourse are therefore \$3,434. Land levelling is conservatively estimated to increase yields by 2%.

(c) Economic Analysis:

The annual benefits and costs are given in Annex 15. Table 8 displays a summary of the economic and sensitivity analysis for proposed farm activities and establishes the economic soundness of these activities.

TABLE 8
SUMMARY OF ECONOMIC ANALYSIS
ON-FARM WATER MANAGEMENT
((\$000's))

Item	Present Value(15%)	Internal Rate of Return(%)	
Costs	993	Estimated benefits & costs	= 35.4
Benefits	1728	Benefits decreased by 30%	= 22
Net Benefits	735	Costs increased by 15%	= 30
B/C Ratio	1.7	Benefits decreased by 30% and costs increased by 15%	= 18

v. KIL KAUR Medium-sized Dam

The Kil Kaur area lies about 60 miles east of Turbat, on the main Mand-Turbat-Awaran- Karachi road. An estimated 25,000 acres of irrigable land is available on the left bank of the river. The command area of the proposed dam will be 5,000 acres. Currently about 150 acres of land is dry farmed in wheat, barley, sorghum, pulses and fodders. The villagers also raise sheep and goats. Agricultural and animal productivity is extremely low because of low rainfall. The returns from land are too low to provide even the minimum subsistence to the farm population. This is why many of the male members work and live at least part of the year in Hoshab, Turbat, Awaran and even as far as Bela and Karachi. The scarce, irregular and unreliable rainfall restricts agricultural production and development in the area. The soils are excellent for crop production if water is available. Climatic conditions are also favorable for many types of agriculture. The existing land utilization farm size, and cropping patterns in the Kil Kaur Dam command area are given in Annex 15.

(a) Project Costs:

The costs of dam construction including AE services and command area development is \$2.52 million. Operating costs are estimated at \$89,610 per year. Ten percent of these costs will be assumed by the Irrigation Department for operation of the dam. The balance will be paid by the water users for cleaning and repair of water courses in the command area.

(b) Project Benefits:

The benefits of the activity comprise those measurable gains to the economy which can be expressed in monetary terms as well as those benefits which, though socially desirable and of considerable value, cannot be quantified and assigned monetary value. Among the measurable benefits of the project the most important is increased agricultural production through increases in crop area and crop yields made possible by the availability of irrigation water. This benefit is presented in terms of the expected increase in production of crop as indicated by the difference in value added under the "with" and "without" project conditions. Details of this analysis are given in Annex 15.

c. Economic Feasibility - KIL KAUR

The economic and sensitivity analysis summary in Table 9 indicates an excellent Benefit Cost Ratio (2.2). The NPV (2,170,000) and IRR of 33.4 all indicate that this component is economically sound and feasible.

TABLE 9
SUMMARY OF ECONOMIC ANALYSIS
KIL KAUR DAM
(\$000's)

Item	Present Value(15%)	Internal Rate of Return(%)	
Costs	1814	Estimated benefits & costs	= 33.4
Benefits	3984	Benefits decreased by 30%	= 25.5
Net Benefits	2170	Costs increased by 15%	= 30.2
B/C Ratio	2.2	Benefits decreased by 30% and costs increased by 15%	= 22.8

vi. Goberd Diversion Dam

Goberd Diversion Dam/Cutoff wall will be constructed on the river Nihing about 117 km west of Turbat near the border town of Mand. There have been attempts several times in the past to divert the Nihing waters to irrigate the Goberd area. As a result of the latest such attempt a large conveyance channel from the river bank to the fields is still intact. The total agricultural land which could be used if sufficient water were available is over 11,000 acres. The site, however does not allow a large storage reservoir. The project will rather divert the rivers base flow plus a very small fraction of the flood flow while not obstructing the extremely large flood flows which can occur. Only about 660 acres of land will come under perennial irrigation as a result of this project. However, an additional 660 acres will be farmed in a bund type irrigation mode using a small fraction of the flood flows. The lined canal capacity will be 10 cfs. (double the estimated base flow). Annex 15 gives land utilization and present cropping patterns over the 660 acres assumed for perennial irrigation.

(a) Costs of Goberd Diversion:

The diversion - structure will cost 1.1 million dollars and the construction will be completed in two years. The annual maintenance cost will be \$11,000.

(b) Benefits:

The quantifiable benefits in the analysis are confined to the incremental agricultural benefits indicated by the difference in value of production with, and without the project. In order to include benefits from the additional 660 acres of bund type irrigation, these incremental benefits were estimated at 50% of those for the 660 acre perennial area. The total benefits from 1320 acres are shown in Annex 15 and summarized in Table 10.

(c) Economic Analysis:

The excellent net benefits and B/C ratio indicated in Table 10 indicate the economic soundness of this project.

TABLE 10
SUMMARY OF ECONOMIC ANALYSIS
GOBERD DIVERSION DAM
(\$000's)

Item	Present Value(15%)	Internal Rate of Return(%)	
Costs	398	Estimated benefits & costs	= 49.9
Benefits	1372	Benefits decreased by 30%	= 34.7
Net Benefits	874	Costs increased by 15%	= 43.3
B/C Ratio	2.8	Benefits decreased by 30% and costs increased by 15%	= 30

4. Economic Feasibility of the Water Component

Annual benefits and costs for all of the water sector activities combined are given in Table 11. The overall B/C ratio is 1.5 and the internal rate of return is 26.5. Since the IRR is much greater than the 15% discount rate, these activities are economically sound.

5. Economic and Sensitivity Analysis for entire Project

Table 12 displays the annual benefits and costs for the combined Roads and Water Sectors (including commodities and technical assistance). The overall B/C ratio is 1.8 and the IRR is 28.2. This represents an excellent investment in economic terms.

Table 13 displays a summary of the sensitivity analysis for roads and for each water activity as well as the combined water sector. All activities appear to be economically sound (IRR 15%) with costs increased by 15%, benefits reduced 30%, and with both simultaneously changed except for the delay action dams which pass the cost increased and the benefits decreased tests but not when the cost and benefits assumptions are combined.

6. Costs per Beneficiary

Assuming the Project, at a cost of \$45.8 million, will benefit, in greater or lesser degree, 90% of Makran's 650,000 people, the LOP cost per beneficiary will be roughly \$75.00. In gross terms, roads will account for \$28.00 of the per capita cost, spread across 615,000 people, while the roughly 132,000 direct beneficiaries of investments in water will absorb on an average of about \$82.00 per capita during the life of the Project. The beneficiaries of the medium sized surface water sub-projects will account for costs of roughly \$300.00 per capita. Thus, at the lower end of the scale, those who benefit only from improved roads will account for only \$28.00 in Project costs, while those who benefit from having access to newly irrigated lands and better roads will absorb something more than \$300.00 per capita and the average beneficiary will account for \$75.00 of Project resources.

TABLE 11

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR WATER SECTOR
(# '000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2	264	5	-259
3	703	84	-619
4	2767	274	-2493
5	3143	832	-2311
6	2530	1721	-809
7	156	2059	1903
8	156	2282	2126
9	156	2649	2493
10	156	2983	2827
11	156	3076	2920
12	156	3240	3084
13	156	3343	3187
14	156	3527	3371
15	156	3720	3564
16	156	3922	3766
17	156	4138	3982
18	156	4365	4209
19	156	4506	4350
20	156	4654	4498
Internal Rate of Return (%)			26.5
Net Present Value (@15%):			
a. Costs			6041
b. Benefits			9146
c. Net Benefits			3105
Benefit Cost Ratio			1.5

Notes: 1. Year 2 costs include \$ 218 thousand for commodities.
2. Years 3-6 include \$ 375, 399, 402, and 1098 thousands for technical assistance.

TABLE 12

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR WATER SECTOR AND ROADS
(\$ '000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2	4946	5	-4941
3	4900	84	-4816
4	6219	274	-5945
5	6547	2832	-3715
6	6143	7721	1578
7	946	9059	8113
8	419	10282	9863
9	419	10649	10230
10	419	11983	11564
11	419	12076	11657
12	419	13240	12821
13	419	13343	12924
14	419	14527	14108
15	419	15720	15301
16	419	15922	15503
17	419	17138	16719
18	156	4365	4209
19	156	4506	4350
20	156	4654	4498
Internal Rate of Return (%)			28.2
Net Present Value (@15%):			
a. Costs			20210
b. Benefits			37071
c. Net Benefits			16860
Benefit Cost Ratio			1:8

TABLE 13

BALUCHISTAN AREA DEVELOPMENT PROJECT
SENSITIVITY ANALYSIS

Activity	Internal Rate of Return (%)			
	Base	Case 1	Case 2	Case 3
1. Roads	29	21	26	18
2. Drilling	107	56	81	45
3. Karez Capping	33	20	27	16
4. Delay Action Dams	25	15	21	12
5. Watercourse Improvement	35	22	30	18
6. Kil Kaur Dam	33	26	30	23
7. Goberd Diversion	50	35	43	30
8. Water Sector	27	18	23	15
9. Water Sector and Roads	28	20	25	18

Case 1: Benefits reduced by 30 percent.

Case 2: Costs increased by 15 percent.

Case 3: Costs increased by 15 percent and benefits reduced by 30 percent.

E. FINANCIAL ANALYSIS

1. General

The total estimated cost of the project is \$45.8 million, consisting of \$40 million from an A.I.D. grant and a GOP rupee contribution equivalent to \$5.8 million (principally in the form of construction equipment and salaries). The total AID contribution is 87% and that of the GOP is 13%.

Seven summary tables are provided within this section. Detailed backup tables for these summaries are provided in Annex 19.

2. Cost Assumptions

In the Mission's initial cost estimates for this Project it assumed that the inflation rate over the life of the project would be 20 percent for all local currency costs and 10 percent for all dollar costs. It also used an exchange rate of Rs 13 = \$1 in converting all local currency costs into dollars. During final Project design the Mission carefully reviewed these rates and concluded that they should be revised. A review of current economic trends and first-hand contracting experience on other projects revealed that: (a) a 5 percent annual rate of inflation for all dollar costs not related to construction is more realistic; and (b) for all local costs except construction a 10 percent annual rate of inflation should be utilized. The Mission determined that construction costs in Pakistan are subject to inflation rates that are higher than the average inflation rate for the economy as a whole. To determine what rate should be followed, a study of past trends in Pakistani construction costs was conducted by the Office of Engineering. That study found that over the last 5 years construction costs increased at a rate of 11 to 12 percent. Therefore, a rate of 12 percent was adopted for all construction costs. For A&E costs a rate of 10 percent was adopted because of the anticipated mix of dollar and local costs.

The Mission also examined the trend in exchange rates over the last 5 years. It found that up to January 1982 the exchange rate was fixed by the GOP at Rs 9.90 = \$1. Since that time the rate has climbed to over Rs 13.5 = \$1 which is equivalent to a rate of increase of Rs 1.5 annually. Based on this trend the Mission has adopted a rate of exchange of Rs 14 = \$1 in converting local costs to dollars for FY 85 and increased this rate by Rs 0.5 every year thereafter.

3. Summary of Costs

The Project includes three components -- (1) Roads, (2) Water, and (3) Planning and Management and Human Resource Development (PMHRD). Table 14 gives a summary of AID costs sorted by these components and by fiscal year. The roads component will require \$17.3 million, water activities will cost \$10.9 million and PMHRD will require \$7.8 million leaving a contingency of \$3.9 million (9.7% of the A.I.D. total cost).

Table 15 presents these same costs sorted by funding category. These quantities are \$4.1 million Technical Assistance, \$0.7 million Training, \$1.2 million for Commodities and \$3 million other costs.

Table 16 is a life of project (LOP) summary of both AID and GOP costs sorted by the same three components as in Table 1 (Roads, Water and PMHRD).

Table 17 presents the AID and GOP costs sorted by the same funding categories as Table 15.

Table 18 is a summary by fiscal year of the total AID and total GOP costs during the LOP.

Table 19 gives a summary of estimated GOP recurring costs from FY 1990 onward, categorized by construction and institution building activity. The total added annual cost is \$0.5 million.

Table 20 presents the imputed value of GOP contributions.

Detailed financial analysis costs from which these summaries were derived are presented in Annex 19.

Recurrent costs are estimated to be \$502 thousand equivalent for 1990 onward. Over half of the amount (\$263 thousand equivalent) will be for roads. A user tax on the paved road would easily cover much of this cost. Staff costs for P&D Quetta and PPMU Turbat are for already sanctioned posts and will be budgeted well in advance of the end of this Project. The remaining recurrent cost are a minor proportion of the GOB's budget and are well within the GOB's financial capacity.

Within each Project component (roads, water and PMHRD) there are a number of sub-components, each requiring a financial disbursement mechanism best suited for effective project implementation.

USAID Islamabad will make the first disbursement after the relevant conditions precedent are met by the GOP and a letter requesting the release is received by USAID/Islamabad from the GOP's Economic Affairs Division. Request for the first release will be based on the first work plan (6 months/12 months) approved by the Provincial Level Steering Committee. The work plan will include those activities for which PPMU/Turbat will be making contracts, FAS payments and other purchases.

The Economic Affairs Division will pass the check to the Federal Ministry of Finance. The Finance Division/Islamabad will credit the dollar check to the account of the GOB. The "accounting head" (budget line item) will be the one sanctioned by the Finance Minister under an "anticipatory approval" of the PC-1 (if it has not already been approved). The dollar

check will be converted into rupees and credited to the accounts of the GOB by the State Bank of Pakistan. Within the GOB, this amount will be credited to the P&D Department. The P&D Department will transfer the entire amount into a Personal Ledger Account (a non-interest bearing checking account) opened at the Government treasury at Turbat in the name of the Project Director, a GOB employee. The PLA will be sanctioned by the Provincial Finance Department.

Subsequent monthly/quarterly replenishments of PLA by the USAID will be based on expenditure reports submitted by the Project Director to the GOB with copies to USAID Islamabad.

TABLE 14

BALUCHISTAN AREA DEVELOPMENT PROJECT
SUMMARY OF PROJECT COSTS BY COMPONENTS
 (R 000)

Expense Categories	FY 84		FY 85		FY 86		FY 87		FY 88		FY 89		Total		
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	
1. Roads															
a. Technical Assistance					551	140	279	11	292	33			1289	252	1541
b. Training			67	68		9		10		10				29	29
c. Commodities 1/															
d. Construction			1272	765	4063		4551		4933		198		1272	14510	15782
e. Others															
Sub-totals			1339	833	651	4212	279	4572	292	4976		198	2561	14791	17352
2. Water Sector															
a. Technical Assistance					358	46	427	29	438	44			1223	119	1342
b. Training						10		11		12				33	33
c. Commodities			218										218		218
d. Construction			252	171	375		5285		1389		1900		232	9120	9352
e. Others															
Sub-totals			450	171	358	431	427	5325	438	1445		1900	1673	9272	10945
3. Planning, Management and Human Resource Development															
a. Technical Assistance					374	126	507	102	146	10			1027	238	1265
b. Training					169	59	131	60	137	63			437	182	619
c. Commodities			756	191									756	191	947
d. Construction		57		1330										1387	1387
e. Local Staff				55		353		675		671		397		2151	2151
f. Evaluation					38	21			41	25	127	48	206	94	300
g. Others				24		234		306		319		264		1147	1147
Sub-totals		57	756	1600	581	793	638	1143	324	1088	127	709	2426	5370	7816
Totals		57	2545	2604	1590	5436	1344	11040	1054	7509	127	2807	6660	29453	36113
Contingency															3887
Grand Totals															40000

1/ To be reported under Agricultural Commodities and Equipment Program (391-0468)

TABLE 15

BALUCHISTAN AREA DEVELOPMENT PROJECT
SUMMARY OF PROJECT COSTS
(\$ 000)

Expense Categories	FY 84		FY 85		FY 86		FY 87		FY 88		FY 89		Total			
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX+LC	
1. Technical Assistance																
a. Short-term					420	84	75	37					495	121	616	
b. Long-term			67	68	963	228	1138	105	876	87			3044	488	3532	
Sub-Total:			67	68	1383	312	1213	142	876	87			3539	609	4148	
2. Training																
a. U.S.																
i) Short-term					26	5	28	6	29	6			83	17	100	
ii) Long-term					90	5	47	3	50	3			187	11	198	
b. Third Country																
i) Short-term																
ii) Long-term					53	3	56	3	58	3			167	9	176	
c. In-country						65		69		73				207	207	
Sub-Total:					169	78	131	81	137	85			437	244	681	
3. Commodities																
a. Equipment													909		909	
b. Housing and Office													65	191	256	
Sub-Total:													974	191	1165	
4. Other Costs																
a. Construction																
i. Roads			1272	765		4063		4551		4933		198	1272	14510	15782	
ii. Water Sector			232	171		375		5285		1389		1900	232	9120	9352	
b. Local Staff				55		353		675		671		397		2151	2151	
c. Travel Costs (PPMU)				8		53		111		117		61		350	350	
d. Vehicle Operation				16		102		104		104		100		426	426	
e. Headquarter costs			57			1330								1387	1387	
f. Recurring Housing and Office Costs						79		91		98		103		371	371	
g. Evaluation					38	21			41	25	127	48	206	94	300	
Sub-Total:			57	1504	2345	38	5046		10817	41	7337	127	2807	1710	28409	30119
Total:			57	2545	2604	1590	5436	1344	11040	1054	7509	127	2807	6660	29453	36113
Contingency																3887
Grand Total:																40000

115-A
TABLE 16

SUMMARY OF PROJECT COSTS a/
BY PROJECT COMPONENT, EXPENSE CATEGORY, AND SOURCE OF FUNDING
(\$ 000)

Project Component b/	Life of Project Funding		
	A.I.D. Dollars	G.O.P. c/	Total
1. Roads			
a. Technical Assistance	1541		1541
b. Training	29		29
c. Commodities d/		2862	2862
d. Construction	15782	1244	17026
e. Others			
Sub-Total:	17352	4106	21458
2. Water Sector			
a. Technical Assistance	1342		1342
b. Training	33		33
c. Commodities	218		218
d. Construction	9352	1259	10611
e. Others			
Sub-Total:	10945	1259	12204
3. Planning, Management and Human Resource Development			
a. Technical Assistance	1265		1265
b. Training	619		619
c. Commodities	947		947
d. Construction	1387		1387
e. Local Staff	2151	403	2554
f. Evaluation	300		300
g. Others	1147		1147
Sub-Total:	7816	403	8219
Total:	36113	5768	41881
Contingency	3887		3887
Grand Total:	40000	5768	45768

a/ Project costs are defined as anticipated earmarkings or commitments of funding through, e.g., PIOs, contracts, purchase orders, PILs, etc.

b/ Includes inflation of 5, 10, and 12 percent for FX, LC other than construction, and construction.

c/ Expressed as dollar equivalent at Rs 13.50 to a dollar.

d/ Commodities worth \$ 2330 thousand to be financed under A.C. & E. Program.

TABLE 17

SUMMARY OF PROJECT COSTS a/
BY EXPENSE CATEGORY AND SOURCE OF FUNDING
(\$ 000)

Expense Categories b/	Life of Project Funding		
	A.I.D. Dollars	G.O.P. c/	Total
1. Technical Assistance			
a. Short-term	616		616
b. Long-term	3532		3532
Sub-Total:	4148		4148
2. Training			
a. U.S.			
i) Short-term	100		100
ii) Long-term	198		198
b. Third Country			
i) Short-term			
ii) Long-term	176		176
c. In-country	207		207
Sub-Total:	681		681
3. Commodities			
a. Equipment	909		909
b. Housing and Office	256	2862	3118
Sub-Total:	1165	2862	4027
4. Other Costs			
a. Construction			
i. Roads	15782	1244	17026
ii. Water Sector	9353	1259	10612
b. Local Staff	2151	403	2554
c. Travel Costs (PPMU)	350		350
d. Vehicle Operation	426		426
e. Headquarter costs	1387		1387
f. Recurring Housing and Office costs	371		371
g. Evaluation	300		300
Sub-Total:	30120	2906	33026
Total:	36113	5768	41881
Contingency	3887		3887
Grand Total:	40000	5768	45768

a/ Project costs are defined as anticipated earmarkings or commitments of funding through, e.g., PIDs, contracts, purchase orders, FILs, etc.

b/ Includes inflation of 5, 10, and 12 percent for FX, LC other than construction, and construction.

c/ Expressed as dollar equivalent at Rs 13.50 to a dollar.

TABLE 18

SUMMARY OF PROJECT COSTS a/
BY FISCAL YEAR AND SOURCE OF FUNDING
(\$ 000)

Source of Funding	Fiscal Year						Total
	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	
1. A.I.D. Grant	57	5149	7026	12384	8563	2934	36113
Contingency							3887
2. G.O.P. b/		3444	581	581	581	581	5768
Total	57	8593	7607	12965	9144	3515	45768

a/ Project costs are defined as anticipated earmarkings or commitments of funding through, e.g., PIOs, contracts, purchase orders, FILs, etc.

b/ Expressed as dollar equivalent at Rs 13.50 to a dollar.

TABLE 19

RECURRENT COSTS FY 1990 AND ONWARD
(\$ 000)

1.	Roads	263.0
2.	Watercourses	44.4
3.	Precision Land Levelling	11.0
4.	Kil Kaur Dam	90.0
5.	Goberd Weir	11.0
6.	PPMU/Turbat	42.0
7.	P&D/Quetta	25.0
8.	Office & Housing/Turbat	16.0
		<hr/>
		<u>\$502.4</u>

Sources:

1.	Roads	Recurrent Costs from the costs stream in the IRR analysis of the PP.
2.	Water Courses	-do-
3.	PLL	-do-
4.	Kil Kaur Dam	-do-
5.	Goberd Weir	-do-
6.	PPMU/Turbat	Personnel Budget
7.	P&D/Quetta	Personnel Budget
8.	Office/Housing Turbat	Housing Recurring Cost Budget

TABLE 20

IMPUTED VALUE OF GOB CONTRIBUTION TO BALAD PROJECT - SUMMARY
(\$000)

SUMMARY

I.	Secretariat	Rs.	549
II.	Commissioner Makran		237
III.	Makran-Based Line Agencies		261
IV.	C&W Field Activities		16,500
V.	Irrigation Field Activities		8,500
VI.	Agriculture Field Activities.		8,500
VII.	Land & Building at Makran		300
VIII.	C&W Graders and Dozers		38,640
IX.	New PPMU Staff		2,700
X.	P&D Unit Quetta		1,700
			<hr/>
	TOTAL		77,887
			<hr/>

4. Methods of Implementation and Financing

Table 21 provides a summary of the proposed methods of implementation and financing for the A.I.D. contribution under the BALAD Project by Project component, in accordance with A.I.D.'s Payment Verification Policy Implementation Guidance dated December 30, 1983. No departures from the three preferred methods of A.I.D. financing are contemplated for this Project.

TABLE 21

METHODS OF IMPLEMENTATION AND FINANCING

<u>Project Component</u>	<u>Method of Implementation</u>	<u>Method of Financing</u>	<u>Estimated Amounts (U.S.\$000)</u>
Road	TA-AID Competitive A&E contract for 55 km of roads	Direct Payment	1,860
	Construction of 55 km roads - AID Contract	Direct Payment	11,350
	Demonstration drainage construction	FAR	260
	Road maintenance operations	FAR	820
	Road rehabilitation operations	FAR	980
	Equipment maintenance service/training - HC contract	HC Reimbursement	450
	Feasibility study kech crossing - AID Contract	Direct Payment	60
		Sub-Total: Road	15,780
Water	Drilling operations - HC Contract	HC Reimbursement	230
	Karez capping	FAR	1,855
	Small delay action dam construction - HC Contract	HC Reimbursement	750
	TA-AID competitive A&E contract for Kil Kaur dam	Direct Payment	260
	Kil-Kaur dam construction - AID Contract	Direct Payment	3,070

	TA-HC competitive A&E Contract for Goberd diversion structure	HC Reimbursement	90
	Goberd Diversion structure construction - HC Contract	HC Reimbursement	1,250
	On-Farm water management Activities.	FAR and HC Reibmbursement	1,810
	Commodities for Water Sector - AID Procurement	Direct Payment	218
		Sub-Total: Water	<u>9,533</u>
Other	Construction of Turbat Complex - AID Contract	Direct Payment	1,380
	TA-AID competitive contract for LT and ST Technical Assistance ^{a/}	Direct Payment	4,140
	Commodities (Vehicles and other equipment) - AID Procurement	Direct Payment	690
	Commodities (HH and office furnishings) - AID Procurement	Direct Payment	560
	Participant (overseas) training (through DST Contractor) ^{b/}	FRLC	300
	Third Country training - AID procurement	Direct Payment	160
	In-Country training (PILS to earmark funds).	HC Reimbursement	200
	Other costs (Evaluation)	Direct Payment	300
	Professional local staff for PPMU - AID competitive contract ^{a/}	Direct Payment	1,500
	Local support staff for PPMU - HC Contract	HC Reimbursement	800
	Vehicle operation costs (PILS to earmark funds)	HC Reimbursement	420

Recurrent housing & office costs - AID Procurement/ HC Contract	Direct Payment HC Reimbursement	350
		<hr/>
	Sub-Total: Other	10,800
TOTAL:		36,113
Contingency	FAR, FRLC, Direct Payment or HC Reimbursement	3,887
GRAND TOTAL:		40,000

a/ Same contract

b/ The Development Support Training (DST) Project contractor (Academy for Educational Development) is a non-profit organization and hence is eligible for a FRLC.

F. Environmental Analysis

Activities funded by the BALAD will not have a major impact on the environment. The Project's impact, moreover, will be primarily positive. A Negative Determination was approved during the APAC Review of the PID, conditional upon incorporation of environmental design criteria in the PP. Environmental design criteria for infrastructure activities have been an integral element in Project Paper design. Criteria and guidelines are incorporated in both the road and water components. These criteria will be an important factor in deciding which specific water activities to support. See Section III (Project Description) Roads and Water. Environmental concerns will be a factor in the selection of specific sub-activities for implementation and incorporated in all feasibility studies where relevant.

The environmental analysis may be summarized as follows:

1. The three areas with significant potential for impact on the environment are: infrastructure construction, irrigation and agricultural production.

2. With regard to all three, the environmental impacts are expected to be minor. As a result of the dry, rocky environment of the Project area, concerns that are elsewhere important do not apply to the BALAD Project (such as salinization and alkalization when irrigation is expanded, and topsoil loss when cuts are made during road construction).

The Project will not involve a major increase in the use of agricultural chemicals, which are now used throughout the area. Project funds will not be used to finance pesticides. The design of sub-activities takes into consideration the environment of each target area. The highly limiting agroclimatic conditions, in particular, will be carefully considered in selecting the crop to be promoted. Specific design features have been included that will reduce the potential for negative environmental impacts and reduce long-term costs. The road construction plans, for example, call for a deeper cut into the mountain side, which will both limit the danger of landslides and reduce the long-term maintenance requirement for the road.

3. All infrastructure (construction) activities shall be conducted in accordance with the following criteria and guidelines:

a. All land surfaces disturbed by construction activities shall be restored to their natural grade except where changes are specifically required by the design.

b. The bottom and side slopes of any excavation back-fill through watercourses shall be compacted sufficiently to avoid erosion of the disturbed material.

c. Material excavated from borrow areas shall be limited to approved borrow locations. Such borrow areas shall upon completion of excavation be graded in a manner that avoids ponding of water. The final grade of disturbed soil (spoil and excavations) shall be on a slope that will not cause erosion.

d. All waste material from construction activity shall be either burned or removed and disposed of at an approved location.

e. Construction activities near residential areas shall include adequate dust control measures.

f. The Project management team shall develop a safety program. All construction activities shall be subject to the criteria developed under this program.

g. Particular care shall be taken during construction near karez wells. Any debris which falls into a karez as a result of such construction shall be completely removed.

h. In addition to the criteria and guidelines noted above, all construction activities shall conform to the environmental design criteria and guidelines contained in the AID Manual entitled Environmental Design considerations for Rural Development Projects (October 1980), and the AID Environmental Procedures, Regulation 16 as amended on October 23, 1980.

G. Women in Development

The Project will not affect directly the relative position of women in Makran. While it will make life easier and more bountiful for many women, it will do so in ways that will not change their position relative to men in the society.

As the first major development effort ever to be mounted in Makran, the Project will undoubtedly set in motion a process of evolutionary change and development with unknown consequences for Makran society. Whether increased prosperity and mobility will tend to liberalize attitudes towards women; whether increased wealth will be used in part for women's education; or whether increased wealth will merely afford an opportunity to keep more women at home and out of the fields and markets, are questions that illustrate the uncertainties about the future role of women. The answers will be the expression of the will of Makrani society as influenced by such factors as Pakistani law and Islamic traditions. Thus, the Project will benefit women in physical terms and open avenues of social change, without attempting to predict the direction of those changes.

H. Narcotics Impact Analysis

The Project is not designed to have a significant impact on the supply or demand for illicit drugs within Pakistan. Nonetheless, it may be expected to provide indirect support to the reduction of opium acreage and production. The activities supported by the Project will improve access to markets and services, and increase the availability of water leading to higher farmer incomes and increased profitability for legitimate crops. An appropriate "poppy clause" will be included in the Project Agreement.

VI. CONDITIONS, COVENANTS AND NEGOTIATING STATUS

A. Conditions Precedent to Disbursement

1. Conditions Precedent to First Disbursement

Except as A.I.D. may otherwise agree in writing, prior to any disbursement of funds under this Project, or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Grantee shall furnish to A.I.D., in form and substance satisfactory to A.I.D.:

a. A written opinion of Counsel acceptable to A.I.D. that this Agreement has been duly authorized and/or ratified by, and executed on behalf of the Grantee, and that it constitutes a valid and legally binding obligation of the Grantee in accordance with all of its terms; and,

b. A written statement setting forth the names and titles of the persons holding or acting in the Office of the Grantee and representing that the named person or persons have the authority to act as the representative or representatives of the Grantee, together with a specimen signature of each such person certified as to its authenticity.

2. Condition Precedent to Disbursement for Selected Activities

Except as A.I.D. may otherwise agree in writing, prior to any disbursement of funds under this Project for any activities, except for design work, under the roads and water components and for those activities related to construction of the office and housing facilities for the Project Planning and Management Unit in Makran or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Grantee shall furnish to A.I.D. in form and substance satisfactory to A.I.D. documentation that:

a. an overall Government of Baluchistan project manager located in Quetta has been appointed;

b. the Commissioner of the Makran Division has been appointed as Field Project Manager with full operational authority over the Project Planning and Management Unit at Turbat;

c. a Steering Committee at Quetta and a Working Committee at Turbat have been formally established;

d. the Project Planning and Management Unit has been formally established under the authority of the office of the Commissioner of Makran Division; and,

e. a Director of the Project Planning and Management Unit has been appointed.

3. Conditions Precedent to Disbursement for Construction of the Office and Housing Facilities for the Project Planning and Management Unit

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds under this Project for all activities, except for architectural and engineering services, related to construction of the office and housing facilities for the Project Planning and Management Unit at Turbat or to the issuance by A.I.D. of documentation pursuant to which such disbursement will be made, the Grantee, shall furnish to A.I.D., in form and substance satisfactory to A.I.D., written assurance that the land to be used for construction of the office and housing facilities will remain available to A.I.D. for the life of the Project or until such other time as A.I.D. and the Grantee may mutually agree in writing, whichever is longer.

B. Covenants

1. Post-Training Employment

Except as the Parties may otherwise agree in writing, the Grantee shall make all reasonable efforts to require that each person trained under this Project works in water resources, road and agricultural development activities in Baluchistan for not less than three times the length of time of his or her training program provided, however, that in no event shall such an individual be allowed to work in such activities for less than one year, nor be required to work in such activities for more than five years from the date of the individual's completion of training. The Grantee shall, further, not approve extensions in the trainee's permitted time abroad if such extension shall allow the trainee to remain abroad beyond that time required for his or her training.

2. Financing Road Maintenance

Except as A.I.D. may otherwise agree in writing, the Cooperating Country shall, within three years of the date of the Project Agreement, establish a system, acceptable to the Cooperating Country and A.I.D., for financing the cost of maintaining roads constructed, rehabilitated or improved under the project which system may include budgetary allocations for this purpose, user fees or other sources of revenue.

C. Negotiating Status

The Project, as described in this Project Paper, has been fully discussed with appropriate GOP officials. The GOP supports the Project as designed and there is no reason why the Project cannot proceed to implementation as soon as the Project Agreement is signed. No legislation is necessary to implement the Project as described.

PAKISTAN - BALUCHISTAN AREA DEVELOPMENT PROJECT (BALAD)

391 - 0479

A N N E X E S

JULY 1984

AID17 INFO AMB ECM ECON CHRON/13

OFFICIAL FILE

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CN: 03796
CHRG: AID
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ACTION: PDM
Info: D, DD, PRO, ARD, E&E,
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TAGS:
SUBJECT APAC REVIEW, BALUCHISTAN AREA DEVELOPMENT PID
(391-2479)

6/22/83

ACTION	
Doc Date	6/22/83
Action	NAN
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Date	6/29/83
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APAC REVIEWED AND APPROVED SUBJECT PID ON JUNE 2. FOLLOWING ISSUES WERE DISCUSSED:

1. PROJECT FOCUS: APAC DISCUSSED EXTENT TO WHICH INSTITUTIONAL DEVELOPMENT SHOULD BE AN EXPLICIT AND IMPORTANT OBJECTIVE OF THE PROJECT. SINCE THERE IS NOW A DEARTH OF PROVINCIAL AND LOCAL CAPABILITY IN BALUCHISTAN TO PLAN OR IMPLEMENT DEVELOPMENT ACTIVITIES, IT WAS FELT THAT THE PROJECT'S PERMANENT IMPACT BEYOND PROJECT LIFE WOULD BE LARGELY DETERMINED BY ITS IMPACT ON INSTITUTIONAL CAPACITY, AT BOTH THE PROVINCIAL AND LOCAL LEVELS. IT WAS RECOGNIZED THAT INSTITUTION BUILDING IS AN IMPLICIT OBJECTIVE OF THE PROPOSED INTERVENTIONS; PP SHOULD, HOWEVER, HIGHLIGHT THIS AS AN EXPLICIT OBJECTIVE AND INDICATE HOW, AT BOTH LOCAL AND PROVINCIAL LEVELS, THE VARIOUS INTERVENTIONS WILL HELP TO DEVELOP THIS CAPACITY. AID'S POLICY PAPER, "INSTITUTIONAL DEVELOPMENT," OF MARCH 1983 SHOULD BE TAKEN INTO ACCUNT IN PROJECT DESIGN.

2. PROJECT COMPLEXITY: CONCERN WAS EXPRESSED AT LARGE

NUMBER OF ACTIVITIES PLANNED REQUIRING WIDE RANGE OF TECHNICAL SKILLS. IT WAS RECOGNIZED THAT PROJECT EMPHASIZES WATER RESOURCES AND ROADS, AND THAT OTHER ACTIVITIES WILL BE SMALL, PERHAPS EVEN QUASI-EXPERIMENTAL. NEVERTHELESS, THE PID INCLUDES ACTIVITIES WHICH, IF PROJECT IS TO HAVE A SUBSTANTIAL IMPACT, ARE POTENTIALLY DIFFICULT AND COULD REQUIRE LARGE TA CONTINGENT. RANGE MANAGEMENT IMPROVEMENT, FOR EXAMPLE, HAS PROVEN VERY COMPLEX IN OTHER COUNTRIES. THE NUMBER OF ACTIVITIES ADDS AN ADMINISTRATIVE COMPLEXITY WHICH PERHAPS IS INAPPROPRIATE IN AN AREA AS DIFFICULT AS BALUCHISTAN. RECENT EVALUATION REPORTS ON AREA DEVELOPMENT ACTIVITIES ELSEWHERE ARGUE FOR A FOCUSED AND LIMITED SET OF ACTIVITIES WITH PRIORITY OBJECTIVES CLEARLY INDICATED. MISSION IS REQUESTED, DURING PP DESIGN, TO FOCUS ON THE MOST URGENT INTERVENTIONS; PROJECT SHOULD NOT TAKE ON ALL THOSE LISTED IN PID. (COPIES OF RELEVANT EVALUATIONS WILL BE

ACTION TO: *4*



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POUCHED WHEN AVAILABLE.)

3. FOCUS ON ROADS: ACCESS AND COMMUNICATIONS IS RECOGNIZED AS A KEY PROBLEM IN BALUCHISTAN. TARGETS FOR ROAD IMPROVEMENT WERE CONSIDERED HIGHLY AMBITIOUS, AND MAY REQUIRE A GREATER INITIAL CAPITAL INVESTMENT AND RECURRENT COST COMMITMENT FROM GOVERNMENT OF BALUCHISTAN THAN WILL EVENTUALLY BE SUSTAINABLE. IN DETERMINING RELATIVE PROJECT EMPHASIS ON ROADS, MISSION SHOULD CAREFULLY EXAMINE INITIAL COSTS, RECURRENT COSTS AND POST PROJECT FINANCIAL AND INSTITUTIONAL MAINTENANCE REQUIREMENTS.

4. COLLABORATIVE ASSISTANCE MODE FOR DESIGN AND IMPLEMENTATION: AID PR SUBPART 7-4.59 REQUIRES THAT, FOR COLLABORATIVE ASSISTANCE MODE TO BE USED FOR DESIGN AND IMPLEMENTATION, IT IS NECESSARY TO DETERMINE THAT THE PROJECT REQUIRES THE SERVICES OF AN EDUCATIONAL INSTITUTION, INTERNATIONAL RESEARCH CENTER, OR A COOPERATIVE DEVELOPMENT ORGANIZATION DESIGNATED AS SUCH BY AA/FVA. THE FOLLOWING ORGANIZATIONS HAVE BEEN DESIGNATED COOPERATIVE DEVELOPMENT ORGANIZATIONS BY THE AA/FVA: AGRICULTURAL COOPERATIVE DEVELOPMENT, INTERNATIONAL; COOPERATIVE LEAGUE OF THE USA; NATIONAL RURAL ELECTRIC COOPERATIVES ASSOCIATION; WORLD COUNCIL OF CREDIT UNIONS (FORMERLY CUNA); COOPERATIVE HOUSING FOUNDATION; AND VOLUNTEER DEVELOPMENT CORPS. OTHER PVO'S WOULD NOT BE ELIGIBLE FOR THE COLLABORATIVE ASSISTANCE MODE BUT WOULD BE ELIGIBLE TO COMPETE FOR OTHER TYPES OF CONTRACTS AND FOR GRANTS AND COOPERATIVE AGREEMENTS. HOWEVER, IT APPEARS THAT THIS PROJECT DOES NOT LEND ITSELF TO AN ASSISTANCE INSTRUMENT, I.E., GRANT OR COOPERATIVE AGREEMENT; SINCE WE ARE ACQUIRING SERVICES, CONTRACTUAL MODE SEEMS THE PROPER WAY TO PROCEED.

SEEMS THE PROPER WAY TO PROCEED.

5. DESIGN OF THE ROADS COMPONENT: APAC FELT, AND MISSION REP CONCURRED, THAT SPECIALIZED ENGINEERING SKILLS REQUIRED FOR DESIGN OF THE ROAD IMPROVEMENT COMPONENT WOULD PROBABLY NOT BE AVAILABLE IN A PVO OR SIMILAR TYPE OF ORGANIZATION UNDER CONSIDERATION FOR PROJECT DESIGN. ROADS COMPONENT SHOULD BE CONSIDERED A SEPARATE DESIGN ELEMENT TO BE UNDERTAKEN BY AN APPROPRIATE FIRM. MISSION MAY WISH TO CONSIDER WORK ORDER UNDER IQC WITH WILBER SMITH AND ASSOCIATES OR SHALADIA AND ASSOCIATES IF DESIGN WORK CAN BE COMPLETED WITHIN 120 DAYS.

6. ENVIRONMENT: THE OBJECTIVES OF THE PROJECT IN RESOURCE PLANNING, WATER RESOURCES MANAGEMENT AND RANGE MANAGEMENT ARE TO PROMOTE ENVIRONMENTALLY SOUND AGRICULTURAL AND RURAL DEVELOPMENT. ENVIRONMENTAL DESIGN CRITERIA FOR THE INFRASTRUCTURE ACTIVITIES SHOULD BE USED

IN PP DESIGN. ASIA/TR/EFE WILL ASSIST THE MISSION TO OBTAIN APPROPRIATE EXPERTISE FOR ADDRESSING ENVIRONMENTAL CONSIDERATIONS IN PROJECT DESIGN AND FOR ESTABLISHING ENVIRONMENTAL MONITORING DURING PROJECT IMPLEMENTATION. THE NEGATIVE DETERMINATION IS APPROVED CONDITIONAL UPON THE INCORPORATION OF ENVIRONMENTAL DESIGN CRITERIA AND GUIDELINES IN THE FP.

7. SOCIAL ANALYSIS: UNDERSTAND IN-DEPTH SOCIAL ANALYSIS IS PLANNED. THE SPATIAL STRUCTURE OF THE PROVINCE, THE TRANSMIGRATION AND MIGRATION OF PEOPLE AND MARKETING OF GOODS, SHOULD BE EXAMINED. LIKEWISE, RESEARCH, MONITORING AND EVALUATION ARRANGEMENTS FOR THE PROJECT SHOULD INCLUDE EXAMINATION OF SOCIAL FACTORS.

8. ECONOMIC ANALYSIS: IN PREPARING ANALYSIS, COST PER BENEFICIARY SHOULD BE EXAMINED FOR THE INFRASTRUCTURE ACTIVITIES.

9. FINANCIAL ANALYSIS: WATER PROJECTS MUST MEET RATE OF RETURN REQUIREMENTS AS SPECIFIED IN SECTION 611B OF FAA AND FEASIBILITY STANDARDS IN SECTION 501 OF APPROPRIATIONS ACT.

10. NARCOTICS: DURING FP DESIGN, MISSION SHOULD VERIFY THAT POPPIES ARE NOT GROWN IN BALUCHISTAN. IF THEY ARE, PROJECT SHOULD ADDRESS THIS PROBLEM OR EXPLAIN WHY IT DOES NOT. SHULTZ

BT

#3038

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PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCE: IS COUNTRY CHECKLIST UP TO DATE? Yes

HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT? Yes

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec.634A; Sec.653(b)

(a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that amount)?

(a) Congressional Notification and Congressional Presentation.

(b) Yes, assistance is within the FY 1984 operational year budget.

2. FAA Sec.611 (a) (1): Prior to obligation in excess of \$100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance, and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes

(b) Yes

(2)

3. FAA Sec.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 purpose of the assistance?
- No further legislative action is required
4. FAA Sec.611 (b) : Continuing Resolution Sec.501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?
- Yes
5. FAA Sec.611 (e). If Project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?
- Yes, Mission Director's 611 (e) certification is included in the Project Paper.
6. FAA Sec.209. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.
- This project is highly specific to Baluchistan within Pakistan and hence is not susceptible to execution as a part of a regional project, nor will it likely encourage regional development programs.

(3)

7. FAA Sec.601 (a). Information and conclusions whether project 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, and 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.
- (a) Yes This project should have an impact on international trade
(b) Yes through improving transportation to the port of Karachi, make access more open and therefore foster private enterprise and competition. and increase the technical efficiency of agriculture.
(c) No
(d) Yes
(e) Yes
(f) No
8. FAA Sec.601 (b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
- U.S. private enterprises will participate as suppliers of both goods and services under this project.
9. FAA Sec. 612 (b), 636 (h) ; Continuing Resolution Sec. 503. 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 owned by the U.S. are utilized in lieu of dollars.
- This is an ESF-funded project. Nevertheless, the GOP and Provincial Government will contribute the equivalent of \$5.8 million over the life of the project, or about 13 percent of total project costs, to help finance local costs. The Mission Director has certified the disbursement of U.S. dollars in lieu of U.S. Treasury-owned excess rupees to cover some of the local costs under this project. This action is consistent with one of the major objectives of the renewed economic assistance program to Pakistan which is to maximize the balance of payments impact of the program. U.S. owned excess Pakistani rupees have been fully programmed in support of other projects.
10. FAA Sec.612 (d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

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(4)

11. FAA Sec.601 (e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise? Yes
12. Continuing Resolution Sec.522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity? N.A.
13. FA Appropriation Sec.525: Will the funds for this project be used to lobby for abortion? No

b. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria This is an ESF-financed project.
- a. FAA Sec.102 (b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better N.A.

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(5)

life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economics of developing countries and the improvement of women's status; and, (e) utilize and encourage regional cooperation by developing countries.

N.A.

b. FAA Sec.103, 103A, 104, 105, 106, 107. Is assistance being made available: (including only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source)

N.A.

(1) [103] for agriculture, rural development of nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agriculture research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec.104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and

N.A.

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(6)

expanded use of indigenously produced foodstuff; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building and national food reserves, expanding available storage facilities, reducing post harvest food losses and improving food distribution.

N.A.

(2) [104] for population planning under Sec.104(b) or health under Sec.104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

N.A.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban

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(7)

poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.

N.A.

(4) [106; ISDCA of 1980, Sec.304] for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;

N.A.

(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development organizations;
(iii) research into, and

N.A.

N.A.

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(8)

- evaluation of, economic development process and techniques; N.A.
- (iv) reconstruction after natural or manmade disaster; N.A.
- (v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; N.A.
- (vi) for programs of urban development, especially small labor intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development. N.A.
- c. [107] is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor. N.A.
- d. FAA Sec.110 (a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the better cost-sharing requirement been waived for a "relatively least developed" country)? N.A.
- e. FAA Sec.110 (b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? N.A.

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(9)

- f. FAA Sec.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 civil education and training in skills required for effective participation in governmental processes essential to self-government. N.A.
- g. FAA Sec.122 (b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth? N.A.
2. Development Assistance Project Criteria (Loans Only).
- a. FAA Sec.122 (b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest. N.A.
- b. FAA Sec.620 (d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan? N.A.
3. Project Criteria Solely for Economic Support Fund

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(10)

a. FAA Sec.531 (a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

Yes. This project has as its prime goal to carry out the GOP's objectives of fostering the economic integration of Makran with the rest of Pakistan and improve the quality of life of people there which will clearly promote both economic and political stability. The project also reflects the policy directions of FAA Section 102.

b. FAA Sec.531 (c). Will assistance under this chapter be used for military, or paramilitary activities?

No.



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable: USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

Annex 3.a

BALUCHISTAN AREA DEVELOPMENT PROJECT, 391-0479
FAA SECTION 611 (e) CERTIFICATION

I, Donor M. Lion, principal officer of the Agency for International Development in the Islamic Republic of Pakistan, having taken into account, among other things, the maintenance and utilization of projects in the Islamic Republic of Pakistan previously financed or assisted by the United States, do hereby certify pursuant to Section 611(e) of the Foreign Assistance Act of 1961, as amended, that in my judgement the Islamic Republic of Pakistan has both the financial capability and the human resources capability to effectively implement, utilize and maintain the proposed Baluchistan Area Development Project, 391-0479.

This judgement is based upon the project analysis as detailed in the Baluchistan Area Development Project Paper and is subject to the conditions imposed therein.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

7/5/84

Date



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable: USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

Annex 3.b
Page 1

BALUCHISTAN AREA DEVELOPMENT PROJECT, 391-0479
FAA SECTION 612 (b) CERTIFICATION

A major purpose of the \$1.625 billion economic assistance program negotiated between the Governments of the United States of America and Pakistan, acknowledged by both governments and a primary reason for both governments having decided to develop an economic assistance package, is to provide balance of payments assistance to Pakistan.

I have carefully reviewed the advisability of disbursing United States dollars in lieu of United States-owned excess foreign currency to pay for local costs of projects being implemented in Pakistan. In light of the United States Government's objectives concerning the program, I have determined that it would be prejudicial to U.S. interests and goals to pay for all local currency costs with United States-owned rupees. Such a procedure would prevent the U.S. from providing the maximum amount of balance of payments support under the economic assistance package, and would consequently undercut one of the basic objectives of the program. The objective of providing balance of payments assistance to Pakistan can best be achieved by disbursing United States dollars to pay for local costs of the program. Section 612(b) of the Foreign Assistance Act of 1961, as amended, authorizes the administrative official approving the voucher to determine that local costs will be funded with direct payment of dollars for the program. Pursuant to this provision, Handbook 19 requires that the Mission Director (or his designee) make a determination as to the reason in any instance where United States dollars are used (disbursed) when United States-owned foreign currency is available. Where dollars are used for local cost financing, USAID/Pakistan will, therefore, make disbursements to the Government of Pakistan in U.S. currency.

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In view of the above rationale, I, Donor M. Lion, Principal Officer of the Agency for International Development in Pakistan, pursuant to Section 612(b) of the Foreign Assistance Act of 1961, as amended, do hereby certify the need to disburse United States dollars to cover local currency costs in lieu of using United States-owned excess rupees under the Baluchistan Area Development Project.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

7/5/84

Date

THE GOVERNMENT OF PAKISTAN ASSURES THE UNITED STATES GOVERNMENT OF ITS FULL COOPERATION IN CARRYING OUT THE BALUCHISTAN AREA DEVELOPMENT PROJECT. THE NECESSARY CLEARANCES, PERSONNEL, FINANCIAL, AND OTHER INPUTS REQUIRED OF US WILL BE PROVIDED IN AN EXPEDITIOUS MANNER. ONCE THE PROJECT AGREEMENT IS SIGNED, A. I. D. IS HEREBY AUTHORIZED TO PROCEED WITH THE PROCUREMENT OF A AND E SERVICES TECHNICAL ASSISTANCE AND COMMODITIES AND ARRANGEMENTS FOR TRAINING FOR ALL COMPONENTS OF THE PROJECT AND TO COMMIT AND DISBURSE FUNDS AS NECESSARY AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE PROJECT AGREEMENT TO CARRY OUT THESE PROJECT ACTIVITIES.

WE LOOK FORWARD TO A CONTINUED, COMBINED EFFORT BY BOTH OUR GOVERNMENTS TO IMPLEMENT A PRODUCTIVE AND BENEFICIAL PROGRAM FOR THE PEOPLE OF PAKISTAN.

SUBJECT: BALUCHISTAN AREA DEVELOPMENT PROJECT
(391-8479) - LETTER OF REQUEST

YOURS SINCERELY,

EJAZ AHMAD NAIK

1. USAID/PAKISTAN RECEIVED JULY 24, 1984 FROM GOP SUBJECT LETTER DATED JULY 22, 1984. VERBATIM CONTENTS FOLLOW:

QUOTE
DEAR MR. LION:

AS PART OF THE AGREEMENT BETWEEN OUR TWO GOVERNMENTS ON A SIX-YEAR DOLS 1.625 BILLION ECONOMIC ASSISTANCE PROGRAM, THE GOVERNMENT OF PAKISTAN FORMALLY REQUESTS FROM AID FORTY MILLION DOLLARS (U.S. DOLS 40,000,000) IN UNITED STATES GRANT ASSISTANCE TO FUND THE BALUCHISTAN AREA DEVELOPMENT PROJECT.

SUBJECT TO THE AVAILABILITY OF FUNDS, I UNDERSTAND THAT DOLS 40,000,000 WILL BE PROVIDED OVER A FIVE-YEAR PERIOD TO ASSIST IN THE IMPLEMENTATION OF AN AREA DEVELOPMENT PROJECT IN THE MAKRAH DIVISION INCLUDING A COMPONENT TO DEVELOP AND STRENGTHEN PLANNING AND MONITORING EFFORTS IN MAKRAH AREA AND THE PROVINCIAL PLANNING AND DEVELOPMENT DEPARTMENT AT QUETTA. FUNDS PROVIDED BY A. I. D. FOR THIS PROJECT WILL BE USED TO PROCURE TECHNICAL ADVISORY ASSISTANCE, TRAINING, COMMODITIES, EQUIPMENT AND CONSTRUCTION SERVICES, REQUIRED, AMONGST OTHER THINGS, TO:

- 1. IMPROVE PRIMARY ROAD SYSTEM IN MAKRAH THROUGH CONSTRUCTION, UPGRADING OF EXISTING ROADS, AND IMPROVED MAINTENANCE METHODS.
- 2. INCREASE AVAILABILITY OF WATER FOR AGRICULTURAL PRODUCTION IN MAKRAH BY SUPPORTING A WIDE VARIETY OF WATER ACTIVITIES FROM IMPROVING EFFICIENCY OF EXISTING KAREZES TO SMALL AND MEDIUM SIZE DIVERSION STRUCTURES AND DAMS.
- 3. IMPROVE PLANNING AND MANAGEMENT CAPABILITIES AND HUMAN RESOURCE AVAILABILITY OF THE GOVERNMENT OF BALUCHISTAN AND MAKRAH THROUGH PRACTICAL EXPERIENCE AND TRAINING.

I ALSO UNDERSTAND THAT, SUBJECT TO THE AVAILABILITY OF FUNDS TO A. I. D. FOR THIS PURPOSE, APPROXIMATELY TWO AND ONE-HALF MILLION DOLLARS (U.S. DOLS 2,500,000) MAY ALSO BE PROVIDED FROM THE AGRICULTURAL COMMODITIES AND EQUIPMENT PROGRAM TO FINANCE EQUIPMENT AND COMMODITIES FOR THE PROJECT.

UNCLASSIFIED

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Annex 5

AID 10-00-2011-720

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORKLife of Project: 89
From FY 84 to FY
Total U. S. Funding 40 Million
Date Prepared: 6/19/84

Project Title & Number: Baluchistan Area Development Project (391-0479)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>The rapid socio-economic development of the more remote areas of Pakistan.</p>	<p>Measure of Goal Achievement:</p> <p>Increased incomes and better services for the people of Makran narrowing differences with more developed areas of Pakistan</p>	<p>Socio-economic data on the area Planning and budget documents Field Observations</p>	<p>Assumptions for achieving goal targets:</p> <ol style="list-style-type: none"> Continued GOP commitment to development of Baluchistan through adequate budget and staff support. Local emphasis on development activities continues.
<p>Project Purpose:</p> <p>To accelerate the integration of Baluchistan into the socio-economic mainstream of Pakistan and to improve the quality of life for the people who live in Makran through improving roads and water infrastructure in Makran and strengthening Baluchistan's planning, management and human resources in the process.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p>Expanded production and increased farm income together with improved quality of roads and water systems.</p>	<p>Results of project evaluations Data collected by P & D units</p>	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> Development programs carried out as agreed. Local cooperation in planning and development exists. Projects are supported in timely and appropriate fashion. Major implementation bottlenecks are avoided or broken.
<p>Outputs:</p> <ol style="list-style-type: none"> Improved primary road system serving Makran through new construction, upgrading of existing roads and betterment of maintenance methods. Increase availability of water for agricultural production in Makran by supporting a range of water activities from improving the efficiency of existing karezes to medium scale diversion structures and dams. Improve planning and management capability and human resource availability of the Government of Baluchistan and Makran through practical experience and training. 	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> Developed maintenance of 900 kilometers of roads 600 kilometers of rehabilitated roads Survey, design and construction of 55 kilometers of paved roads Training of 143 roads staff Establishment of a plan for roads <p>Please see Section III Outputs Cont.</p>	<p>Project and AID records</p> <p>Project evaluations</p> <p>Field observations</p>	<p>Assumptions for achieving outputs:</p> <ol style="list-style-type: none"> Line agencies cooperate in program. P & D units carry out assigned functions effectively. Roads and irrigation systems have impact on farm production and income. Sufficient technically appropriate sites found for irrigation and agricultural program. Area residents are responsive to and participate actively. Advisory assistance effective both in substance and institution building.
<p>Inputs:</p> <p>Technical assistance and other personnel services.</p> <p>Commodities.</p> <p>Operations (including training).</p> <p>Construction.</p> <p>GOP Staff, facilities and ongoing programs.</p>	<p>Implementation Target (Type and Quantity)</p> <p>Personnel: 7.7 Million</p> <p>Commodities: 1.2 Million</p> <p>Construction: 26.5 Million</p> <p>Operations: 0.7 Million</p> <p>Inf'l & Cont: 3.9 Million</p> <p>GOP inputs: 5.8 Million (equiv.)</p>	<p>AID and GOP project records and financial documents</p> <p>Project evaluations</p>	<p>Assumptions for providing inputs:</p> <ol style="list-style-type: none"> Necessary contracts completed in a timely manner. Facilities are made available as planned. Commodities and services made available through this and other AID projects as planned. Qualified expatriot and Pakistani personnel in place when needed. Funding approved as proposed and disbursements timely.

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PROJECT AUTHORIZATION

Name of Country: Pakistan Name of Project: Baluchistan Area
Development Project

Number of Project: 391-0479

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, (the Act) I hereby authorize the Baluchistan Area Development Project for the Islamic Republic of Pakistan (the Cooperating Country) involving planned obligations of not to exceed Forty Million United States Dollars (\$40,000,000) in grant funds over a four (4) year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. The planned life of the project is through December 31, 1989.

2. The project is intended to assist the Cooperating Country's effort to integrate the Makran Division of Baluchistan Province into the socio-economic mainstream of Pakistan and to improve the quality of life for the people who live there by providing technical assistance, construction services, training and operating expenses to (a) construct, rehabilitate or upgrade maintenance of approximately 900 kilometers of road in the primary road network of Makran Division, (b) construct or improve water karezes and small and medium scale diversion structures and dams, and (c) strengthen the capacity of the Cooperating Country, the Government of Baluchistan, and the Makran Division to plan, prioritize, select and implement development projects for Baluchistan, particularly the Makran Division.

3. The agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms, covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin Commodities, Nationality of Services

Commodities financed by A.I.D. under this project shall have their source and origin in the Cooperating Country or in the United States except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the Cooperating Country or the United States as their

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place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States or the Cooperating Country.

b. Condition Precedent to Disbursement for Selected Activities

Except as A.I.D. may otherwise agree in writing, prior to any disbursement of funds under this project for any activities, except for design work, under the roads and water components and for those activities related to construction of the office and housing facilities for the Project Planning and Management Unit in Makran, or to the issuance by A.I.D. of the documentation pursuant to which such disbursements will be made, the Cooperating Country shall furnish to A.I.D. in form and substance satisfactory to A.I.D. documentation that:

i. an overall Government of Baluchistan project manager located in Quetta has been appointed;

ii. the Commissioner of the Makran Division has been appointed as Field Project Manager with full operational authority over the Project Planning and Management Unit at Turbat;

iii. a Steering Committee at Quetta and a Working Committee at Turbat have been formally established;

iv. the Project Planning and Management Unit has been formally established under the authority of the office of the Commissioner of Makran Division; and,

v. a Director of the Project Planning and Management Unit has been appointed.

c. Conditions Precedent to Disbursement for Construction of the Office and Housing Facilities for the Project Planning and Management Unit

Except as A.I.D. may otherwise agree in writing, prior to the disbursement of funds under this project for activities related to construction of the office and housing facilities for the Project Planning and Management Unit at Turbat, other than disbursements for architectural and engineering services related thereto, or to the issuance by A.I.D. of documentation pursuant to which such disbursements will be made, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D., written assurance that the land to be used for construction of the office and housing facilities will remain available for this purpose for the life of the project or until such other time as A.I.D. and the Cooperating Country may mutually agree in writing, whichever is longer.

d. Covenant as to Financing Road Maintenance

Except as A.I.D. may otherwise agree in writing, the Cooperating Country shall, within three years of the date of the Project Agreement, establish a system, acceptable to the Cooperating Country and A.I.D., for financing the cost of maintaining roads constructed, rehabilitated or improved under the project which system may include budgetary allocations for this purpose, user fees or other sources of revenue.

e. Waivers

Based on the justification set forth at Annex 7 of the Project Paper, I hereby:

a. approve a waiver from A.I.D. Geographic Code 000 (U.S. only) to A.I.D. Geographic Code 935 (Special Free World) for the procurement of 40 trailbikes and related spare parts, required for this project;

b. find that special circumstances exist to waive, and do hereby waive the requirements of Section 636(i) of the Act; and

c. certify that exclusion of procurement from Free World countries other than the Cooperating Country and countries included in Geographic Code 941 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

M. Peter McPherson
Administrator

Date

Clearances:
AA/ASIA: CWGreenleaf _____ Date _____
AA/PPC: RDerham _____ Date _____
GC: HFry _____ Date _____

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VEHICLE WAIVER REQUEST

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR, BUREAU OF ASIA

FROM: A/ASIA/PD.

SUBJECT: Source/Origin/Nationality Vehicle Procurement Waiver for
Baluchistan Area Development Project (391-0479)

I. Problem: You are being requested to waive the requirements of Section 636(i) of the Foreign Assistance Act and to waive source/origin/nationality requirements from AID Geographic Code 000 (U.S. only) to AID Geographic Code 935 (Special Free World).

II Background:

A. Cooperating Country: Pakistan

B. Authorizing Document: Project Authorization

C. Project: Baluchistan Area Development Project
391-0479

D. Geographic Code of Project: 000 and Pakistan

E. Importer of Commodity: USAID/Pakistan on behalf of the
Planning & Development Department
of Baluchistan Province, Government
of Pakistan.

F. Description of Commodity: Forty (40) motorbikes; dual purpose
road trail with high exhaust
system, 125 cc w/luggage carriers
installed at \$1275 each.

G. Approximate Total Value: \$ 51,000

H. Nature of Funding: ESF Grant

I. Procurement Source: Japan

III. Discussion and Justification

The purpose of the Baluchistan Area Development Project is to accelerate the integration of Baluchistan into the socio-economic mainstream of Pakistan and to improve the quality of life in Makran through improving roads and water infrastructure and strengthening Baluchistan's planning, management and human resources in the process. The project consists of three major components; road construction, upgrading and maintenance; water sector improvements; and improvements in planning, management and human resources. The latter component will also focus on the creation of a Planning and Management Unit (PPMU) in the Makran Division which will have the capability to plan, coordinate and supervise the implementation of sub-projects. The PPMU will work closely with the technical agencies such as the Agriculture Department providing training and upgrading the skills of professional and field staff. The motorbikes are required to enable the Agriculture Department field agents to move about their respective areas of responsibility thereby improving the availability to the farmer of technical information and help. The motorbikes are also required for PPMU Construction supervisors who will be required to travel to remote construction sites to monitor construction and road maintenance activities for the PPMU. Motorbikes are the most economical means of moving one or two persons in the project area. They are suitable for movement on small tracks and trails and are widely used in the Makran area. The U.S. does not manufacture motorbikes of this type.

- IV. Authority: Section 636 (1) of the Foreign Assistance Act of 1961 requires AID to procure U.S.-manufactured vehicles but also provides that the requirements may be waived under special circumstances. AID Handbook 1, Supplement B, Chapter 4C2d(1)(a) describes some of the special circumstances which may support a waiver, including the "inability of U.S. manufacturers to provide a particular type of needed vehicle, e.g., right-hand drive vehicles....etc." Handbook 1, Supplement B, Chapter 4Cd(3) and Delegation of Authority No. 40 authorize Assistance Administrators to waive source/origin/nationality requirements in this instance.
- V. Certification: In approving this waiver request, you will be certifying that exclusion of procurement from Free World Countries other than the Cooperating Country and Geographic Code 941 countries would seriously impede attainment of U.S. foreign policy objectives and the objectives of the Foreign Assistance Program.
- VI. Recommendation: That you approve a waiver of Section 636(1) of the FAA and a source/origin/nationality waiver to permit procurement of the required vehicles from AID Geographic Code 935 (Special Free World).

Approved: _____

Disapproved: _____

Date: _____

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**UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN**

Cable : USAIDPAK

**HEADQUARTERS OFFICE
ISLAMABAD**

THE DIRECTOR

USAID/PAKISTAN MISSION DIRECTOR'S WAIVER FOR A.I.D.
PAYMENT OF INTERNATIONAL PARTICIPANT TRAVEL COSTS

A.I.D. Handbook 10, Chapter 15B1, provides that the cost of international travel, including incidental costs en route as well as the cost of travel between the participant's city and the points of departure and return in the participant's home country, shall be paid by the host government or other sponsor unless, in the case of Mission-funded programs, the Mission Director has justified and authorized full or partial waivers and has so notified S&T/IT.

Training and institution-building are important components of the \$1.625 billion economic assistance program negotiated between the Governments of the U.S. and Pakistan. USAID/Pakistan's experience, however, has been that the Government of Pakistan (GOP), due to serious foreign exchange and budgetary constraints, has been historically unable to fund international travel costs for short-term training programs. The consequence has been that Pakistani participants have, on numerous occasions, been denied worthwhile and much needed training, inhibiting the achievement of project targets.

I have carefully reviewed the advisability of requiring full GOP funding for travel costs for participant training of one year or less and the alternative of funding such travel with grant and loan funds provided through USAID/Pakistan to the GOP. Recognizing the objectives of many of our projects and the fact that project success will be enhanced by encouraging opportunities for short-term training, I have determined that it would be prejudicial to U.S. interests to require that the GOP pay the entire international participant travel costs for training programs of one year or less.

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Therefore, on all Mission-funded training programs up to and including one year, USAID/Pakistan shall be responsible for the entire cost of the round-trip economy class air ticket and other necessary incidental costs en route. Where a PIO/P has been originally written for a program of one year or less, but, after the participant has initiated his or her program, the program is extended so that it exceeds one year in total, USAID/Pakistan shall also fund the round-trip ticket. The justification for funding programs that are extended is to minimize administrative problems which are otherwise likely to occur.

On the basis of the above justification and pursuant to Handbook 10, Chapter 15B1a, I, Jimmie M. Stone, principal officer of the Agency for International Development in Pakistan, do hereby waive the requirement that the host government fully fund international travel for training courses of one year or less and authorize payment with USAID/Pakistan loan and grant funds for travel costs as specified above.



Jimmie M. Stone
Acting Director
USAID/Pakistan

2/27/84
Date

PROJECT DESCRIPTION

A. Project Goal and Purpose

The goal to which this Project contributes is the rapid socio-economic development of the lagging areas of Pakistan. The purpose of the Project is to accelerate the integration of the Makran Division of Baluchistan Province into the socio-economic mainstream of Pakistan and to improve the quality of life in Makran through improving roads, water and agriculture infrastructure and strengthening Provincial and Divisional planning, management and human resources in Agriculture in the process.

B. Project Components

The Project consists of three components: (1) Road construction, upgrading, and maintenance; (2) water sector improvements; (3) improved planning, management and human resources.

The road construction, upgrading and maintenance component is designed to improve and rehabilitate priority roads to assure adequate access into, out of and within the Makran Division. In addition, it will strengthen and improve the road maintenance capability of the Communications and Works Department in that area. The water sector improvements are designed to provide a balanced selection of karez and surface water development activities. The improved planning, management and human resources component will provide support to the GOB's Planning and Development Department at Quetta which has development responsibilities throughout Baluchistan; support a new Project Planning and Management Unit-Makran Division; support activities complimentary to those carried out by the PPMU designed to improve performance and effectiveness of human resources in agriculture in Makran; and a special development activity fund.

1. Road Construction, Upgrading and Maintenance

Under this component three major activities will take place.

- (1) Road rehabilitation and upgrading of 600 kms of priority roads to bring those roads to a design speed of 50 kms per hours. Rehabilitation will include road widening; cutting down vertical curves; improving approaches to low-water crossings; and re-alignment of short lengths of road. This work will be undertaken by the Communication and Works Department (C&W) under a force-account system based on an agreed program of work. The Project will fund consultant planning and supervisory services to work directly with the C&W Department.

- (2) Improved maintenance of 900 kms of priority roads to maintain a traffic design speed of 50 kms per hour. The Project will provide financial support, training and supervision to assist C&W to operate existing equipment effectively.
- (3) Road construction through two mountainous sections for a total of 55 km will be designed and constructed to eliminate major transport bottlenecks. This 55 km section will be paved to stabilize the roadbed and protect the embankments, grade and wearing course from flood flow damage.

2. Water Sector Improvements

This component will support expansion of existing facilities such as the karez and development of new surface water related activities. Karez improvement activities will range from capping of karezes to reduce maintenance expenses and prolong the well life; to drilling to connect the existing mother wells to deeper aquifers thereby increasing water flow. These activities will be undertaken in cooperation with Karez Owners Associations. Construction of small delay action dams will also be undertaken to increase the recharge into the karezes. Surface water related activities will include construction of the Kil Kaur storage dam and Goberd diversion dam. The survey, design, and construction of these larger projects will be contracted out to established Pakistani or joint-venture Pakistani/American construction firms. The PPMU with support from a contract A&E firm will monitor these construction activities. Improved on-farm water management practices such as renovation of water courses will also be included in the water component.

3. Planning Management and Human Resources Development

This Project Component will undertake the following major actions (1) provide technical assistance and staff support to the GOB's Planning and Development Department at Quetta; (2) provide support and technical assistance to a new Project Planning and Management Unit (PPMU) Makran Division; (3) support activities complimentary to those carried out by the PPMU designed to improve the performance and effectiveness of human resources in agriculture in Makran; and (4) a special development activities fund. The technical assistance personnel working with the Planning and Development Department in Quetta will improve systems for design and analysis of new development projects for the Province and improve the monitoring, reporting and evaluation systems; and simultaneously support activities of the PPMU Makran as a proto-type planning development unit at the Divisional level. Short term expatriate and Pakistani consultants will be provided to perform short term specialized technical tasks. The PPMU Makran is designed to become a major instrument of practical project prioritization, selection, design, monitoring and, when necessary, hands on management. At the same time during the life of Project this Unit will be supported with additional staff to ensure that the BALAD Project itself is carried out effectively

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and efficiently. While implementing the BALAD Project the PPMU personnel will receive on the job training in developing necessary skills. The spread-effect of formal training and on-the-job training and improvements in the planning and management process will have significant impact beyond the PPMU and be the basis for further development in Makran.

Human resources development in Agriculture will include training of agriculture field assistants; better use of model farmers in farming systems approach; improved support for agriculture professionals including field agents; technical information appropriate to the Makran for professionals and client groups. The Special Development activities will be a source of funding available to the PPMU and Makran officials, enabling them to be responsive to current development problems in the Project area. A contract with a Pakistani firm or institution to conduct a marketing survey will be one of the early special development activities. Funding for the collection of base-line social and economic data is another example.

C. Illustrative Implementation Plan

1. A.I.D. Responsibilities

A.I.D. will be responsible for (a) negotiating and awarding a contract to a U.S. firm to provide technical advisory services for the roads, water, and improved planning management and human resources components; (b) for negotiating and awarding a contract for A&E and construction supervisory services for the 55 km section of new highway to be constructed; (c) for negotiating and awarding a contract for construction of a headquarters and housing complex in Turbat, Makran (d) negotiating and awarding a contract to a U.S. or joint-venture U.S. Pakistani firm for the construction of the new 55 km paved highway; (e) negotiating and awarding contracts for A&E and construction services for all medium scale water structures such as the Kil Kaur Dam (f) purchasing directly all Project vehicles and all household and office equipment and supplies for the long-term consultants and the PPMU, as well as assisting the GOB in procurement of the remaining off-shore commodities; (g) arranging for short-term and long-term training of participants outside of Pakistan (h) providing sufficient staff to participate in the scheduled Project evaluations and to coordinate with host country staff in the implementation of this Project; and inspecting and certifying for payment of all construction activities.

2. GOP Responsibilities

The GOP entity responsible for the overall implementation of this Project is the Government of Baluchistan Province (GOB). The GOB will establish a steering committee to oversee the Project and will establish a Project Planning and Management Unit in the Makran Division to manage implementation in that area.

The GOP will be responsible for (a) negotiating and awarding contracts for specified sections of the roads and water components of the Project; (b) procuring local commodities not procured by A.I.D. during the life of the Project ; (c) identifying suitable candidates for both long-term and short-term overseas training; (d) arranging for all in-country training activities; (e) providing sufficient staff to participate in the scheduled Project evaluations and to serve as counterparts to the expatriate advisors in the implementation of this Project.

PROJECT MANAGEMENT STRUCTURE

A. Introduction

The powers, responsibilities, and linkages describe how the technical assistance and support to the P&D Department, Quetta and the Project Planning-Management Unit (PPMU), Makran Division will operate within the context of the Baluchistan Area Development Project.

The PPMU, Makran Division is designed to foster implementation and monitoring of the roads; water; and planning, management and human resource development components of the Baluchistan Area Development Project. Technical Assistance at Quetta is designed to provide back-up on methods of planning, reporting, and monitoring as well as more generally providing consulting services to the Additional Chief Secretary, Planning and Development on improved methods of planning, reporting, monitoring, and training as well as ways of obtaining qualified Pakistani staff to better perform such work.

B. Additional Chief Secretary Planning and Development - Quetta

1. Responsibilities

a. All 'line' agencies in the province report to the Additional Chief Secretary for Planning and Development in matters concerning planning, development, monitoring, etc.

b. In future, if feasible, all Divisional Commissioners will report to the Additional Chief Secretary, Planning and Development for matters concerning development and will be annually evaluated for this kind of work by the Additional Chief Secretary (as now occurs in the Government of the Punjab).

c. Controls all assignments, designation of positions, incentives, promotions, etc. for personnel of Planning and Development Department-Quetta and the technical assistance personnel of the PPMU, Makran Division.

d. Operating under 'reserved' powers not delegated to the Field Project Manager PPMU-Makran Division, directs and controls technical assistance personnel assigned to the P&D Department-Quetta.

e. Directs back-stopping for the technical assistance personnel Unit assigned to the P&D Department-Quetta and as appropriate, the PPMU-Makran Division.

2. Relationships

a. Senior federal civil service officer for development in the Government of Baluchistan.

b. Reports to the Governor and the Chief Secretary for all matters concerning development and planning in the province.

c. Senior to all Secretaries of 'line' agencies in the province.

C. Provincial Level Steering Committee-Baluchistan Area Development Project

1. Staff

a. Chairman, Additional Chief Secretary (P&D) and as Overall Project Manager - voting member

b. USAID Regional Affairs Officer, Quetta and as USAID Project Officer - voting member

c. Commissioner, Makran Division or his designee - voting member

d. Secretaries of concerned 'line' departments, the Director of the PPMU-Makran Division - at the request of the Additional Chief Secretary (P&D) and all ex-officio members.

e. Chief of Party of expatriate team inside PPMU-Makran Division, or his designee.

2. Responsibilities

a. To receive Quarterly Reports on progress and finances and review them.

b. To provide policy guidance to the PPMU-Makran Division and to the technical assistance personnel assigned to the P&D Department-Quetta.

c. To assure maximum incentives for GOB personnel assigned to the PPMU-Makran Division and to the P&D technical assistance personnel, Quetta. At the Makran Division, in particular, also to assure that maximum incentives are given to 'line' agency personnel and others designated as critical to the success of Baluchistan Area Development Project activities.

d. To foster 'line' agency and P&D personnel training in planning, management, and monitoring through the PPMU-Makran Division and the P&D Quetta.

e. To gradually test and build the long-term establishment components (positions and duties) for a permanent P&D Unit at the divisional level and use the P&D Quetta to help foster this development through the PPMU.

f. To coordinate supporting linkages and actions among 'line' agencies at the provincial level.

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g. To commission at any time audits of project activities using project funds.

h. To use the technical assistance personnel assigned to the P&D Quetta to help develop improved methods of planning, reporting, monitoring and test same at the PPMU-Makran Division.

i. To propose pre-feasibility studies for prospective Baluchistan Area Development Project.

3. Periodicity of Meetings

The Provincial Level Steering Committee will meet quarterly or as necessary.

4. Relationships

a. Through the Additional Chief Secretary, Planning and Development and the Governor's Office with the federal level.

b. With the 'line' agencies at the provincial level.

c. Through the Regional Affairs Officer-Quetta with USAID-Islamabad.

d. With the Field Project Manager/Commissioner at the PPMU.

e. With the expatriate Chief of Party of the contractor/consultant team.

D. Divisional Level Working Group-Baluchistan Area Development Project

1. Staff

a. Chairman, Commissioner-Makran Division and as Field Project Manager for GOB, voting member.

b. Director of the PPMU-Makran Division, voting member.

c. AID Regional Affairs Officer-Quetta, or his designee - voting member.

d. At the invitation of the Chairman, members of the 'line' agencies at divisional level, Assistant Commissioners from the districts, all ex-officio and non-voting.

e. Chief of Party of the expatriate contractor/consultant team or his designee.

2. Responsibilities

a. To set operational policies for the PPMU-Makran Division.

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b. To adhere to general policy guidance provided by the Provincial Level Steering Committee.

c. To assure coordination by all 'line' agencies where relevant.

d. To oversee the awarding of contracts based on PPMU-Makran Division recommendations.

e. To accord PPMU operational procedures with the methods and approaches recommended by the P&D Quetta where judged feasible and appropriate.

f. To review and approve the PPMU-Makran Division Quarterly Work Plans.

g. To review progress, problems, level of financial expenditures etc. of the Baluchistan Area Development Project activities for Makran and the PPMU-Makran Division on a periodic basis.

h. Commissioning of audits on Baluchistan Area Development Project activities at any time.

3. Periodicity of meetings

The Divisional Level Working Group will meet quarterly or as necessary.

4. Relationships

a. Through the Commissioner/Field Project Manager with the Provincial Steering Committee-Quetta.

b. With the PPMU-Makran Division Director.

c. With the 'line' agencies at the divisional level.

d. With the AID Project Officer(Regional Affairs Officer)-Quetta.

E. Technical Assistance to the Planning and Development Department - Quetta

This will be headed by an Economist NPS 18/19 grade officer recruited and appointed by the Additional Chief Secretary, P&D.

1. Personnel

a. Three GOB trainees designated as: systems analyst; statistical officer; and planning officer. These will be established as Grade 17 positions; but trainees may have lower personal grades.

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b. Expatriate planner/economist specialised in area development planning, planning processes, etc. He will be a member of the contractor/consultant team.

c. One systems analyst (Pakistani) - member of the contractor/consultant team.

d. Unspecified number of short-term expatriate and Pakistani specialists on various aspects of planning, data-gathering, analysis, monitoring, etc. Levels dependent upon work targets set.

e. Such staff support as may be assigned by the contractor/consultant team or by the Government of Baluchistan.

f. Any additional trainees assigned by the Government of Baluchistan.

2. Responsibilities

a. Development of improved methods for the preparation and appraisal of development projects.

b. Inventory and assess existing physical, economic, social data that can be utilized in designing and appraising development projects.

c. Development of Operations and Management systems supportive of the PPMU-Makran Division planning, training, reporting, and monitoring activities.

d. Linking of province-wide 'line' agency personnel to training opportunities and training programs as established within the PPMU-Makran Division.

e. Design/use of reporting and monitoring systems which accurately identify policy and management issues in PPMU and Baluchistan Area Development Project performance.

f. Design/test periodic performance indicators for speedily and reliably measuring the progress, quality of performance, and management constraints in individual PPMU and Baluchistan Area Development Project operations.

g. Design, test, and use formative evaluation techniques for planning, management, and reporting.

E. Commissioner-Makran Division (GOB) Field Project Manager for Baluchistan Area Development Project

1. Staff

All staff related to the Commissioner's functions as Field Project Manager will be located inside the PPMU-Makran Division, including the expatriate contractor/consultant team inside the PPMU.

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2. Responsibilities

a. Appropriate financial, contracting, recruitment, purchase, and other relevant powers and authorities will be delegated to the Commissioner by the Additional Chief Secretary, Planning and Development so as to enable implementation of the Baluchistan Area Development Project through operation of the PPMU-Makran Division.

b. Review and direct the work of the Director of the PPMU-Makran Division.

c. Coordinate the work of the 'line' agencies in the Makran Division as these pertain to the operation of the Baluchistan Area Development Project.

d. Chair and direct the work of the Divisional Level Working Group.

e. Participate in the Provincial Level Steering Committee.

f. Review/approve Quarterly Work Plans.

g. Commission audits on all Baluchistan Area Development Project activities.

3. Relationships

a. To the Additional Chief Secretary (P&D) for matters concerning development and as Chairman of the Provincial Steering Committee.

b. Operational control over PPMU-Makran Division and the Director of the PPMU as well as the expatriate team assigned inside the PPMU.

c. Supervision and direction of all 'line' agencies in the division.

d. Private contractors through bid processing, letting, monitoring of PPMU-Makran Division.

e. Kerez owners associations and other groups through PPMU-Makran Division arrangements.

G. Director PPMU-Makran Division will be a NPS 19/20 grade officer recruited and appointed by the Additional Chief Secretary, P&D.

1. Staff

a. Five sections occupied by trainee or senior GOB staff. Sections include: roads; water; agriculture; planning/economics/statistics; administration/finance.

b. Expatriate contractor/consultant team, including Pakistani employees, assigned inside the PPMU-Makran Division.

2. Responsibilities

- a. Operate the PPMU-Makran Division under the direction of the Commissioner (Field Project Manager) Makran Division.
- b. Exercise authority delegated by the Commissioner-Makran Division.
- c. Approve preparation of all Work Plans - as developed by the various Sections and relevant contractor/consultant personnel assigned to those Sections.
- d. Receive policy guidance from the Divisional Level Working Group, of which he is secretary; and from the Provincial Level Steering Committee.

H. Section Head - Roads (PPMU) will be either a senior person or a trainee. In both cases he will be a Civil Engineer. The established grade will be NPS-18. As trainee the grade will be lower.

1. Staff

- a. Expatriate Chief of Party for contractor/consultant team: Civil Engineer.
- b. Senior Civil Engineer (Pakistani) - member of expatriate contractor/consultant team.
- c. Civil Engineer (Pakistani) - member of expatriate contractor/consultant team.
- d. Survey/Design engineer (Pakistani) and two surveyors/draftsmen (Pakistani) employed by contractor/consultant.
- e. Up to 15 Work Supervisors (Makrani's) employed by the contractor/consultant team.
- f. Such support staff as may be assigned by the contractor/consultant team or by the Government of Baluchistan.
- g. Any additional trainees assigned to this function by the Government of Baluchistan.

2. Responsibilities

- a. Cooperate with the relevant Sections in operating the FAR system where applied.
- b. Cooperate with the relevant sections in doing all necessary work to operate private contracting processes including monitoring where applied.

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c. Direct the Survey/Design Engineer and the two surveyor/draftsmen in providing services to this section as well as to other relevant sections of the PPMU-Makran Division.

d. Set road rehabilitation and maintenance standards and practices.

e. Coordinate training of assigned PPMU and 'line' agency personnel. In the latter case, also arrange/assist in the special training of road staff, operators, etc. in the 'line' agencies.

f. Develop all work plans, plans, and scheduling including a Road Implementation Plan.

g. Recruit, train, and direct the activities of Works Supervisors.

h. Develop demonstration and test of various types of wash crossings and drainage structures.

i. Cooperate with the relevant sections in dealing with costing, financial flow, recruitment, logistic and other matters.

j. Where feasible, adopt methods of planning, reporting, monitoring developed by P&D Quetta.

I. Section Head - Water (PPMU) will be either a senior person or a trainee. In both cases he will be a Civil Engineer with a background, preferably, in dam construction and catchment structures. The established grade will be NPS-18. As a trainee the grade will be lower.

1. Staff

a. Expatriate member of contractor/consultant team designated as Water Manager who is a Civil Engineer with dam design/construction experience.

b. Senior Civil Engineer (Pakistani) with hydrological experience/training - member of the expatriate contractor/consultant team.

c. Civil Engineer (Pakistani) with experience in dams and structures - member of the expatriate contractor/consultant team.

d. Civil Engineer (Pakistani) with experience in field work, water catchments, structures - member of the expatriate contractor/consultant team.

e. Up to 15 Work Supervisors (Mackrani's) employed by the contractor/consultant team.

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f. Such support staff as may be assigned by the contractor/consultant team or by the Government of Baluchistan.

g. Any additional trainees assigned to this function by the Government of Baluchistan.

2. Responsibilities

a. Cooperate with the relevant sections in operating the FAR system where applied.

b. Cooperate with the relevant sections in doing all necessary work to operate private contracting processes including monitoring when applied.

c. Direct the Survey/Design Engineer and the two surveyor/draftsmen in matters related to design, siting of catchment structures, Karez capping, etc.

d. Establish and operate karez capping slab precasting systems as well as other processes related to karez improvement.

e. Establish and operate systems to establish mini-check dams and water retention structures.

f. Establish and operate systems to deepen and improve the efficiency of mother wells.

g. Overview the design and construction of major or larger dam constructions.

h. Coordinate training of assigned PPMU and 'line' agency personnel. In the latter case, also arrange/assist in the special training of irrigation staff, technicians, etc. in the relevant 'line' agencies.

i. Develop all work plans and schedules for activities.

j. Directly or through use of sub-contractors develop the essentials of a Water Use Plan.

k. Recruit, train and direct the activities of Works Supervisors.

l. Develop demonstration and test activities for various types of re-charge structures.

m. Develop and maintain contacts with 'line' agencies, private contractors, Karez Owners Associations, etc.

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n. Where relevant, provide assistance to the Agriculture and On-Farm Water Management activities of the Baluchistan Area Development Project and the PPMU sections concerned.

o. Cooperate with the relevant sections in dealing with costing, financial flow, recruitment, logistic and other matters.

p. Where feasible adopt methods of planning, reporting, monitoring developed by P&D Quetta.

J. Section Head - Agriculture (On-Farm Water Management) (PPMU) will be either a senior person or a trainee. In both cases he will be an agriculturist with a background in irrigation agronomy and/or experience in water spreading techniques. The established grade will be NPS-18. As a trainee the grade will be lower.

1. Staff

a. Expatriate member of contractor/consultant team with background as an irrigation agronomist.

b. Irrigation engineer (Pakistani) with experience in on-farm water management - member of the expatriate contractor/consultant team.

c. Some Work Supervisors (Makrani's) employed by the contractor/consultant team.

d. Such support staff as may be assigned by the contractor/consultant team or by the Government of Baluchistan.

e. Any additional trainees assigned to this function by the Government of Pakistan.

2. Responsibilities

a. Cooperate with the relevant sections in the PPMU in operating the FAR system where applied.

b. Cooperate with the relevant sections in doing all necessary work to operate private contracting processes including monitoring when applied.

c. Coordinate all work with the OFWM Directorate of the Department of Agriculture and other concerned 'line' agencies.

d. Develop and apply technologies for water course improvements, precision land levelling, relevant agronomic practices, and the training of staff and farmers in cultural practices, maintenance of systems, etc.

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e. Coordinate all training of assigned PPMU and 'line' agency personnel. In the latter case, also arrange/assist in the special training of OFWM staff, technicians, and irrigation personnel in the relevant 'line' agencies.

f. Develop all work plans and schedules for activities.

g. Where necessary, and permitted by the workloads of other relevant sections of the PPMU, utilize and direct some Works Supervisors in supporting some of the activities.

h. In addition to executing the principle implementation/monitoring functions connected with water course improvement, land levelling, and training, develop tests and demonstrations of improved methodologies in OFWM and monitoring activities.

i. Develop and maintain contacts with 'line' agencies, private contractors, Water User Groups and other groups associated with OFWM practices and introduction of improved cultural practices.

j. Where relevant, seek assistance from other sections of the PPMU when implementing the Agriculture-On-Farm Water Management activities.

k. Coordinate useages and systems with development of same by the P&D Staff Unit-Quetta.

l. Cooperate with the relevant sections in dealing with the costing, financial flow, recruitment, logistic, reporting, and other matters.

m. Where feasible, adopt methods of planning, reporting, monitoring developed by P&D Staff Unit-Quetta.

K. Section Head - Planning, Economics, Statistics (PPMU) will be a senior person or a trainee. In both cases he will be an economist with a background in planning. The established grade will be NPS-17/18. As a trainee the grade may be lower.

1. Staff

a. Economist (Pakistani) with experience in planning - member of the expatriate contractor/consultant team.

b. Social Scientist (Pakistani) with experience in social surveys, analysis of client needs - member of the expatriate contractor/consultant team.

c. Such support staff as may be assigned by the contractor/consultant team or by the Government of Baluchistan.

d. Any additional trainees assigned to this function by the Government of Baluchistan.

2. Responsibilities

a. Overseeing and supporting the detailed planning activities of each section in relation to project designs, plans, work plans, schedules, costing, benefits, etc.

b. Where feasible, adopting the methods of planning, project appraisal, and performance evaluation developed by the P&D Staff Unit-Quetta.

c. Assisting in the design, preparation, and/or contracting and review of preparation of plans for roads and water.

d. Generating and evaluating socio-economic data for pre-feasibility of proposed projects executed through the PPMU-Makran Division.

e. Cooperate with the relevant sections in dealing with the costing, financial flow, recruitment, logistic, reporting, and other matters.

L. Section Head - Finance and Administration (PPMU) will be a senior person or a trainee. In both cases he will be an administrator with experience particularly in handling larger-scale support operations. The established grade will be NPS-18. As a trainee, because of the importance of this post, the grade should not be less than a NPS-17.

1. Staff

a. Executive Officer (Pakistani) with extensive experience in organizing and managing major administrative, finance, purchase, logistics operations - member of the expatriate contractor/consultant team.

b. Senior Contract Officer (Pakistani) with extensive experience in setting up and operating bid preparation, solicitation, screening, award, and supervision activities - member of the contractor/consultant team.

c. Senior Accountant (Pakistani) with experience in setting up and operating payroll, purchase, accounting, and other like systems - member of contractor/consultant team.

d. Junior Accountant (Pakistani) to assist in setting up and operating all relevant finance control and accounting systems - member of the contractor/consultant team.

e. Such support staff as may be assigned by the contractor/ consultant team or by the Government of Pakistan.

f. Any additional trainees assigned to this function by the Government of Baluchistan.

2. Responsibilities

a. Coordination with all sections concerning costing, budget preparation, and budget control.

b. Prepare bids in cooperation with all sections and supervise their solicitation, review, and awarding.

c. Negotiate contracts with successful bidders and supervise financial aspects of contractor relations/obligations.

d. Coordinate financial, accounting aspects of all FAR operations with relevant sections.

e. Set up and operate all necessary book-keeping and accounting systems/procedures to facilitate costing.

f. Provide secretarial services to all sections.

g. Manage general services, housing and the motor pool.

h. Manage local procurement.

i. Conform to all reporting and other requirements as prescribed by policy and at the direction of the Commissioner.

j. Participate, where relevant and feasible, in audits of Baluchistan Area Development activities.

SPECIAL MEMORANDA ON PLANNING AND MANAGEMENT

a. Reason for Choice of Commissioner as Field Project Manager and eventuality of eventual staffing of P&D Unit at Divisional level.

In the Punjab, they have set up the Divisional P&D Units for the purpose of assisting the Commissioner in performing a role as the senior officer in charge of development for the Division. The Commissioner has two responsibilities: to the Chief Secretary of the Punjab in matters concerning Law and Order and to the Additional Secretary for Planning and Development in matters concerning development. In the Punjab the latter writes the annual personnel evaluation on each Commissioner for his development work. In the Punjab, also all the Commissioners must meet quarterly with the Additional Chief Secretary for planning and Development to review development plans progress of projects, problems in projects, etc.

They plan to, eventually, set up a similar system in Baluchistan. However, there are complications caused by distances and lack of skilled staffing in remote areas. In the Punjab a single P&D Divisional Unit is comprised of a Director (Grade 18) and 2 research officers. A support staff of 8 to 10 people supports such a Unit. Because the technical services are so well staffed at Divisional levels in the Punjab there is no need to attach technical personnellike engineers, etc. to such units. The Director can ask the Commissioner to see that such staff is seconded for special tasks - and it is done immediately.

In Baluchistan, it is probable that this later practice cannot be followed - at least in the more remote Divisions. Therefore, it is probable that the P&D Units will require the 3-man staffing now established in the Punjab plus 3 to 6 more technical people and administrative types. Probably, according to the Secretary of P&D Department, the eventual size will be about 10 officers per P&D Divisional Unit.

The Baluchistan Area Development Project PPMU is thus looked upon by the Additional-Chief Secretary as a way of testing out how to be best authorize and equip the Commissioner to act as a development officer, and also to determine the optimum size and duties of a P&D Unit at the Divisional level.

1. This entity is the oldest of its kind in Pakistan. Prior to the reorganization of Pakistan along its present lines, the personnel of this Board, used to handle all planning, monitoring, etc. for the West Wing as a whole.
2. In its formative stages, the Harvard Advisory Group and other foreign technical assistance resources such as A. Waterston (now retired) but formerly with the World Bank, Mr. Pickering (still with the World Bank-Washington) and a number of others all worked with the P&D. It has also been able, (and still is) to obtain long-term (Masters level and above) foreign training scholarships for its personnel - through various donor assistance programs.
3. Presently, at Lahore, this Board has an establishment staff of 97 officers, with accompanying support staff. These comprise:
 - 10 Chiefs of Section
 - 30 Assistant Chiefs
 - 57 Research Officers.
4. The Board is responsible for: coordination of development activities of all the Departments; preparation of the: Provincial Plan of the Five-Year Plan, Annual Development Program; liaison with National Planning agencies and coordination with Federal Agencies for their Annual Development Programs, and development projects in the Punjab; processing of all development schemes, i.e. appraisal of projects and sanctioning of same; monitoring the progress of all development schemes; formulation and review of economic policies; scheduling and handling of foreign aid; and programming foreign training.
5. Because of the size of population (60,000,000) as well as the wealth of this province the planning and developmental activities are on a very large scale. For example, the Annual Development Program contains over 2,000 schemes with annual expenditures scheduled at 422 crores of Rupees (\$315,000,000 @ 13.4/\$1 rate). To plan these, as well as screen out another 1,000-plus which are either rejected or are returned for further re-design each year imposes large workloads. Monitoring of all these activities also requires much time and effort.
6. In the Government of the Punjab the Chairman of Board (Planning and Development) and other senior officials have successfully encouraged the development of project planning, appraisal, monitoring, and evaluation skills within the various 'line' agencies. In a number of cases

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The Directors of the Units work very closely with Commissioners. They attend the quarterly review meetings where problems on projects are discussed, progress reported, and plans developed. In the same way, projects exceeding Rupees 2,500,000 must be sanctioned by the P&D, Lahore. Here, the Commissioners attend quarterly review meetings accompanied by the Directors of the Units in order to review progress on larger projects, and discuss plans and specific schemes.

The P&D has not experienced any difficulty in staffing the Units. Directorships are favored because they carry many 'perks' like a car, housing, extra pay, etc. - which are not available as an Assistant Chief of Section in Lahore.

In general, Mr. Qadir summed up the experience with the Units as very good. They have certainly helped to improve the quality of planning, appraisal, and monitoring work while enabling the P&D to play a more consequent role at the District level in reporting on performance and speeding up the planning process.

9. Starting in 1977 the P&D created a Project Training Institute at Lahore. This is aimed at providing short-term and long-term courses for 'line' agency personnel as well as P&D staff. Experience has been very good with the Institute and Mr. Qadir expressed the view that its services could be made available to the Planning and Development Department of Baluchistan. (This Institute is the subject of a separate interview report on the same date.)

In closing, we discussed whether the Punjab model could be assisted to develop in Baluchistan. Mr. Qadir argued that, if at all possible, the first 'tests' of a model should be set up on a District basis. Alternatively, if this is not possible, it should be planned for one Division - and then extended downward to the Districts within that Division. It was agreed that because of distances, limited 'line' agency technical staffing, and a number of other factors in Baluchistan a P&D model appropriate to those conditions would probably be somewhat different from the model that has evolved in the Punjab. Mr. Qadir said that he believed the Planning and Development Board, Punjab could provide technical assistance to the P&D-Quetta in this matter. The subject would have to be carefully explored in order to determine what was needed.

Mr. Abbas made the following points:

1. To date, the Institute has organized 10 long-term courses and 30 short-term courses. Over 750 individuals drawn from many departments as well as the P&D Board have participated in these training sessions.
2. The 'core' group of trainers include Mr. Abbas, 3 Grade 18 Officers and 3 Grade 17 Officers. These are augmented by lecturers drawn from senior ranks within the P&D Board.
3. The number of long-term courses has had to be limited because of lack of housing accommodations for trainees at Lahore. It is expected that, soon, the P&D Board will be able to build its own hostel at Lahore. When this happens, the number of long-term courses can be expanded.
4. A copy of a typical long-term course (in agriculture) given to me by Mr. Abbas includes the following courses and sub-topics:

(a) Project Planning

- Plans, Programs and Projects
- Project Cycle
- Formulation of Agricultural projects
- Introduction to PC-Proforma
- Approval of Projects at various levels
- Formulation of Annual Development Programs
- Selected Concepts of Economics
- Elementary Statistics
- Group formulation and study of selected projects

(b) Project Appraisal

- Identification of Costs and Benefits
- Evaluation of Costs and Benefits
- Time Value of Money
- Project Criteria
- Sensitivity Analysis
- Social Evaluation of projects
- Case Study

(c) Project Implementation

- Network Analysis including PERT and CPM

(d) Project Evaluation

- Review of three selected projects

(e) Field Workshop of 10 days

- 3 Groups organised with each one to design a project using techniques taught during course.

1. Improved planning and appraisal methods:

- Review the content and methods of gathering socio-economic data related to the planning/appraisal/monitoring of roads, water, and irrigated agriculture projects by the 'line' agencies and the P&D. Use the experience at PPMU-Makran Division as a starting point.
- Develop low-cost, quick, methods for the gathering of additional or different data (socio-economic, physical, etc.) that could help speed the planning and appraisal of road, water, and irrigated agriculture projects. Again, use the PPMU-Makran as the basis for initial experience.
- Develop divisional Operations Room Plan Development and Monitoring systems for planning and operating division-based projects in roads, water, and irrigated agriculture. Use the Makran PPMU as the basis for this.

2. Management:

- Organize and operate an Operations and Management study directed at the P&D-Quetta initially, in first phase, aimed at obtaining the best support, guidance, and utilization of the PPMU Divisional initiative from the P&D-Quetta. Later, this might be expanded into a larger study looking at the P&D in relation to all or a portion of its responsibilities with reference to the entire province.
- Design/use of reporting systems which quickly identify performance status inside the PPMU as well as among BALAD project activities.
- Design training systems and schedules adjusted to the needs and workloads of 'line' agency and PPMU staff.
- Set up systems for constantly reviewing and testing the design and use of special incentives aimed at attracting and holding varying levels of technical and administrative staff of the Government of Baluchistan - for service in remote areas.
- Set up systems for recruiting and training Baluchi citizens for use in technical, semi-technical, and administrative work in remote areas.

- Design, install, and operate radio communications systems designed to facilitate policy/monitoring functions between P&D-Quetta, the PPMU-Makran Division, and the 'line' agencies.

3. Monitoring and evaluation

- Using the PPMU-Makran Division as a basis for test, develop reliable methods for surveying performance on F&R and contract activities costing of same, and assessing quality of content.
- Review how the P&D-Quetta operates monitoring of 'line' agency development projects in roads, water, and irrigated agriculture throughout the province.
- Based on the above review develop recommendations on how such monitoring can be improved in the absence of PPMU divisional level units.
- Design and apply formative evaluation techniques for testing on the Baluchistan Area Development Project activities.

Types of short-term personnel required:

- i. Area development (regional) planners with a background in data-gathering and analysis (expatriate or Pakistani),
- ii. Systems analysts with a background in regional planning (expatriate or Pakistani),
- iii. Economic analysts experienced in micro-analytic technique applications to project design/appraisal for projects of relatively low cost or complexity. (Expatriate or Pakistani)
- iv. O&M specialists (Pakistani),
- v. Performance indicator, visual display, and management information specialists (Pakistani or expatriate),
- vi. Evaluation specialists (Pakistani or expatriate).

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DETAILED SOCIAL SOUNDNESS ANALYSIS

Since project activities are concentrated in Makran, that division has been the focus of the social analysis. Additional analyses will continue to be carried out during project implementation in conjunction with research, monitoring and evaluation.

1. Overview of Makran Ecology and Demography:

Makran is one of the four divisions of Baluchistan and borders the Iranian province of Baluchistan to the west, Kalat Division to the north and east and the Arabian Sea to the south. Historically Makran has been one of the most important areas in this part of the world. Its strategic, economic and political importance has not declined in recent times. Most of Baluchistan's and thus most of Pakistan's sea coast, lies in Makran. Makran, including the Iranian Makran Coast across the border covers about 1000 miles of the Persian Gulf and Arabian sea coasts. Makran has a total area of 54,574 sq. kms. which amounts to 16 percent of the total area of Baluchistan (which in turn makes up 45 percent of Pakistan's total area). It has a population of 552,602 persons (Turbat district - 379,467, Panjgur district - 160,750, and Gwadar district - 112,385) which also constitute about 15% of Baluchistan's total population. The population density of Makran approximates the provincial average of 12 persons per sq. km. (27 persons per sq. mile). Makran has three main mountain ranges traversing the Division from east to west. The southernmost range skirts the Arabian Sea coast and is called the Makran Coastal Range. Proceeding northward, the next range located in the center of the Division is called the Central Makran Range; while in the north separating Makran from Kharan District of Kalat Division is the Siah Range. Between these ranges lie valleys of varying width which form natural divisions and are roughly coterminous with the districts of today. The valleys enclosed by Makran coastal range on the south (Dasht is the most important one) rise to a height of about 200 feet above sea level, and form the southern coastal district of Gwadar. The second or central division enclosed between the Makran Coastal Range and the Central Makran Range consists of the Kech Valley from Mand to Hoshab lying at an elevation of about 500 feet above sea level (A.S.L.). The subsidiary valleys of Buleda and Balgattar lie about 1000 feet A.S.L. The third and the northernmost district of the Division - Panjgur District consists of the valleys of Panjgur, Rakhshan, Parom Dasht Shahbaz and Gichk. The elevation varies from about 3000 feet in Parom and Zamuran in the west to about 4000 feet in the northeast in Rakhshan. The rivers from which the valleys take their names are the source of sustenance for all type of life in Makran. Again proceeding from sea

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coast - south to north - the three most important rivers are Dasht, Kech and Rakhshan which are the main sources of irrigation and drinking water for most of the people in the three districts. Nearly 500 Karezes and Kaurjos irrigating over 70 thousand acres of land in Makran Division depend on these rivers for their discharge. Except for the coastal towns of Gwadar, Pasni, Jiwani and Ormara and a few others, the majority of Makran's population lives on the banks of these rivers (Dasht, Kech, Rakhshan).

a. History, Ethnecity and Social Structure

Baluchistan means the country, the land or the place of the Baluch people or tribes. The present province in Pakistan (as also in Iran) took the name in about the 14th or 15th century. In medieval times the central Plateau of Baluchistan (the areas of Kalat and Khuzdar) were called "Turan" and the western parts (including the Pakistani and Iranian Makrans and adjacent areas) as "Makuran" by the Arabs. The ancient Persians called this (Makran) area as "Makaria" or "Mahikhoran" which means the fish eaters. The Greeks called it "Gedrosia" or "Mekia". The Greeks visited the area when part of Alexander's army passed through Makran on its way back from India to Macedonia. The celebrated Chinese traveller Hauen Tshang called it "Zangala".

The Muslim Arabs conquered Makran in the 7th century AD during the rule of the third Caliph Osman. One of the Caliph's generals returned from Makran and described Makran as follows:

".... The soft lands of Makran are harder than mountains. There is scarcity of water; its fruits are bad; the enemy is formidable; there is less of goodness and more of evil. A large army even looks smaller. A smaller army gets wasted."

Various Iranian emperors briefly occupied and ruled Makran at various times but for the most part local chiefs or princes ruled this area for centuries.

The legendary Baluch heroes like Mir Jalal Han and Mir Chakar Khan - Rind ruled Makran during the 15th and 16th centuries. Naseer Khan, the great ruler of Kalat during the middle of the 18th century, brought Makran under the rule of the Khans of Kalat. Makran along with the other states of Kharan, Las Bela and Kalat, remained part of the Baluchistan States Union under the domination of Khan of Kalat who himself was under British domination from the latter parts of the 19th century upto 1947. Makran became part of Pakistan in 1947 and in 1955 it was merged with the Province of West Pakistan. It became a district of the restored province of Baluchistan in 1970 and since 1977 Makran has been one of the four Divisions of Baluchistan.

Most of Makran's population is of Baluch extraction. The Baluch have historically been a nomadic pastoral people. According to their legends the Baluch migrated from Aleppo (Syria) to Kirman (Iran) and from there to present day Baluchistan. Some historians have called the Baluch a

semitic people, others considered them Arayans but nothing definite is known about their origin. The vicinity of Baluchistan to Iran, the extreme similarity of Baluchi language with Persian and the racial affinity with some Iranian groups indicates that the Baluch might be people of Iranian origin. Throughout their history the Iranians have referred to Baluch as a savage and barbarian people and many Iranian rulers tried to invade and pacify the Baluch tribes. The Safavid and Kajar rulers who preceded the Pahlavis repeatedly attacked Baluchistan but they were unable to subjugate the Baluch.

After the Indian mutiny of 1857 the British considered it a matter of utmost importance to connect India and England by a direct chain of telegraphic communication. This led to the exploration of Makran. The Afghan wars also necessitated passage through the northeastern Baluchistan. These developments marked the beginning of British interest in Baluchistan and their contacts with the Baluch people.

The Baluch as mentioned earlier were originally all nomadic and pastoralists. But at some stage certain tribes or individuals settled down on the banks of Dasht, Kech and Rakhshan rivers in Makran and engaged in agriculture by using the river waters. Makran still has almost all the major Baluch tribes but tribalism in the way that it exists in most other parts of Baluchistan does not exist in Makran. In fact, tribalism did not exist in Makran in recent times, probably since the times of Jalal Han and Shaihak. The most recent rulers were chiefs called sardar but also ruled tribes other than their own. Slavery existed in Makran up to the late 1920s during British rule and even today the former slaves called "Naqeeb" "Darzadag" or "Golam" are mostly landless and poor tenants and wage workers. These former slaves are concentrated in urban areas particularly in Turbat, Panjgur and Gwadar towns. The coastal towns also have sizeable "Med" (original fishermen and non-Baluch) populations. Besides the former slave and "Med" all other people in Makran are Baluch. Following are the most important Baluch tribes living in Makran.

1. Tribes of Baluch origin:

- | | |
|-------------|------------------|
| (a) Rind | (13) Rakhshani |
| (b) Kiazai | (14) Bezanjo |
| (c) Hot | (15) Kohi |
| (d) Kalmati | (16) Mazarzai |
| (e) Rais | (17) Askani |
| (f) Sangur | (18) Noohani |
| (g) Puzh | (19) Damani |
| (h) Gorgezh | (20) Nausherwani |
| (i) Gichki | (21) Mirwani |
| (j) Buledi | (22) Sajidi |
| (k) Kahudai | (23) Issazai |
| (l) Dashti | |

ii. Tribes or groups of African origin (former slaves):

- (a) Naqeeb
- (b) Darzadaz
- (c) Golam

iii. Tribes or groups of non-Baluch origin:

- (a) Med
- (b) Jadgal

Irrespective of tribal origin or affiliations, the mountainous, mostly pastoral people, are called "Baluch" and the settled, mostly agriculturists, are called "Shahri". The Baluch (the Pastoralists) are considered to be the standard bearers of Baluch customs and traditions (Baluchi) and all other groups aspire to emulate these customs and traditions. The Baluch traditional code of ethics and behavior is called "Baluchi". "Baluchi" is the ideal Baluch behavior considered superior to that of the non-Baluch. The basic concepts of Baluchi are "Mehmandari" (hospitality), "Be-Tursi" (bravery), "Bahoti" (protection for the submitted and those seeking protective care), Badal/Ber (revenge) and "Siah-Kari" (punishment for violating Baluch female honor). One reason that settled agriculturist Baluch idealize the pastoralists and aspire to emulate them is that the pastoral Baluch, owing to many factors but basically because of the harshness of their physical and social environments are capable to practice and uphold the above mentioned principles. In recent times the spread of education, emigration and availability of work and travel opportunities in other parts of Pakistan as well as in the Gulf States have weakened "Baluchi" even among the most traditional pastoralists. The forces of Islam, Pakistani nationalism and Baluch nationalism have also all effected "Baluchi", in different, mostly adverse, ways. Many concepts of "Baluchi" conflict with religious laws and Pakistani civil laws and many concepts encourage tribalism. Besides Baluchi customary laws, the Islamic laws (Shariat) of Hadood and the government civil laws (criminal law special provision ordinance 1968) are all simultaneously operative in Makran.

b. Leadership/Authority

Although today no tribalism exists in Makran and there are no chiefs as such, descendants of the old chiefs and ruling families still constitute the most influential group socially and politically and it is from their ranks that the local leaders come. For example, the Gichkis remained rulers of Makran for a long time and still dominate the scene because of their newly acquired education, wealth and privileged government positions. During the last 10 to 15 years increased job opportunities, in the Gulf States, particularly in Oman, have enabled former slave and poor tenant classes to get rich, buy landed property in Makran and pose a challenge to the existing socio-political and economic

structure. In the rural areas the traditional leadership still dominates but even there changes such as those indicated above have started taking place. Many ordinary Baluch who worked and lived in the Middle East for many years have now returned to Makran to provide economic and political leadership.

The government introduced union council system has not provided an alternative to the traditional leadership but in most cases both have merged. In major population centers the individuals who represented Makran during different regimes in the recent past also seem to be in positions of leadership under the present union council system. Hundreds of Karezes have hereditary leaders called Sarrishtas. These people provide social, economic and political leadership at grass roots level, since it is the social and economic power of the present or past Sarrishtas which enabled them to initiate and maintain the karez system. Any agricultural development activity in the existing oases will have to be carried out through these leaders and their associations and in the newly settled agricultural areas similar leadership and associations will have to be created.

c. Language and Religions

Baluchi is the predominant language spoken in the Makran Division. In this respect it is uniquely homogenous because even the Baluchi dialect, Makrani, is the same throughout the Division. By contrast in the northeastern Baluchistan each tribe has its own dialect of Baluchi. The Baluch of Makran are predominantly but not exclusively Sunni Muslims. There is a sect of Muslims (non-Muslim according to some) called "Zikri" centered in the Turbat area but found throughout Makran and neighboring areas. The beliefs of this religious sect are secret and variously stated. The Zikris are followers of a prophet or Imam and visit Koh-i-Murad, a hill close to Turbat, for their annual pilgrimage instead of going to Mecca. The Zikris do not follow the normal Muslim practices of prayers and fasting. Unlike the Nakeeb, Darzadag, Gulam, and Med, the Zikris are linguistically, culturally and racially considered pure Baluch and many of them live in remote mountains and lead a pastoral life. In the past there have been conflicts between the Zikris and the Wamazis (Sunni Muslims), but the two groups have lived harmoniously in recent times.

d. Resources of land, Water and Range/Rights Practices

The total area of Makran is 5,457,400 hectares. Makran has a sea coast about 400 km. long and has numerous fertile valleys. The soils for the most part are clay-silty, sandy-silt and sandy and, with the water available, are mostly fit for cultivation. The Division has over 500 karezes and kourjos and dozens of big and small, seasonal and perennial rivers as water sources for drinking and irrigation. The Division has 32,908 hectares currently under various agricultural crops, has an animal population of 1,676,170 and 66,980 metric tons of fish are

produced annually. The main crops grown under irrigated conditions are dates, lucerne and other fodders, rice and all types of vegetables. Rainfed agriculture is carried out throughout the Division, wheat and sorghum being the most important crops grown. Most of the valleys and mountains produce some vegetation for animal raising. Zamuran area along the Iranian border and Rakhshan valley in the north of the Division are the most important animal producing areas in the Division. Studies carried out by WAPDA indicate that all valleys (particularly Rakhshan) have substantial underground water resources.

e. The Organization of Production in Agricultural and Pastoral Areas:

While the Baluch are commonly referred to as nomadic Pastoralists, in Makran nomads account for less than 10 percent of the Division's population. And those predominantly engaged in Pastoralism usually combine it with dryland agriculture or seasonal wage labor. The very low rainfall and extreme hot summer temperatures in most of Makran make the growth of grasses and other vegetation difficult. The vast majority of economic activity, as mentioned before, is concentrated in the river valleys focused on irrigated agriculture in Panjgur, Turbat, Tump, Mand and Buleda. Either as independent operators, tenants or farm laborers, perhaps as much as sixty percent of the Makran population is engaged in some form of irrigated agriculture. Another approximate ten percent of the population is engaged in some form of dry land agriculture using small and large earthen embankments (called bunds) to trap runoff water. Much of dryland farming in Makran is concentrated in Dasht area of Turbat and Gwadar districts and in different valleys in Panjgur district.

Excluding the coastal fishing towns, the essence of Makran livelihood is Karez irrigation. In fact, Makran is one of the only few areas in the world where investment in karez is still taking place. For example, 30% of all the karezes in Panjgur district were started and/or finished during the last 10-15 years. The basis for the population centers of Turbat, Panjgur, Mand, Tump and Buleda is the karez organizations. Karez irrigation is centered around the leadership of the "Sarrishta" (Head Man of Karez). He is the person responsible for assessing and collecting from the members the karez construction and maintenance costs, establishing watering schedules and mediating disputes. Most Sarrishtas keep record books where they keep water shares expenses and contributions accounts. Individuals own shares of water measured in terms of time. The usual allocation is as follows: when a karez has a total of 14 hangams then a hangam is 12 hours, a nim hangam is 6 hours, a tassu is 3 hours and a habba is 1 and one-half hours of water in a weekly rotation. Since water shares are inherited and distributed among all the children, these are sub-divided to an extent that an individual may own only 10 minutes (or even less) of water in a week. Individuals buy into karezes by purchasing water shares, either when the karez is originally constructed or from a share holder any time after it is completed.

Because of some form of caste system in Makran mainly based on the Baluch and non-Baluch and former slave groups, the majority of work on irrigated farms in Makran is carried out by tenants or hired laborers. Even an owner of an acre of irrigated land will normally engage somebody else to work on his land. This is in contrast to the dryland farming where mostly family labor is used. The herder groups are more egalitarian and generally animals are self-shepherded. These specialized herding groups that exist in Makran tend to be organized in small camp clusters made up of five to eight families. They usually move within a well-defined circular territory with a radius of 100-150 kilometers depending upon the group and areas. Many herder groups converge on Panjgur, Turbat and other oases at the time of date harvest and supply their labor for harvest work.

f. Factors Affecting Labor Availability:

There are two main trends in the past decade that have affected labor availability in Makran's rural areas. They are the increasing growth of the urban population vis a vis the rural areas and the exodus of male migrants to the Gulf States. Of the two, the far more significant is the Gulf migration, since it is not only affects labor availability but results in considerable amounts of remittance cash entering the Makran economy. A fair estimate of the number of male Makranis working in the Gulf is 20,000-25,000 or approximately 20 percent of the effective male labor force over the age of 18 years. In the past two years, however, the rate of migration to the Gulf seems to have slowed down and there is some indication that several Makranis have returned to their homes following the recent constriction of Gulf employment opportunities.

Nevertheless, the Gulf migration is still significant and has had both positive and negative impacts on Makran agriculture. On the positive side is the remittance factor, since several farm families have been able to support agricultural investments through remittances from family members. Negative effects relate to the changes in the Makran regional labor market. Because of the competing Gulf labor market, labor costs are at least 20 percent higher in Makran than elsewhere in Baluchistan. There also is some indication that labor shortages are severe in Makran and that farmers with sufficient cash are still unable to find sufficient labor at reasonable wages for farm work. While the impact of labor loss on karez irrigation and pastoralism in Makran has not yet been documented, evidence from elsewhere in the Middle East indicates that there are serious costs. For example, recent emigration from Oman has resulted in a decline in karez maintenance in Oman and in many cases in the demise of entire karez systems (see Brown, et al 1981). Similarly the loss of labor in Pastoral areas of Iran has in some cases completely depopulated entire regions of Iran since sufficient labor does not exist to move the animals when grazing conditions so warrant. In the latter case pastoralism usually cannot take place in arid range lands unless there is mobility of human and animal populations.

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g. Social Differentiation and Distribution of Productive Assets:

As indicated earlier in this analysis, there is a considerable number of landless families in Makran who are either farm or menial labors, fishermen or sharecroppers. Estimates are that this segment of the society makes up from 25-30 percent of the entire Makran population (Pastner 1971). It should be noted, however, that recent employment outside of Makran provides considerable opportunities for social mobility. In this respect, the availability of jobs in the Gulf has had a positive impact on the poorer segments of the population in both providing employment and in increasing wage scales in the local market. Because of the labor shortages in Makran, the poor are in a better bargaining position for their labor than elsewhere in Baluchistan.

Approximately twenty-five percent of the families in Makran own shares of karez water, and perhaps another five percent own shares of kaurjo water. Among those individuals that own shares in water, the distribution tends to be relatively egalitarian. The table below illustrates the distribution of water and land, the average of a sample of 20 karezes in the Turbat district.

TABLE 14
IRRIGATED LAND OWNERSHIP PATTERNS IN MAKRAN DIVISION

<u>Number of individuals</u>	<u>Hangams owned by each individual</u>	<u>Estimated acreage owned by each individual</u>
6	0.125	0.67
9	0.25	1.34
22	0.5	2.68
11	1.0	5.36
2	1.5	8.0
<u>50</u>	<u>28</u>	<u>150</u>

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h. Role of Women in Makran

Land and water rights in Makran are also owned by women, and under Islamic law they inherit these resources from their fathers. However, where land and water are owned by women their brothers, sons or husbands often represent them in the Karez Associations. Except among tenant farmers, women usually do not work manually in agriculture. An importance source of non-farm income among women in Makran comes from palm mats, bags and other palm products. many of these products are made by women and they derive an important source of cash income from it. After fish, dates, and labor, palm products are the most important exports from Makran. In the coastal areas, women also engage in fishing, fish business and other retail business activities. It should be noted that other than these non-farm activities, access to employment opportunities for women is extremely limited.

1. Record of Past Donor Interest/Activity in the Area

Mention of other donor activity is important because of the implications of such activity for the success or failure of BALAD Project. The attitude of the people of the area towards such activities is also extremely important. Unlike most of the tribal people in central and northern parts of Baluchistan, people in Makran have had a long exposure to outsiders coming not only from the sea but also from west and east. Most of the government and foreign donor activity and interest in the past has been confined to the northeastern parts of Baluchistan for political reasons and not for reasons of social infeasibility of any development activity in Makran. In recent years some interest has been shown in this area by the Sheikhdoms across the Gulf and by the United Nations (UNICEF). The activities are still in their initial stages and USAID may be ahead of others in terms of any physical executions of projects. People of the area have been found to be extremely interested in the development of their area and will cooperate with USAID and any other donor activities in Makran.

The BALAD pre-PID and PID teams have visited Makran and all were warmly welcomed by the people. However, even the educated people do not understand the USAID procedures and requirements as they are accustomed to different systems.

Visits by consultant and AID Mission teams during the last two years have raised people's expectations which, with the passage of time, are now turning into disappointment. It is suggested that some activities be started as soon as possible to quell misunderstandings among the people.

j. Experience of BALAD Design Team in the Area

The design team was warmly received during all their visits. The team members, particularly those working in the water/dams component, were impressed by the friendliness and hospitality of the people. This attitude extended to everywhere from the village oases, to the desolate and far-flung remote corners of the province, and to the Divisions where the dam sites are located.

People were visibly impressed and grateful that the Pakistan government and its allies seem to be genuinely interested in the development of the area. The design team met with shepherds, farmers, landlords, chiefs and elders, union council members and various government officials. The team received cooperation from the highest level of government officials to the lowest. Chiefs and elders were helpful as well as the people just passing by.

2. SOCIAL FEASIBILITY OF THE PROJECT

The main components of this project are roads construction and improvement and the development of water resources. These activities will be carried out by the PPMU, through the Communication and Works (C&W) and Irrigation Departments as well as through private contractors.

a. Project Activities

The activities under water resources development will include the enhancement and more efficient use of water from existing Karezes in Turbat, Panjgur, Buleda, Mand and Tump area of Makran. Specific karez improvement activities will include capping of karez wells and drilling and extension of mother wells besides various underground water recharge activities.

Sites for the construction of small dams proposed to be financed by USAID have been identified by the Provincial Irrigation Department. Preliminary technical and social feasibility studies have been carried out in cooperation with the department personnel. Following sites have been selected for dam, weir and recharge structures construction:

1. A medium sized dam at Kil Kaur
- ii. A Diversion weir at Goburt

Preliminary technical and socio-economic investigations show that these activities are feasible. With respect to formation of water users groups and local land settlement matters, the procedure followed would be the same as followed by USAID with respect to similar projects elsewhere and by World Bank with respect to minor irrigation schemes in Baluchistan. The Commissioner of the Division will settle land disputes and definite plans of water distribution and management. The final decision to construct the dams (or other structures) will be contingent upon a

There are no large land owners and the majority of the people own extremely small tracts of land. Improvements in the karez systems will benefit mostly the small land owners. In case of dams, weirs and water structures the criteria mentioned above will insure that larger proportions of small, poor and needy farmers will benefit from the project.

a. Benefits to Women and Unemployed Poor

As mentioned earlier, land and water rights in Makran are also owned by women and any improvements in the irrigation systems will equally benefit women. In the dry areas where only rainfed agriculture is practiced at present women are suffering the most because they have to fetch water sometimes from distances up to 10-15 kms. Dam construction and other water providing structures will provide water for irrigation but also for drinking purposes close at hand. The pastoral women will similarly benefit. Women will naturally also benefit from general improvements in the living standards of the farmers of the area. Women will also share benefits from improved roads and improved productivity. The area unemployed and under-employed residents will also benefit from increased acreage under cultivation, from increased productivity of land and increased access to the markets. At present a large number of Makran Baluch seek employment in the Gulf and they have been having such opportunities for a while, thus reducing local unemployment. Recent changes in the world oil market and ever declining oil revenues of the Gulf states have already shown signs of reduced demand for foreign labor. The settlement of Zofar problem in Oman and improved South-Yemen/Oman relations have already significantly reduced the Sultanate of Oman's demand for Baluch soldiers (mercenaries). So as thousands of this area residents return home the unemployment would be a serious problem unless this project and similar other projects are undertaken in this area. So it can safely be said that this project will help in the general development and in easing a likely severe unemployment situation.

b. Roads Improvement Beneficiaries:

These benefits include reducing costs of transportation of the date and other crop producers, reducing costs to truck owners/businessmen and providing employment to Makran and neighboring area unskilled and skilled road construction labor.

ii. Indirect Benefits of the Project

- a. Technology introduced in karez (also in kaurjo and bund systems at later stages) will spread throughout Baluchistan and possibly beyond because most of the traditional karez diggers are originally from Afghanistan and northern parts of Baluchistan where the karez systems exist and now work on an interact basis in many different areas - carrying their knowledge and techniques with them.

- b. Dam and weir construction will make agriculture more profitable.
- c. Road improvements will accelerate the general pace of development and improve access to services raising the living standards of the people.

3. Conclusions

It may be concluded on the basis of the preceding discussions that the water resources and consequent agricultural development as well as the roads improvement component of Baluchistan Area Development Project are socially feasible. There are no major social problems or factors that will prevent project success. The BALAD activities are straight-forward and easy for the local population to understand. In fact, water resources development and road improvement are considered by the Makran residents as keys to the areas development and to the improvements in the living standards of people.

Section II G

CASE STUDY: A KAREZ, AN OASIS, AND A FARM FAMILY IN MAKRAN

The karez is central to the irrigated agriculture of Makran. However, there is wide variation among karezes in size, age, and capacity. Some are as much as a thousand years old. Some are being constructed today. Some serve many families. Some serve only a few. Some karezes channel a large amount of water. Some carry only a little.

Makran Division may be unique as the only place in the world today where people are currently investing money and resources in the development of new karezes. This investment strategy appears to be a function of unique agro-economic, social and hydrogeologic conditions that permit the karez to remain a viable institution in Makran. Because there is an absence of cheap electrical power, and because diesel powered tubewells will remain expensive, it seems certain that karezes will remain an economically viable technology for the foreseeable future.

Because of the wide variations that exist among karezes, the Project Paper Design Team has constructed a profile of a typical karez, an oasis, and a farm family. This profile is based on approximately three months cumulative field work in Makran. It is based on a fairly close observation of approximately 15 karezes, and more general observations of another 20 to 30 karezes. The profile that follows represents an illustrative synthesis of this analysis.

The typical karez is more than 200 years old. It has a name and is called Mazarabad karez by the local people. It is about 2.25 kilometers long, and it has a total of 150 wells along its length. Nobody knows exactly how much it cost when it was originally built, but if a similar karez were dug in Makran today, it would cost approximately a million rupees (\$75,000).

The karez has three "mother" wells which are supplied from the ground water aquifer. Each of these three wells is about 25 meters (75 feet) deep. The production or discharge at the mother wells is not known because no measurements have been taken. However, measurements at the mouth of the karez show a flow of 1.2 cubic feet per second (cfs) of water. The karez water is produced primarily by the three "mother" wells, and then conveyed through an almost horizontal shaft which slopes downwards slightly at a gradient of approximately 1:1,000. The

horizontal shaft has 150 access wells along its length. These wells are used to clear debris, and provide access and ventilation for the laborers working down in the conveyance tunnel. At the mouth of the tunnel the water comes to the surface.

There is an open ditch between the mouth of the karez and the oasis. This ditch is called Kalmer and is about 400 meters long. The engineers for the design team estimated that the loss rate through seepage back into the ground along the length of the unlined karez is about 6 liters/kilometer, or about 40 percent of the karez flow. The loss in the kalmer itself over a distance of 400 meters is almost 10 percent. The annual cleaning and maintenance cost for the karez comes to Rs. 40,000 (\$3,000).

Five men work eight months a year at the rate of 1000 rupees per month each to keep a typical karez in operation. Some new karezes take less maintenance. Many older karezes take a bit more. Mazarabad karez requires 40 man months a year to keep it functioning. Many of the laborers practice the same profession as their fathers. Afghans traditionally have also come over from Afghanistan to work on the Makran's karezes. The cleaning and maintenance primarily requires removing dirt that falls in from the open well down into the horizontal tunnel. If maintenance is neglected for a few months, the karez may become dysfunctional and the fields start to dry up.

The karez belongs to a group of 50 farmers, each of whom owns various shares of water. To establish a measurable unit, water ownership on karezes in Makran is expressed in periods of time. It is not practical for Makranis to quantify karez flow by volume (like acre feet or cubic feet per second) so instead they measure a constant flow of water over a constant period of time, or the amount of water that flows from a particular karez over a 12 hour period. This unit is called a hangam. Usually there are 14 hangam designated for one weeks time per day (two twelve-hour periods) for seven days.

The water along Mazarabad karez has 28 hangams. However, to simplify water management, the water at the mouth of the karez is divided into two equal parts of 14 hangams each. Hangams are then subdivided into smaller units: nimhangams, tassus, habbas, and taas. A nimhangam is six hours and a tassu is three hours of water in a week. There are smaller shares like habba and taas, so that sometimes a farmer has only 10 minutes of karez water in a week.

Sale, purchase, and trading of karez water among the shareholders also takes place. Last year the lease value of one hangam for one year was rupees 3,000 or \$225. The ownership of karez water along our representative typical karez is distributed as follows:

Table 1 OWNERSHIP OF KAREZ WATER & LAND

<u>No. of Owners</u>	<u>%</u>	<u>Hangams Per Owner</u>	<u>Total No. of Hangams</u>	<u>Estimated Total Area (Acres)</u>	<u>Percentage of Total</u>
2	(4%)	1.5	3	16	10.6
11	(22%)	1	11	60	40
22	(44%)	0.5	11	60	40
9	(18%)	0.25	2.25	12.38	8.2
6	(12%)	0.125	0.75	4.125	2.75
TOTAL	50		28	150	100%

Among Makranis who own irrigated land, the ownership distribution is relatively equal on this karez.

On this karez, the following ownership patterns are found:

The bottom 10 percent owns 2.2 percent of the land and water.
 The bottom 20 percent owns 6.2 percent of the land and water.
 The bottom 40 percent owns 19.6 percent of the land and water.
 The bottom 50 percent owns 28.5 percent of the land and water.
 The top 50 percent owns 71.5 percent of the land and water.
 The top 40 percent owns 62.6 percent of the land and water.
 The top 30 percent owns 53.7 percent of the land and water.
 The top 20 percent owns 39.3 percent of the land and water.
 The top 10 percent owns 21.4 percent of the land and water.

An average farmer in Turbat owns half a hangam of water which, depending on the flow of the karez, generally is sufficient to irrigate 2.5 acres of land.

For the two northern districts of Makran, Turbat and Panjgur; 80 to 90 percent of the population are principally engaged in agriculture. The rest make their living through raising animals, fishing, business, and services. Less than half of the agriculturists of Turbat and Panjgur districts appear to own any irrigated agricultural land. Others who are engaged in agriculture work as share croppers, tenant farmers, or farm laborers. Many small artisans and shop keepers are also small farmers.

One of the 50 owners of Mazarabad karez is the hereditary leader, Mr. Rasool Baksh. In western management terms, he would be called the President of the Karez Owners Association. He could also be called the President, Water Users Cooperative. In Baluchi, the man who holds this office is called the sarrishta. This man is usually a descendant of the man who originally initiated the construction of the karez. His great-grandfather was the most influential man in his village. He

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initiated the idea of the karez, and convinced some of his fellow villagers to contribute money towards its construction. The karez construction was completed in about three years time, and his great grandfather was its first sarrishta. The office of sarrishta has passed down through the family. Rasool Baksh is now about 45 years old. His father was sarrishta until 10 years ago. When he died Rasool took over as the leader of the karez organization. Rasool is a strong sarrishta, and his neighbors respect him. As with any of the social organizations, leadership is a function of personality. Some sarrishtas are strong and some are weak.

The sarrishta has many privileges including one called Raaj-i-kar which means he is not required to pay for some labor, and for cleaning, and maintenance for one hangam of water along the karez.

For any water above one hangam which he owns, he is required to pay his share in the same proportion as are other shareholders. The sarrishta also gets the best land in the oasis, and the best times for watering. In exchange for these privileges, however, he has to provide all tools, equipment and materials for cleaning and to supervise the laborers at their work.

The sarrishta consults the other shareholders in the karez on all important matters in formal meetings or individually, and he advises them on karez related expenses. The sarrishta almost always keeps a written karez account book which is available to all members at all times. He also settles disputes between the members concerning water use.

With respect to karez construction, there have always been certain traditional customary rules and regulations (Common Law) to be followed. In recent years the government authorities in Makran have also formed karez committees composed of government officials, farmers and local representatives. Mr. Rasool approaches the government karez committee when he has disputes with owners of other karezes. Sometimes for example, a new karez well might be dug less than 750 feet from the "mother" well of his karez, causing hydrologic interference. Alternatively another karez under construction might be cutting across his karez. The general rule today for new karezes is that in gravel areas they must be 1500 feet apart. In areas with harder soils they need to be 750 feet apart.

Like the original construction costs, today's maintenance and cleaning costs as well as any other expenses like litigation or gratuities are all assessed on the basis of the shares in the karez which each member owns. Normally money is paid, but it is also possible for a poor owner to contribute through his own labor.

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THE OASIS

The typical karez irrigates about 150 acres of land. The owners of karez water own land in direct proportion to the amount of water they own. A farmer owning a ten percent share of the karez water will own approximately 10 percent of the irrigated land in the command area. Traditionally dates are the most important crop grown in the oasis, but wheat, rice, vegetables and other fruit and crops are also grown. The cropping patterns on the oasis are given in Table III. The acreage figures of today compared with those of fifteen years ago indicate the agro-economic trends of the recent past.

Table 3: CHANGING CROPPING PATTERNS ON A TYPICAL KAREZ
MAKRAN, BALUCHISTAN

<u>Crop</u>	<u>Acreage 15 yrs. ago (Estimated)*</u>	<u>Acreage 1984 (Estimated)*</u>	<u>Percentage Change in Area</u>
Dates	1.35	1.125	- 17
Lucerne	0.125	0.5	300
Mangoes/Citrus	0.025	0.125	400
Wheat	0.35	0.25	- 29
Rice	0.43	0.125	- 71
Broad Beans	0.120	0.125	- 4
Misc. Vegetables	0.1	0.25	150

*Estimates are from the Department of Agriculture staff and documents.

Thirty to forty years ago, Makran was self sufficient in wheat or at least it tried to be. But during the last 2 decades deficiencies started to appear. As recently as 10 years ago (1974) the government had to arrange air drops of wheat when there was a drought in Makran. Over the last 15 years, the government of Pakistan has introduced a food supply program. Wheat and rice are imported into Baluchistan from other provinces of Pakistan. Now there is at least 6 month's supply of wheat in government godowns, and the farmers of Makran have taken advantage of this ready availability of food grains to switch over to more profitable cash crops. Although the area under dates has remained relatively constant, rice and wheat cultivation has declined. Instead the farmers have substantially increased their acreage under crops like alfalfa, beans, vegetables, mangoes, and citrus.

The date orchards throughout Makran are intercropped with fruits, cereals and vegetables. The general pattern is that dates are growing around the edges of the fields. They are planted along the length of the water courses starting in some cases from where Kalmer starts and water comes at the surface. Other crops like rice, wheat, melons, mangoes, citrus, and alfalfa are grown in the middle of the fields surrounded by date palms. The farmers believe this takes maximum advantage of the meager land they have at their disposal.

If a date orchard were devoted exclusively to growing date palms, the trees would normally be planted at a rate of 100 to 120 trees per acre. Under the planting regime followed in Makran, however, this number is reduced to approximately 56 trees per acre. Thus, the number of date trees in a typical oasis is estimated to be about 8,400.

THE FARMER

When a karez is initially constructed, the sarrishta usually owns more shares in the karez than others. Over time the sale of shares may result in the sarrishta owning fewer shares than other members. On this karez, Rasool Baksch now owns 1.5 hangams. Only one man owns an equal share of the karez water. However, neither the sarrishta nor the other major owners are representative of typical farmers along the karez.

To understand the situation of a typical farmer, we go to the sarrishta's neighbor, Mr. Khair Jan Baluch. Khair Jan owns half a hangam of water and presently has about 2.5 acres of land under cultivation. This 2.5 acres supports his family of seven people, which includes himself, his wife, and his five children. If his land were allocated among the members of his family on a per capita basis, it would mean that each was supported by 0.36 acres of land.

At present, Khair Jan's fields are divided into 10 plots. Each plot is approximately 1/4 of an acre. These small plots have evolved over time as the land was cleared of stones and the irrigation channels were put in. The crops along with their acreage grown by Mr. Khair Jan during the preceding year are listed in Table 4.

Table 4: A typical Karez Share Holder/Farmer's Cropping Patterns
Turbat, Makran 1983-84

<u>Crop</u>	<u>Acreage</u>	<u>Percentage of Total</u>
Dates	140 trees (Approx 1-125 acres)	45
Lucerne	0.5	20
Mangoes/Citrus	0.125	5
Wheat	0.25	10
Rice	0.125	5
Broad Beans	0.125	5
Misc. Vegetables	0.25	10
TOTALS	2.5 acres	100%

Mr. Khair Jan does not keep any exact accounts of production, returns or costs, but his estimated gross returns and costs are shown in tables 5 and 6.

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Table 5: Gross Returns from a 2.5 Acre Farm in Turbat

Crop (Mds.)	Yields (Rs/md)	Price Returns	Gross Returns (Rs.)
Dates	150	120	18,000
Lucerne	125	25	3,125
Mango (Traditional variety)	10	200	2,000
Wheat	4	100	400
Rice	4	70	280
Broad Beans	10	100	1,000
Misc. Veg.	12	200	2,400
TOTAL GROSS RETURNS			27,205

Table 6: Costs of Production over a 2.5 Acre Farm in Turbat
Makran, Baluchistan (1983-84)

Input Item	Quantity	Costs (rs)
<u>Seeds</u>		
Wheat	10 kg	25
Lucerne	6 kg	900
Rice	2.5 kg	15
Broad Beans	12 kg	90
Misc. Vegetables		120
<u>Manure</u>		
For all crops	2 loads	1,000
<u>Pesticides</u>		
General spray	1 sprays	100
<u>Power Rental</u>		
Tractor time	10 hours	700
Bullocks	One Pair	300
<u>Water Charges</u>		
(Opportunity Cost)	0.5 hangam	1,500
<u>Labor</u>		
Hired Labor (one)	6 months	6,000
Family Labor (one) (Opportunity Cost)	6 months	6,000
TOTAL COSTS		16,750

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Khair Jan's gross returns are 27,205 rupees per year. However, it costs him a considerable amount of money to produce his crops. His inputs are relatively expensive. If all his costs, including opportunity costs are included, it costs him 16,750 rupees to produce 27,205 rupees worth of farm produce amounting to net returns of Rs. 10,455.

It is a precarious undertaking. According to government of Baluchistan statistics, Khair Jan is at the margin. The government has developed statistics showing the average expenditures for a family of seven persons in various parts of Baluchistan. According to these statistics, Turbat is the most expensive town in Baluchistan in which to live. It is reportedly 43 percent more expensive for people to live in Turbat than the provincial average.

The average total annual expenditures for a family of seven persons living in Turbat comes to 22,559 rupees. And Khair Jan's returns including those for his family labor come to 16,455. The average expenditures for a family of seven are shown in Table 7.

Table 7: Average Expenditure for a Family of Seven Persons in Turbat, Makran Division (1983-84)

Commodity	Unit	Average Price (Rs.)	Per Capita Consumption (Kgs)	Family Consumption (Kgs)	Yearly Family Expenditure (Rupees)
Vegetables	Kg	5.13	78	546	2,800.98
Pulses	Kg	12.00	16	112	1,344.00
Wheat	Kg	3.15	90	630	1,984.50
Rice	Kg	9.17	12	84	770.28
Cloth	Mtr.	20.00	12/6	80	1,600.00
Mutton	Kg	30.00	24	168	5,090.00
Ghee	Kg	12.00	24	168	2,016.00
Sugar	Kg	13.67	20	140	1,913.80
Others	Kg	24.00	30	210	5,040.00
TOTAL ANNUAL					22,599.56
Monthly Average					1,879.96

According to Table 7, if Khair Jan were to spend according to the standards of an average family in Makran, his expenses would exceed his income by 6,104 rupees per year. To survive, of course, he reduces his expenses. Like everyone in Makran, he has a ration card which authorizes him to get 7.464 kilograms of wheat per family member per month from the Food Supply Department. He buys less cloth for his family than the average family. He spends less money on mutton, ghee and sugar.

Transportation costs have come down somewhat. More significantly, although the unit costs for transporting a maund of goods over the road has been reduced by only 10 percent, there is more movement of goods. More shippers send in more trucks. More buyers for dates venture over to Makran. The improvement in roads has also reduced the trucker's maintenance costs on their vehicles.

The biggest return, however, is psychological. The farmers of Makran look more directly to Karachi as their principal market center now. They also look to Iran and the Gulf.

Khair Jan is familiar with the results of an agro-economic marketing survey which was conducted by the BALAD project in 1985. The results of this study were widely publicized throughout the Division. This study confirmed a number of popular ideas, and generated some new suggestions. It confirmed the central role of dates, for which Makran has a comparative advantage, but it suggested some improved ways to market the crop. Now, for example, the date farmers are holding their crop for a longer period after the harvest. Dates are a non-perishable crop and the farmers can release them for sale over the following ten months of the year. Their average price per maund from this time released sales strategy has gone from Rs. 150 per maund to Rs 200 per maund.

Khair Jan himself, who previously has never left Makran, has gone on a project sponsored study tour with several of his neighbors to the North West Frontier Province and Sind. Here they looked at improved farming and irrigation practices and returned with several new ideas.

The sarrishta's farm has become a model farm for the area, and many new planting, cultivating, harvesting, and irrigation techniques have been introduced. Rasool Baksh, for example, has stopped growing any cereal crops at all. He grows no rice and very little wheat, having decided that he can rely on the government and the private sector to provide grains. Instead he concentrates more on growing cash crops. He has introduced crops like potatoes and peanuts. He has put more land into citrus and mangoes. Now that he knows that his citrus trees were nitrogen deficient, he is using a lot more fertilizer on his trees, and gets a substantially greater winter harvest, which he sends to Karachi for market.

His dates are still intercropped with lucerne, but he has a new seed variety from southwestern United States that nearly doubles his production on the same amount of land. He has introduced grapes and pomegranates. And they are conducting some planting trials with various melons. An Afghan species, locally called the Kunduzi, is showing some promise, and there is talk of exporting it by plane over to the Arabian Gulf.

Khair Jan is more conservative than the sarrishta. As a smaller farmer he operates closer to the margin, and cannot afford experiments which might fail. Still, he has assimilated a lot of these new practices. He is skeptical about a few of them (he thinks it's too hot to grow melons) and is waiting to see the results of some further field trials. He has started planting citrus and bananas, however, which do well in the area. And he is also growing potatoes, tomatoes, soybeans, onions, and several other vegetables. He is thinking about planting coconut and quinquat. He is pleased with some improved cultivating and weeding tools which he first saw in use in the North West Frontier Province.

Weeding has become a serious problem in the late 1970's and 80's, with the migration of many of the laborers over to the Gulf and into Karachi who left in search of better paying jobs. Khair Jan realized that he was going to have to learn how to use the available farm laborers more efficiently, and this meant mechanization. One of the better tools they have found is a mechanical weeder. It is a large flat metal wheel studded with barbs welded onto the wheel like little fish hooks. This is pushed from behind by a laborer, or pulled by a donkey. When crops like tomatoes, potatoes, broad beans or soybeans are planted on furrows the weeder is pulled down between the furrows and a weeding job that used to take one man several days working with a hand trowel is now accomplished in a few hours.

The local blacksmith produces copies of this prototype mechanical weeding tool imported from the Frontier, and it is now available in Turbat for 450 rupees. There are also improved hoes available, and an improved sickle for harvesting that Khair Jan is thinking about buying.

On the water side of things, Mazarabad Karez was one of the first karezes to be capped. In 1984, the Karez Owner's Association had spent 40,000 rupees to clean the karez. This was an annual recurring cost. The BALAD project team had come in and done surveys on a series of karezes. They had measured the flow, and calculated the conveyance losses. BALAD had put up the money for the cement and reinforcing steel. The Karez Owner's Association had provided the labor and local materials. It had taken only a couple of months, and then all 150 wells were capped with a removable reinforced concrete slab. The job had gone smoothly, and the yearly maintenance costs on the karez had been reduced from 40,000 to 4,000 rupees per year. The personal savings to Khair Jan as the owner of 0.5 hangams had been 642 rupees per year.

The Karez Owner's Association had voted to take this money saved and invest it in adding two additional mother wells at the start of the karez. This had been done the following winter, and produced a 10 percent increase in the flow of the karez.

Now they were talking about reducing the conveyance loss through their on-farm canals and turn-outs. Khair Jan surprised himself sometimes when he would find himself using a term like "conveyance loss" in his conversations with his friends. They always knew that water was important. "More than 95 percent of the people live on less than 5 percent of the land. Less than one percent of the land area of Makran is irrigated." But now they had calculations to show how important the water losses were. "More than 40 percent of our water is lost through the karez....."

Several of the field assistants from Turbat had been sent to Lahore for training at the On-Farm Water Management Institute. A special curriculum was developed and built into the Institute's program, adapted to the irrigation requirements of Makran. A follow-up training program

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In Makran in Baluchi was conducted for 20 sarishtas from Turbat District. Rasool Baksh attended this training program. Now on his model farm, using mostly his own money, he has introduced improved turn-out structures that do not leak. He has also stopped all flood irrigation on his fields, and he has bought a small soil auger, so that he can measure the rate of penetration of the water into the soil. On a couple of the water channels, he has realigned the water course and stabilized the banks with a mixture of soil and cement. He also keeps the canals much cleaner than he previously did.

The Agriculture Department came out and surveyed the area irrigated by the karez. In 1984, the karez irrigated 150 acres. In 1990, the acreage had gone up to 207 acres, an increase of over one-third. Khair Jan's own acreage had increased by less than this. His 2.5 acres had gone up to 3.0 acres, an increase of one fifth.

Table 8 shows the changing cropping patterns as well as production and returns of Khair Jan's field followed by Table 8 which shows the cost of production.

Table 8: Changed Cropping Pattern on
Khair Jan's Fields

Crop	Acreage		Yields (Mds)		Returns	
	(Old)	(New)	(Old)	(New)	(Old)	(New)
<u>Rabi Season</u>						
Wheat	0.25	0.25	4	16	400	1,000
Potatoes	0.00	0.125	-	40	-	4,000
Tomatoes	-	0.125	-	20	-	4,000
Misc. Veg.	0.25	-	12	-	2,400	-
<u>Kharif Season</u>						
Broad Beans	0.25	0.125	10	20	1,000	2,000
Rice	0.125	0.00	4	5	-	-
Onions	-	0.125	-	20	-	5,000
Lady Finger (Okra)	-	0.125	-	10	-	2,000
<u>Perennial Crops</u>						
Dates	1.00	1.25	150	170	18,000	20,000
Mango/Citrus	0.125	0.25	10	25	2,000	5,000
Banana	0.00	0.125	-	-	-	-
Lucerne	0.50	0.5	125	200	3,125	5,000
TOTAL	2.5	3.0	-	-	27,250	48,000

Table 8: Cost of Production Over a 3 Acre Farm in 1990

<u>Input Item</u>	<u>Quantity</u>	<u>Estimated Cost</u>
<u>Seeds</u>		
Wheat	10 kg	25
Lucerne	9 kg	1,500
Broad Beans	12 kg	90
Onion	250 kg	100
Potatoe	100 kg	150
Tomatoe	100 kg	15
Okra	10 kg	100
<u>Manure/Fertilizer</u>		
Wheat	.25 bag Urea	33
	.25 bag DAP	32
Lucerne	1 bag DAP	131
	1 bag Urea	128
Broad Beans	1 bag DAP	131
	Nitrophas 1 bag	97
Other Vegetables	1 bag DAP	131
Manure	5 loads	2,500
<u>Pesticides</u>		
Wheat	2 sprays Gusathion	50
Lucerne	4 sprays Malathion	200
Broad Beans	1 spray	100
Other Vegetables	2 spray	100
Water Charges	0.5 hangam	1,500
<u>Labor</u>		
Family Labor	One	7,000
Hired Labor?	One	7,000
<u>Power Rental</u>		
Tractor Time	20 hours	1,400
TOTAL COSTS		22,513

Note: Since most of the vegetables and cereals are intercropped with fruit crops like dates, bananas, mangoes and citrus no separate fertilizer is applied for the fruit crops.

The net returns to Mr. Khair Jan from his farm are now 25,487. We have assumed the same prices for products as well as for most outputs. We further assume that the family consumption patterns and expenses will remain the same. With the improvements in the karez system, increased cropping intensity, new crops, improved mechanization...etc. Khair Jan's net returns have increased from Rs. 10,455 to Rs. 25,487. This

represents an increase of 144 percent. It must be noted that besides the above mentioned increases of cropping intensity, bringing new land under cultivation has increased this farm size by 20 percent.

Beyond this direct increase in Khair Jan's personal income, there are several things that the BALAD project has done which are improving people's lives. There were a series of gabion mini check dams which had been put into place on a nullah that fed the mother wells of 20 karezes in the vicinity. These little low rock dams slowed down the runoff when the floods came, and increased the amount of water that flowed into the aquifer that fed the karezes. Khair Jan and his neighbors understood this correlation before the project began, but they did not know what to do about it.

The Forestry Department, working with the local people had also introduced some riverbed plantings on the upstream side of these check dams. The local people understood the importance of this tree planting program, and they wanted to undertake more activities like this. The Forest Department was also starting some bigger afforestation schemes in the bed of the Kech River itself, and Khair Jan thought that this was a good idea. When he was a kid, he remembered seeing wild boar in the river bed, and he knew that when the big winter floods came, it took several days for the floods to pass. If the trees would grow again, it might attract back some of the game. And the trees would also stand the flood allowing the water to seep into the ground rather than running to the sea. The riverbed plantings seemed like a good idea, and he and his neighbors supported it.

One of the most visible results of the project was a new Baily Bridge that spanned the Kech River between the checkpoint and the Divisional Capital on the other side. There was a long causeway leading up to the bridge, and then steel trusses spanned the narrowest part of the Kech River where it was about 200 yards wide.

Khair Jan knew that the river was almost dry for most of the year. But when the floods came, people couldn't get in or out of Turbat. In the year before the project came, five people drowned trying to cross the river. The lack of a bridge was a local scandal, and people would complain and sometimes even demonstrate in front of the Commissioner's Office. Prices would rise during flood times, and kerosene would become unavailable. The new bridge was an important symbol that the people of Makran were not completely forgotten by the people who ran things in Pakistan.

Khair Jan's nephew had also been nominated for a scholarship to study at Tando Jam Agricultural University in Sind Province. This seemed like a good thing and Khair Jan hoped that in a couple of years he might be able to send his oldest son away to college, too. He has also heard about the new dam that was being built under BALAD, and he hoped that maybe one or two of his children might be eligible for a few acres of this land.

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Khair Jan was both an optimist and a fatalist. Recently he felt that things had been getting better. He knew that in this world, nothing is certain. He also knew that things could get worse.

He listened to his radio, and knew about events in Iran and Afghanistan. Still he was marginally optimistic.

He had more land now than he had had five years before. He hadn't had to go to Karachi to keep his family together. He felt confident he and his family would survive. Eashallah, they might continue to prosper.

DETAILED ECONOMIC ANALYSIS

Much of narrative plus a summary of the mathematics related to the economic analysis by Nek Buzdar are given in Section V of the Project Paper. Rather than repeat the same narrative here, this annex has been limited to the detailed Tables and that portion of the narrative which was not included in Section V of the paper.

1. THE ROADS COMPONENT

a. Background Information

Tables 1 and 2 show the existing and the projected quantities of agricultural and industrial commodities imported into Makran. The existing food import figures were provided by the Food and Agriculture Department/Makran at Turbat and industrial import figures were taken from the NESPAK Coastal Road Feasibility Report prepared for C & W Department/Baluchistan (Oct. 1983).

TABLE 1

Makran's Existing Estimated Agricultural Imports

<u>ITEMS</u>	<u>ESTIMATES ANNUAL IMPORTS</u> <u>(Thousands of Metric Tones)</u>
Wheat	45
Rice	30
Vegetables	110
Fruits	191

TABLE 2

Estimates of Industrial Imports in Makran Division
Turbat, Punjgur & Gwadar Districts
(Thousands of Metric Tons)

	1983	1989	1994	1999	2004	2009
Requirement	206	317	413	533	662	771
Production	-	-	-	-	-	-
Surplus/ (Deficit)	(206)	(317)	(413)	(533)	(662)	(771)

With regard to exports, large quantities of dates are transported and sold out of Makran, mainly in Karachi. This is also the case with dwarf palm and fish products. Besides the roads, the BALAD project intends to develop irrigation water resources which would result in increased agricultural production. But before anything was known about the BALAD project, NESPAK projected the future production of various agricultural crops, livestock, forests and marine fish to justify a coastal road construction project. These projections shown in Tables 3, Table 4, Tables 5, and Tables 6 indicate a basis for the growth of traffic in the years to come.

Inbound and outbound freight movement for Makran Division has also been estimated and given in Table 7. The present and projected figures come as a result of analyzing the production figures given in the previous tables. The sources of all basic data are the Bureau of Statistics, P&D, Government of Baluchistan and the Pakistan Census of Agriculture, 1980.

TABLE 3

Projected Production of various Crops in Makran Division
(Turbat, Panjgur and Gwadar Districts)
(Thousands of Metric Tons)

CROPS	1983	1989	1994	1999	2004	2009
Wheat	2.1	3.0	4.1	5.6	7.4	9.7
Rice	1.3	1.8	2.4	3.2	4.1	5.0
Barley	.5	.7	.8	1.0	1.3	1.6
Jowar	.6	.8	1.0	1.2	1.5	1.8
Maize	-	-	-	-	-	-
Pulses and Grams	*	*	*	*	*	*
Vegetables	18.4	25.3	33.1	42.3	54.0	65.6
Fruits	70.9	103.5	141.8	189.7	253.9	324.1
	93.7	135.1	183.3	243.0	322.2	407.8

* Less than .1

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TABLE 4

Projected Livestock Population in the Makran Division
(Turbat, Panjgur and Gwadar Districts)

(Thousands of Heads)

ANIMAL/BIRDS	1976	1983	1989	1994	1999	2004	2009
Cattle	76.7	82.2	87.2	91.7	96.4	101.3	106.5
Sheep	385.2	618.5	902.4	1207.7	1541.3	1920.8	2281.3
Goats	499.6	703.0	915.4	1087.3	1230.1	1358.2	1499.5
Camels	42.0	59.1	76.9	91.4	103.4	114.2	126.0
Asses	3.3	3.6	3.8	4.0	4.2	4.4	4.6
Horses	.6	.7	.7	.8	.8	.8	.9
Mules	.5	.5	.6	.6	.6	.7	.7
Poultry	209.7	408.7	613.3	820.7	1072.7	1369.0	1665.6

TABLE 5

Projected Forest Products
(Cubic Feet)

Turbat District

PRODUCTS	1982	1985	1989	1994	1999	2004	2009
Timber	99	116	144	172	199	227	255
Firewood	462	511	585	662	738	815	891
Ephedra	17	20	25	33	45	60	80
TOTAL	578	647	754	867	982	1102	1226

TABLE 6

Projected Production, Local Consumption and Exportable
Surplus of Marine Fish on Makran Coast
(Thousands of Metric Tons)

Year	Production	Consumption	Surplus
1982	67	10	57
1984	76	12	64
1989	85	13	72
1994	103	17	86
1999	121	18	102
2004	139	21	117
2009	156	24	132

TABLE 7

Inbound and Outbound Freight Movement for Makran Division
(Thousands of Metric Tons)

ANIMAL/BIRDS	1983	1989	1994	1999	2004	2009
<u>Agriculture Commodities</u>						
Inbound	190.9	224.8	297.3	360.6	423.7	489.0
Outbound	42.4	62.8	87.6	117.7	159.9	200.1
TOTAL	233.3	307.6	385.0	478.4	583.6	690.1
<u>Livestock</u>						
Inbound	-	-	-	-	-	-
Outbound	14.6	19.8	24.4	27.8	30.3	31.5
TOTAL	14.6	19.8	24.4	27.8	30.3	31.5
<u>Hides and Skins</u>						
Inbound	-	-	-	-	-	-
Outbound	1.9	2.6	3.5	4.6	6.2	8.2
TOTAL	1.9	2.6	3.5	4.6	6.2	8.2
<u>Forestry</u>						
Inbound	-	-	-	-	-	-
Outbound	.6	.8	.9	1.0	1.1	1.3
TOTAL	.6	.8	.9	1.0	1.1	1.3
<u>Fertilizer</u>						
Inbound	.2	.3	.6	.9	1.2	1.4
Outbound	-	-	-	-	-	-
TOTAL	.2	.3	.6	.9	1.2	1.4
<u>Other Industrial Goods</u>						
Inbound	206.3	316.9	412.8	532.8	661.9	770.7
Outbound	-	-	-	-	-	-
TOTAL	206.3	316.9	412.8	532.8	661.9	770.7
<u>Grand Total</u>						
Inbound	397.3	562.0	710.7	894.3	1086.8	1262.3
Outbound	59.5	86.0	116.4	151.2	197.6	241.2
TOTAL	456.8	648.0	827.1	1045.6	1284.4	1503.5

b. Cost Benefit Analysis
1. Project Costs

(\$000)

Estimated costs for the roads component are \$19 million. A breakdown is given in the Financial Analysis, the Technical Analysis and the Detailed Project Description.

TABLE 8 Road Costs (\$000)

a.	Technical Assistance	
	1) US Personnel	1,390
	2) Local hired, project staff	<u>262</u>
b.	Road Maintenance, 900 km. road - 3 years	
	1) Spare parts	250
	2) Personnel, fuel, maintenance	<u>611</u>
c.	Road Rehabilitation, 600 km.	
	1) Equipment spares	2,997
	2) Operating costs, personnel, fuel, etc	<u>695</u>
		3,692
d.	Road Design, Inspection Construction, 55 km.	
	1) Design	290
	2) Inspection	1,023
	3) Construction	<u>9,200</u>
		10,513
e.	Engineering equipment for road component staff, text books, etc.	60
f.	Vehicle/spares for road component staff operation	172
g.	Demonstration drainage constructions, commodities, kilometer markers	258
	Sub-total =	\$ 17,208,000
h.	Air freight shipments	25
i.	Project evaluation	20
j.	Project contingency (15%)	<u>2,588</u>
	Sub-total =	\$ 2,633,000
	TOTAL =	\$ 19,841,000

TABLE 9

Summary of Project Expenditures by Fiscal Year
(U.S. \$000)

	FY 84 -9/84	FY 85 10/84 -9/85	FY 86 10/85 -9/86	FY 87 10/86 -9/87	FY 88 10/86 -9/88	FY 89 10/88 -9/89	FY 90 10/89 -9/90	TOTAL
Technical assistance	100	614	422	254				1390
Commodities	3	3063	384	145				3595
Road Design		290						
Road Construction Inspection			23	300	300	300	100	1023
Road construction				1600	3000	3000	1600	9200
	FY 84 -9/84	FY 85 10/84 -9/85	FY 86 10/85 -9/86	FY 87 10/86 -9/87	FY 88 10/86 -9/88	FY 89 10/88 -9/89	FY 90 10/89 -9/90	TOTAL
Demonstration drainage construction		48	48	46				142
Evaluation		2	8	10				20
Road Maintenance operation		175	202	233				611
Road rehabilitation operation salaries, etc.		22	224	226	113			695
Misc. air freight	2	6	9	6				25
Local staff Project Rd. Component salaries, etc.		68	102	92				
Total	105	4289	1422	3024	3413	3300	1700	17253
Contingency (15%)	16	643	213	454	512	495	255	2588
Grand Total	121	4932	1635	3478	3925	3795	1955	19841

2. Project Benefits

Methodology: The standard methodology of evaluating benefits on the basis of comparison between "without" and "with" project conditions has been followed. Vehicle operating costs have been worked out under "with" and "without" project conditions. The difference in the vehicle operating costs under these two conditions has been taken as a measure of road users benefits. Basically 2 types of traffic estimates have been included:

- a) The normal traffic growing at a rate of 5% per annum.
- b) The normal and development traffic as a result of construction, rehabilitation and better maintenance of the asphalt roads only, growing at a rate of 10% per annum from the fifth year of completion.

The operating costs over different sections of the road are different, therefore averages for all sections and of different speeds have been calculated. The cost estimate figures in Table 10 are taken from the NESPAK updated feasibility study for C & W Department, Government of Baluchistan (1983 updated) carried out for the Makran Coastal Road. Their methodology for calculating operating costs has also been included after the Table. It is assumed that the operating costs in case of rehabilitated and upgraded roads will be reduced by 20 percent and 10 percent respectively. Inflation assumed to be uniform for costs and benefits has been ignored in the analysis.

TABLE 10

Motor Vehicle Operation Costs per 1000 Kms for Vehicles
(Averaged over buses, Trucks and Cars)

Operating Cost Items/Speed	: UNDER "WITHOUT" : PROJECT CONDITIONS		: UNDER "WITH" PROJECT CONDITION		
			: Asphalted	: Rehabilitated	: Upgraded
Fuel Consumption	1109	903	952	998	
Engine Oil	83	62	66	75	
Tyre Wear	506	120	341	455	
Depreciation	735	479	588	662	
Interest	486	328	389	440	
Labor	250	133	200	225	
Parts	1551	495	1240	1395	
Time saving	1390	640	1112	1251	
Total	6110	3160	4888	5501	
Vehicle Operating Cost/KM	6.11	3.16	4.88	5.5	

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A description of methodology used to estimate various items included in the vehicle operating costs calculation follow.

Fuel Consumption

Fuel consumption of vehicle was calculated for the applicable speeds under the various road conditions. Economic prices of petrol and diesel, excluding custom duties and taxes, used in calculations of fuel costs are Rs. 4.25 and 2.66 per litre respectively.

Oil Consumption

The cost of engine oil for cars, buses and trucks at different speed, have been calculated using the economic price of Rs. 12.09 per litre.

Tyre Consumption

Tyre consumption for cars, buses and trucks have been calculated on the basis of varying average speeds of these vehicles taking into consideration the road conditions.

Vehicle Maintenance Costs

Two components of the vehicle maintenance costs are related to labor and material (parts). These have been estimated on the basis of per thousand kilometer run. A rate of Rs. 6.42 per hour has been taken as economic cost of maintenance labor. The maintenance cost of material (Parts) has been calculated as percentage of new vehicle (without tyre) cost per thousand kilometers. The cost of cars, buses and trucks without tyres has been taken as Rs. 64,321, Rs.246,357 and Rs. 187,500 respectively.

Time Related Costs

Time related cost to be included in the vehicle operating costs are:

- Depreciation
- Interest on the capital invested in vehicle
- Cost of passenger and driver time

Depreciation costs have been analyzed in terms of vehicle utilization over total service life, or life time kilometerage which is a function of annual kilometerage. The lower speed in case of unimproved road would result in higher depreciation costs of vehicle. The effect of increase in operating speed over the existing and after improvement would be to increase lifetime kilometerage thereby causing decrease in the vehicle operating cost per kilometer. Decreased depreciation would be due to increased utilization.

Interest rate of 15 percent, considered to be the opportunity cost of capital, has been used. Interest has been calculated on the basis of the average age of each vehicle type, which in Pakistan is generally considered to be less than half the average lifetime of vehicle as shown below:

	<u>CAR</u>	<u>BUS</u>	<u>TRUCK</u>
Vehicle lifetime (year)	12	8	6
Average age taken (year)	5.5	3.5	4.5

Interest cost, as percentage of the cost of a new vehicle has been taken for various type of vehicles, as given below:

Percentage of vehicle cost assumed as interest cost	6.5	6.7	6.8
---	-----	-----	-----

For the calculation of interest cost on capital invested, the percentage given above has been divided by the annual kilometerage (in thousands) on the basis of the average speeds of 61 KPH for cars, 51 KPH for buses and 42 KPH for trucks.

Time Value of Bus Crews

A similar method was used to calculate the time savings of bus drivers and conductors. It is estimated that bus drivers and bus conductors earn Rs. 30,000 and Rs. 24,000 per year respectively inclusive of social benefits and commissions giving a total of Rs. 54,000 for both. The calculation of the value of crew time is based on annual kilometerage travelled at varying speeds. The calculation for buses has been based on the average age of the vehicle for an average speed of 56 KPH and average annual kilometerage of 56,000.

Time Value of Truck Crew

Truck crew includes one driver and one mate. Average wages, including social benefits and bonuses, are estimated to be Rs. 48,000 per year. This is on the assumption that average speed of truck is 40 KPH annual kilometerage is 80,000.

Time Value of Car Passengers

The factor value adopted for evaluation of time of car passengers is 49 percent of the hours of utilization of a car. Passenger salary is estimated as Rs. 48,000 per year and the average number of passengers per car is assumed to be 1.5. A paid car driver is estimated to earn a wage of Rs. 9,000 per year including social benefits and his utilization is also assumed to be 49 percent of total car hours utilization. Total passenger and drivers time has, therefore, been valued as Rs. 48,000 plus Rs. 9,000 multiplied by 0.49, or Rs. 27,930 per year.

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The average age of a car is taken as 5.5 years, which give an average yearly kilometerage of 18,100. At an average speed of 56 KPH, actual car utilization in a year works out to 159 hours, and the total working hours of passenger and driver would therefore, be 2000 per year.

Thus passenger time which can be accounted to travel will be 8 percent of the total hours, at 49 percent utilization. For 1.5 passengers, therefore, the yearly cost would be Rs. 2822.

All of the drivers time, however, has been taken as accountable which works out to Rs. 4410, being 49 percent of the yearly wage.

The total travel cost is Rs. 7232 for 8900 kilometers per year at an average speed of 56 kilometers per hour, or Rs. 0.81 per kilometer. These assumptions form the basis for calculating the time savings due to increased speed, and then increased annual kilometerage.

Table 12-20 show the vehicle operating costs under "without" and "with" project conditions and the net savings over the asphalted, rehabilitated and the upgraded roads. The annual traffic volumes in each case are weighted averages of the traffic counts over different sections of roads. The per kilometer operating costs are also average figures for trucks, buses and cars.

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TABLE 11

Vehicle Operating Cost Including Time Costs for
Normal Traffic Over 55 KM Bela Awaran Road
"Without" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual* Traffic (Thousand of Kms.)	Total Cost (Million Rs.)
1984	6.11	55	64	21
1985	--	--	67	23
1986	--	--	70	24
1987	--	--	74	25
1988	--	--	78	26
1989	--	--	82	28
1990	--	--	86	29
1991	--	--	90	30
1992	--	--	94	32
1993	--	--	99	33
1994	--	--	104	35
1995	--	--	109	37
1996	--	--	120	40
1997	--	--	132	44
1998	--	--	145	49
1999	--	--	160	54
2000	--	--	176	59

* ADT=175

TABLE 12

Vehicle Operating Costs Including Time Costs for
Normal and Development Traffic Over 55 KM Bela-Awaran Road
"With" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual Traffic (Thousand of Kms.)	Total Cost (Million Rs.)
1984	6.11	55	64	21
1985	--	--	67	23
1986	--	--	70	24
1987	--	--	74	25
1988	--	--	78	26
1989	--	--	82	28
1990	--	--	86	29
1991	3.16	--	90	15
1992	--	--	94	16
1993	--	--	99	17
1994	--	--	104	18
1995	--	--	109	19
1996	--	--	120	21
1997	--	--	132	23
1998	--	--	145	25
1999	--	--	160	28
2000	--	--	176	31

TABLE 13

Vehicle Operating Costs for Normal and Development
Traffic Over 55 KM. Bela-Awaran Road
"With" and "Without" Project Conditions and Net Savings
(Million Rs.)

Year	"Without" Project Conditions	"With Project Conditions	Net Savings
1984	21	21	0
1985	23	23	0
1986	24	24	0
1987	25	25	0
1988	26	26	0
1989	28	28	0
1990	29	29	0
1991	30	15	15
1992	32	16	16
1993	33	17	16
1994	35	18	17
1995	37	19	18
1996	40	21	19
1997	44	23	21
1998	49	25	24
1999	54	28	26
2000	59	31	28

TABLE 14

Vehicle Operating Costs including Time Costs for
Normal Traffic Over 600 KM. Rehabilitated Road
"Without" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual* Traffic (Thousand of Kms)	Total Cost (Million Rs.)
1984	6.11	600	56	205
1985	--	--	59	216
1986	--	--	62	227
1987	--	--	65	238
1988	--	--	68	248
1989	--	--	71	260
1990	--	--	75	275
1991	--	--	79	209
1992	--	--	83	304
1993	--	--	87	319
1994	--	--	91	334
1995	--	--	96	352
1996	--	--	101	370
1997	--	--	106	389
1998	--	--	111	407
1999	--	--	116	425
2000	--	--	122	447

*Weighted ADT=155

TABLE 15

Vehicle Operating Costs Including Time Costs for
Normal and Development Traffic Over 600 KM. Rehabilitated Road
"With" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual Traffic (Thousand of Kms.)	Total Cost (Million Rs.)
1984	6.11	600	56	205
1985	--	--	59	216
1986	--	--	62	228
1987	--	--	65	238
1988	--	--	68	248
1989	4.88	--	71	208
1990	--	--	76	220
1991	--	--	79	231
1992	--	--	83	243
1993	--	--	87	255
1994	--	--	91	266
1995	--	--	96	281
1996	--	--	101	296
1997	--	--	106	310
1998	--	--	111	325
1999	--	--	116	340
2000	--	--	122	357

TABLE 16

Vehicle Operating Costs for Normal and Development Traffic
Over 600 KM. Rehabilitated Road "With" and "Without"
Project Conditions and Net Savings
(Rs. Million)

Year	"Without" Project Conditions	"With Project Conditions	Net Savings
1984	205	205	0
1985	216	216	0
1986	227	227	0
1987	238	238	0
1988	248	248	0
1989	260	208	52
1990	275	220	55
1991	209	231	59
1992	304	243	61
1993	319	255	64
1994	334	266	68
1995	352	281	71
1996	370	296	74
1997	389	310	79
1998	407	325	82
1999	425	340	85
2000	447	357	90

TABLE 17

Vehicle Operating Costs for Normal Traffic
Over 900 KM. Maintained Road
"Without" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual* Traffic (Thousand of Kms.)	Total Cost (Million Rs.)
1984	6.11	900	46	253
1985	--	--	48	264
1986	--	--	51	280
1987	--	--	53	291
1988	--	--	56	308
1989	--	--	59	324
1990	--	--	62	341
1991	--	--	65	357
1992	--	--	68	374
1993	--	--	72	396
1994	--	--	75	412
1995	--	--	79	434
1996	--	--	83	456
1997	--	--	87	478
1998	--	--	91	500
1999	--	--	96	528
2000	--	--	101	555

* Weighted ADT=126

TABLE 18

Vehicle Operating Costs for Normal and Development Traffic
Over 900 KM. Maintained Road
"With" Project

Year	Vehicle Operating Cost/Km.	Distance KM.	Annual Traffic (Thousand of Kms.)	Total Cost (Million Rs.)
1984	6.11	900	46	253
1985	--	--	48	264
1986	--	--	51	280
1987	--	--	53	291
1988	5.5	--	56	277
1989	--	--	59	292
1990	--	--	62	307
1991	--	--	65	322
1992	--	--	68	337
1993	--	--	72	356
1994	--	--	75	371
1995	--	--	79	391
1996	--	--	83	411
1997	--	--	87	431
1998	--	--	91	450
1999	--	--	96	475
2000	--	--	101	500

TABLE 19

Vehicle Operating Costs for Normal and Development Traffic
Over 900 KM. Maintained Road "WITH" and "Without"
Conditions and Net Savings
(Rs. Million)

Year	"Without" Project Conditions	"With Project Conditions	Net Savings
1984	253	253	0
1985	264	264	0
1986	280	280	0
1987	291	291	0
1988	308	277	31
1989	324	292	32
1990	341	307	34
1991	357	322	35
1992	374	337	37
1993	396	356	40
1994	412	371	41
1995	434	391	43
1996	456	411	45
1997	478	431	47
1998	500	450	50
1999	528	475	53
2000	555	500	55

TABLE 20

Total Net Cost Savings or Benefits Over the 3 Categories of Roads
(Million)

Year	: Benefits : Due to Cost : Savings over : 55 Km. paved : Road	: Benefits : Due to Cost : Savings over : 600 Km. re- : habilitated : Road	: Benefits : Due to Cost : Savings over : 900 Km. : Maintained : Road	: : : Total : Rupees	: : : Benefits : Dollars
1988	---	---	31	31	2
1989	---	52	32	84	6
1990	---	55	34	89	7
1991	15	59	35	109	8
1992	16	61	37	114	8
1993	16	64	40	120	9
1994	17	68	41	126	9
1995	18	71	43	132	10
1996	19	74	45	138	10
1997	21	79	47	147	11
1998	24	82	50	156	12
1999	26	85	53	164	12
2000	28	90	55	173	13

3. CONCLUSIONS

Economic Feasibility of Roads Component

Table 21 shows the discounted cost benefit and cash flow streams. At 15% opportunity cost of capital the net present worth (NPW) is a positive \$13,756,000. The B/C Ratio exceeds unity (2.0) and the Economic Rate of Return is 28.7 percent which is a very good return considering the remoteness and general economic backwardness of Makran Division of Baluchistan. The analysis therefore establishes that the project component as planned is economically feasible ensuring an adequate rate of return for the investment involved. The project component should be undertaken.

TABLE 21

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR ROADS
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2	4682		-4682
3	4197		-4197
4	3452		-3452
5	3404	2000	-1404
6	3613	6000	2387
7	790	7000	6210
8	263	8000	7737
9	263	8000	7737
10	263	9000	8737
11	263	9000	8737
12	263	10000	9737
13	263	10000	9737
14	263	11000	10737
15	263	12000	11737
16	263	12000	11737
17	263	13000	12737
Internal Rate of Return (%)			28.7
Net Present Value (@ 15%)			
	a. Costs		14169
	b. Benefits		27925
	c. Net Benefits		13756
Benefit Cost Ratio			2.0

- Notes: 1. Year 2 costs include \$ 2330 thousand for commodities to be financed under A.C. & E. Program.
2. Years 2-6 include \$ 27, 725, 251, 272 and 1078 thousands for technical assistance.

2. The Water Component

a. Background

This section is divided into two parts. In the first part the water availability in Makran Division and some estimates of water costs from different sources are discussed. This discussion is considered necessary for understanding the rationale behind the AID decision to assist in the development of some particular system of water provision in preference to other systems.

In the second part the costs and benefits of the proposed water resources development activities are discussed and BCR, NPV and IRR are calculated and sensitivity analysis performed.

b. Water costs

In Makran water for agriculture and drinking purposes is available from four primary sources. Traditionally people have depended upon Karezes, flood control and storage structures (bunds) and water from perennial streams diversions (Kaurjos). During the last 10-15 years open and bored wells with diesel and electric pumps have been introduced in the area although social and economic factors greatly constrained their spread after an initial popularity. Following are some of the estimates of water costs from different sources.

1. Karez Water:

A mile long 0.75 cusec Karez with a 3-year construction period costing Rs.1.3 million plus Rs.60,000 per year for cleaning and maintenance costs, at 15% opportunity cost of money, water delivered at the mouth of the Karez has a net present cost of Rs.125/acre foot on an annual basis. According to best estimates there are 457 Karezes in Makran irrigating about 72,000 acres of land.

ii. Tubewell Water:

A 0.75 cusec 100 foot deep tubewell costs around Rs.150,000 including diesel motor and pump. Assuming fuel costs of Rs.40,000 for pumping 2,200 hours per year, water at the well outlet pipe costs about Rs.138/- per acre foot with a 20-year tubewell life. The estimated number of tubewells in Makran is 300 irrigating 400 acres of land.*

111. Bunds/Flood Control and Storage:

Flood waters are the most variable as they are totally dependent upon rainfall events. Some years it may not rain at all while other years may have as many as 10 major rainstorms. Life of the structures are also difficult to estimate as many fail the first year while others last for a number of years (some were found 2-3 generations old with rare breaches). For bunds (like those seen in Nalaint area half way between Pasni and Gwadar) an estimate of 10 years average (without breaches) is used here. These bunds cost from Rs.250,000 to Rs.4,500,000. Based on an average of five (5) storm events of five (5) hours duration bund water costs vary from Rs.67 to 374 per acre foot.

More commonly found in Makran and elsewhere in Baluchistan are small bunds designed to trap and hold water and also soil, so that a crop can be grown behind the bund. Most of these entrapment bunds are made without any technical guidance, do not contain any clay soil, do not have a proper spillway and consequently over 90% of the bunds breach in a normal year. The farmers pay Rs.150 per hour (to Machinery Maintenance Department) and often spend more than 50 hours building these bunds. Yet the chance of these holding appears to be very slim. These bunds are designed to take only one or at most two runoff events during a season and usually serve a limited amount of area (2-3 acres). Given the uncertainty of rainfall, runoff, serviceability and control, water costs from the system are difficult to estimate. A first look would indicate about Rs.27 per acre foot but this is only a crude guess.

*Both the construction and maintenance costs in case of Karezes are higher but the net present costs are lower than tubewells because of continuous water flow from Karezes throughout the year.

iv. Kaurjos:

Kaurjos are simple perennial river water diversions. The costs of creating a gravel embankment in the middle or towards a bank of the perennial river to check and divert water into a conveyance channel is minimal but it is expensive to reconstruct the embankment or bund after each flood. Many kaurjos have dried down in recent times and there seem to be no efforts by people to construct new kaurjos. Besides annual and seasonal fluctuations of rainfall and river flows which effect Kaurjos there seems to be a more serious and almost uncontrollable problem with them. The perennial rivers in Makran too often change their course: destroyed, damaged and abandoned date palm orchards all over Makran are a witness to this phenomenon. A minor tilt by the river towards the bank across from the kaurjo makes it almost impossible to continue using the kaurjo; thus abandoned orchards. There are an estimated 25 kaurjos in Makran irrigating about 3000 acres of land. Among the existing systems of irrigation, tubewells and karezes are the most popular not only in Makran but in all of Baluchistan. Thanks to the massive electrification effort, connection with the national grid system and government subsidy programs, people of Baluchistan, particularly those living in about 100 mile radius around Quetta, started substituting tubewells for the traditional Karez irrigation systems. In the mentioned areas thousands of tubewells were installed and hundreds of Karezes systems, many of them hundreds of years old, dried down completely. By the time that people in remote Makran started installing tubewells their potentially harmful side effects were widely known throughout Baluchistan. The agricultural communities in Makran decided not to allow any individuals to install tubewells near their Karezes. The universal tendency in Makran today is investing in Karezes and discouraging tubewells.

c. Benefit Cost Analysis

1. Drilling inside the mother wells of Karezes: An average Karez in Makran has about 70 wells throughout its length. These wells or vertical shafts - generally about 50 feet apart - are necessary for the initial Karez construction and for periodic cleaning of the debris and also for providing access and ventilation for the laborers working at the bottom. The first well or a few wells at the head of the karez are called mother wells because they are the source of all water springs (aquifers). Local Baluch farmers have developed different techniques to increase the rate of water supply in the Karezes mother wells. One such technique successfully followed by well to do Karez owners and by the local Irrigation Department has been to expand the area of aquifer contact. This is done either by digging horizontal tunnels to different directions from the mother wells or by drilling small vertical holes at the bottom of mother wells so as to intercept a deeper confined (artisan) aquifer. The BALAD design team engineers determined that the approach of drilling holes at the bottom of mother wells have an important potential for increasing the water supply. It is proposed that a total of 95 Karez mother wells will be drilled in four year's time.

(a) Cost Estimates:

The cost estimates are shown in Table 22.

TABLE 22

COSTS OF KAREZ MOTHER WELLS DRILLING

<u>Year</u>	<u>No. of Mother Wells Drilled</u>	<u>Costs</u>	
		<u>Rs(Thousands)</u>	<u>\$(Thousands)</u>
1985	5	125	9
1986	12	300	22
1987	24	600	44
1988	24	600	44
1989	30	750	56
Total	95	2,375	175

(b) Benefits-Cost Analysis:

The benefit cost streams and excellent B/C ratio are shown in Table 23.

TABLE 23

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR DRILLING
($\$000$)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2	9	5	-4
3	22	16	-6
4	44	38	-6
5	44	61	17
6	55	89	34
7		89	89
8		89	89
9		89	89
10		89	89
11		89	89
12		89	89
13		89	89
14		89	89
15		89	89
16		89	89
17		89	89
18		89	89
19		89	89
20		89	89
Internal Rate of Return (%)			107.0
Net Present Value (@ 15%)			
	a. Costs		106
	b. Benefits		352
	c. Net Benefits		246
Benefit Cost Ratio			3.3

11. Karez Capping:

As mentioned before a karez in Makran has on an average about 70 wells or vertical shafts. At the time that there was no shortage of any labor in Makran and labor was available at extreme low wages, costs of periodic cleaning and maintenance of tunnels was far lower than the costs of sealing or capping the wells of the Karezes. During the last 10-20 years new job opportunities for Makran people, particularly in the neighboring Gulf countries, have attracted thousands of unskilled labor resulting in serious labor scarcity problems in Makran. Labor wages are sometimes 100% more in Makran compared to most of the rest of Baluchistan. These high costs of Karez cleaning and maintenance labor necessitated adoption of labor saving techniques. Makran karez owners are increasingly resorting to karez capping to save on the cleaning and maintenance labor costs. The BALAD design team realized the importance and utility of karez capping and the resulting savings and possible investment on improved inputs and farming operations. Thus the decision to undertake capping of wells of 95 karezes under the Project.

a. Karez Capping Costs:

The karez capping costs along with the number of karezes capped each year are shown in Table 24.

TABLE 24

KAREZ CAPPING ACTIVITIES COSTS

Year	Number of Karezes Capped	Costs Rs. (Thousands)	\$
1985	0	0	0
1986	5	950	73
1987	20	3,802	292
1988	30	5,703	439
1989	40	7,604	585
TOTAL	95		1389

b. Benefit Cost Evaluation/Economic Feasibility:

Table 25 gives cost benefit and cash flow calculations.

TABLE 25

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR KAREZ CAPPING
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2			
3	73	18	-55
4	292	92	-200
5	439	202	-237
6	585	348	-237
7		348	348
8		348	348
9		348	348
10		348	348
11		348	348
12		348	348
13		348	348
14		348	348
15		348	348
16		348	348
17		348	348
18		348	348
19		348	348
20		348	348
Internal Rate of Return (%)			33.0
Net Present Value (@ 15%)			
	a. Costs		789
	b. Benefits		1268
	c. Net Benefits		479
Benefit Cost Ratio			1.6

iii. Small Delay Action Dams

The benefit and costs streams for delay action dams are given in Table 26.

TABLE 26

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR DELAY ACTION DAMS
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2			
3	48	10	-38
4	155	42	-113
5	170	77	-93
6	190	117	-73
7		117	117
8		117	117
9		117	117
10		117	117
11		117	117
12		117	117
13		117	117
14		117	117
15		117	117
16		117	117
17		117	117
18		117	117
19		117	117
20		117	117
Internal Rate of Return (%)			25.3
Net Present Value (@ 15%)			
	a. Costs		330
	b. Benefits		441
	c. Net Benefits		111
Benefit Cost Ratio			1.3

d. OFWM activities: under on-farm water management activities the project proposes to include watercourse improvement and land levelling.

1. Watercourse Improvement:

(a) Cost of Watercourse Improvement

Table 27 shows year-wise number and costs of water courses improvement in Makran.

TABLE 27

Year	Number of watercourses improved	Costs (Thousands)	
		Rs	\$
1985	4	480	30
1986	20	2,400	178
1987	30	3,600	267
1988	40	4,800	355
<u>1989</u>	<u>50</u>	<u>600</u>	<u>444</u>
TOTAL	144	17,280	1,280

11. Land Levelling

The losses of irrigation water are not due to defective water courses alone. Unlevelled lands also result in tremendous water losses and levelling program has therefore, also been included in the project water resources development component.

(a) Cost of Land Levelling

The number of acres proposed to be levelled each year and the costs are shown in the following table:

TABLE 28

COST ESTIMATES FOR LAND LEVELLING

Year	Acres to be levelled	Cost	
		Rs.	(thousands) \$
1985	75	15	1
1986	200	40	3
1987	1,000	200	15
188	1,400	280	21
1989	1,500	300	22
TOTAL	4,175	835	62

(b) Land Levelling Benefits

The benefits of land levelling include even distribution of water, better crop stand, better utilization of inputs and better yields. In a WAPDA report (March 1984) on Monitoring and Evaluation of OFWM, it is stated that based on Punjab and Sind experience, (1) an average of 3.5% additional cultivated area can be gained by land levelling. (2) Cropping intensities can increase by 34%. (3) Yields can increase by 30%.

Punjab and Sind conditions are different from those of Baluchistan. Moreover, many of the results were obtained under controlled conditions. To be on the extreme conservative side we assume that the land levelling results in just 2% increase in the crop yields. As explained before this means a meagre \$6.29 additional net returns per acre. Benefits are the product of this amount and the total acreage levelled. To continue to reap the benefits of land levelling throughout the analysis period it is reasonable to assume that after the initial 5 years operations financed by AID the owners will continue the land levelling work on their fields. From 5th to the 19th year levelling costs equal to 50% of the 4th year costs have been included in the analysis.

(c) Benefit/Cost Evaluation and Conclusions

Table 29 details streams of benefits/costs and the cash flow for water course improvement and land levelling (combined).

TABLE 29

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR ON-FARM WATER MANAGEMENT
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2	37		37
3	185	41	-145
4	300	102	-198
5	403	192	-211
6	501	337	-164
7	55	520	465
8	55	520	465
9	55	520	465
10	55	520	465
11	55	520	465
12	55	520	465
13	55	520	465
14	55	520	465
15	55	520	465
16	55	520	465
17	55	520	465
18	55	520	465
19	55	520	465
20	55	520	465
Internal Rate of Return (%)			35.4
Net Present Value (@ 15%)	a. Costs		993
	b. Benefits		1728
	c. Net Benefits		735
Benefit Cost Ratio			1.7

5. KIL KAUR MEDIUM-SIZED DAM CONSTRUCTION

1. Background in Formation

The following tables show existing land utilization farm size, and cropping patterns in the Kil Kaur dam command area.

TABLE 30

LAND UTILIZATION OF THE PROJECT AREA

	Areas in Acres	Percent of total area
Total cultivated area	131	0.05
Net sown	62	0.024
Current fallow	69	0.025
Total Cultivable area	25,000	99.5
Culturable waste	18,000	71.6
Forests	2,000	7.79
Not available for cultivation	5,000	19.95

NOTE: The majority of local residents raise animals because of low rainfall but take to crop raising in years of more rainfall. The people, in fact, grow crops over more than 131 acres. The figures provided by the local (Hoshab) Revenue Department relate only to years 1982-83.

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TABLE 31

NUMBER AND AREA OF FARMS BY SIZE OF FARM

Farm Size	Category	Number of Farms	Percent of Total	Average Farm size
0-4	I	5	27.8	2.2
4-8	II	8	44.4	6.67
8-12	III	0	0	0
12-15	IV	5	27.8	13.32
TOTAL		18	100	7.3

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TABLE 32

PRESENT CROPPING PATTERN AND INTENSITIES AND CROP PRODUCTION
IN THE PROJECT AREA

Crops	: Cropped : Acreage	: Percent of : Total Area	: Yield/Acre : (Maunds)	: Production : (Maunds)
<u>Kharif</u>				
Jowar (Sorghum)	20	15	5	100
Fodder	4	3	240	960
Pulses	5	4	3	15
<u>Rabi</u>				
Wheat	10	8	6	60
Barely	14	11	5	70
Fodder	4	3	250	1000
Pulses	5	4	3.5	17.5

11. Project Benefits

In addition to the direct benefits discussed in Section V of the PP, the project is expected to have the following indirect benefits: 1) Tapping water resources which were so far wasted to the sea, could be the beginning of a new era of irrigation water availability and agricultural development in Makran. The private sector, the provincial and federal governments as well as international donor agencies will be encouraged to invest in similar activities elsewhere in Makran. 2) The design team engineers determined that Hydro Power Generation from the dam was a possibility in the future. If that happens the people of the area who are still part pastoral and nomadic will see rapid development of their area and much improved living standards in matter of years. 3) The dam site is located in a very strategic and central area of Makran which itself is one of the most important strategically located region in Pakistan. The construction of the dam will have the positive psychological impact upon Makran Baluch that Pakistan government and its allies are alive to their problems and are helping in the development of Makran.

To simplify the benefit calculations for both this dam and the Gobert cut off wall following assumptions have been made:

(a) The existing crop acreage and intensities are assumed to remain constant during all the years of analysis under "without" project conditions. However, under without project conditions an optimistic 1% annual growth rate in productivity is assumed. Under with project conditions an annual growth rate of 3% in production and returns is assumed.

(b) It is assumed that benefits would start occurring immediately after the completion of the project works.

(c) Except the internationally traded commodities (rice, wheat and fertilizer) which are based on World Bank estimates (price Prospects for Major Primary Commodities V. I-III, World Bank Report, July 1982) internal farm gate prices have been used. Constant price level has been used both for "with" and "without" project conditions.

(d) Gross returns, production expenses and net returns under "with" and "without" project conditions which is the same as under irrigated and rainfed conditions of crop growing have been estimated by the BALAD design team. As a result of the reconnaissance survey and interviews with Makran farmers during 1983-84 gross returns, production expenses and net returns per acre have been estimated as follows:

(1) Irrigated Land:	Gross returns per acre = Rs 8000
	Production expenses per acre = Rs 3750
	Net returns per acre = Rs 4250
(2) Rainfed Land	Gross returns per acre = Rs 1400
	Production expenses per acre = Rs 800
	Net returns per acre = Rs 600

These averaged figures have been used throughout the analysis.

(e) As determined by the office of Engineering for both the dam and cut off wall an annual maintenance cost equal to 5% of the cost of construction has been added.

(f) Appreciation in value of land. After the Kil Kaur dam and Gobert cut off wall construction land in the project area is expected to appreciate in value considerably due to its high productive potential. The existing average value of land in the project area is estimated to be Rs. 2000/ per acre. It is estimated that after the dam construction the value of land will appreciate to Rs. 6000/per acre. But since no land rent separate from water charges has been included on the cost (production) side and since the increased production (and rents) reflect land appreciation, therefore, no separate land appreciation has been added to the benefits stream.

(g) It is also assumed that increased production will not result in lower prices, therefore, increased production will increase returns in the same proportion.

(h) Inflation will affect costs and benefits uniformly so no changes in their relative values is foreseen. Inflation factor is therefore ignored. A 0.5% increase in production expenses under "with" project conditions provides for improved technology and inputs. The following tables show gross returns, production expenses and net returns calculations leading to incremental agricultural benefits from the project.

TABLE 33

GROSS PRODUCTION VALUE "WITHOUT" PROJECT

Year	Acres	Gross Returns per acres	Total Returns Rs. (in thousands)
1985	131	1400	183
1986		1414	185
1987		1428	187
1988		1442	189
1989		1455	191
1990		1470	193
1991		1484	194
1992		1499	196
1993		1514	198
1994		1529	200
1995		1545	202
1996		1560	204
1997		1576	206
1998		1591	208
1999		1607	211
2000		1623	213
2001		1640	215
2002		1656	217
2003		1672	219
2004		1688	221

TABLE 34

GROSS PRODUCTION VALUE "WITH" PROJECT

Year	Acres	Gross Returns per acres	Total Returns Rs. (in thousands)
1985	131	1400	183
1986	131	1414	185
1987	131	1428	187
1988	131	1442	189
1989	1000	8000	8,000
1990	1200	8240	9,888
1991	1500	8487	12,730
1992	2000	8742	17,484
1993	2400	9004	21,609
1994	2400	9274	22,258
1995	2500	9552	23,880
1996	2500	9839	24,597
1997	2600	10134	26,348
1998	2700	10438	28,183
1999	2800	10751	30,103
2000	2900	11074	32,114
2001	3000	11406	34,218
2002	3000	11748	35,244
2003	3000	12100	36,300
2004	3000	12463	37,389

TABLE 35

PRODUCTION EXPENSES "WITHOUT" PROJECT

Year	Acres	Production Returns Per acre	Total Production Expenses Rs. (in thousands)
1985	131	800	105
1986			105
1987			105
1988			105
1989			105
1990			105
1991			105
1992			105
1993			105
1994			105
1995			105
1996			105
1997			105
1998			105
1999			105
2000			105
2001			105
2002			105
2003			105
2004			105

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TABLE 36

PRODUCTION EXPENSES "WITH" PROJECT

Year	Acres	Production Expenses Per acre	Total Production Expenses Rs. (in thousands)
1985			
1986			
1987			
1988			
1989	1000	3750	3750
1990	1200	3769	4522
1991	1500	3788	5682
1992	2000	3807	7614
1993	2400	3826	9182
1994	2400	3845	9228
1995	2500	3864	9660
1996	2500	3883	9708
1997	2600	3903	10148
1998	2700	3922	10589
1999	2800	3942	11038
2000	2900	3961	11487
2001	3000	3981	11943
2002	3000	4002	12006
2003	3000	4021	12063
2004	3000	4041	12123

TABLE 37

NET PRODUCTION VALUE WITHOUT PROJECT
(THOUSAND RS.)

Year	Gross Production Value	Production Expenses	Net Production Value
1985	183	105	78
1986	185	105	80
1987	187	105	82
1988	189	105	84
1989	191	105	86
1990	193	105	88
1991	194	105	89
1992	196	105	91
1993	198	105	93
1994	200	105	95
1995	202	105	97
1996	204	105	99
1997	206	105	101
1998	208	105	103
1999	211	105	106
2000	213	105	108
2001	215	105	110
2002	217	105	112
2003	219	105	114
2004	221	105	116

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TABLE 38

NET PRODUCTION VALUE "WITH" PROJECT

(Thousand Rupees)			
Year	Gross Production Value	Production Expenses	Net Production Value
1985			
1986			
1987			
1988			
1989	8000	3750	4250
1990	9888	4522	5366
1991	12730	5682	7048
1992	17484	7614	9870
1993	21609	9182	12427
1994	22258	2228	13030
1995	23880	9660	14220
1996	24597	9708	14889
1997	26348	10148	16200
1998	28183	10589	17594
1999	30103	11038	19065
2000	32114	11487	20627
2001	34218	11943	22275
2002	35244	12006	23238
2003	36300	120063	24237
2004	37389	12123	25266

TABLE 39
INCREMENTAL AGRICULTURAL BENEFITS

Year	Net Production Value "With" Project	Net Production Value "Without" Project	Incremental Benefits	
			(Rs (000))	\$
1985	78	78	0	
1986	80	80	0	
1987	82	82	0	
1988	84	84	0	
1989	4250	86	4164	308
1990	5366	88	5278	391
1991	7048	89	6959	515
1992	9870	91	9779	724
1993	12427	93	12334	913
1994	13030	95	12935	958
1995	14220	97	14123	1046
1996	14889	99	14790	1096
1997	16200	101	16099	1193
1998	17594	103	17491	1296
1999	19065	106	18959	1404
2000	20627	108	20519	1520
2001	22275	110	22165	1642
2002	23238	112	23126	1713
2003	24237	114	24123	1786
2004	25266	116	25150	1863

iii. Conclusion/Economic Feasibility - Kili Kaur

The stream of costs and benefits are given in Table 40 as the Benefit Cost calculation table indicates we have a lucrative Benefit Cost Ratio (2.2). The NPV (2,170,000) and EIRR (33.4) all indicate that this component is economically sound and feasible.

TABLE 40

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR ON-FARM WATER MANAGEMENT
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2			
3			
4	1093		-1093
5	1430		-1430
6	90	513	423
7	90	652	562
8	90	858	768
9	90	1207	1117
10	90	1523	1433
11	90	1597	1507
12	90	1743	1653
13	90	1825	1735
14	90	1988	1898
15	90	2160	2070
16	90	2340	2250
17	90	2533	2443
18	90	2737	2647
19	90	2855	2765
20	90	2977	2887
Internal Rate of Return (%)			33.4
Net Present Value (@ 15%)	a. Costs		1814
	b. Benefits		3984
	c. Net Benefits		2170
Benefit Cost Ratio			2.2

(f) Goburt Diversion Dam

Goburt Diversion dam is proposed to be constructed over River Nihing about 117 Kms west of Turbat near the border town of Mand. The total agricultural land which could make up the command area of a medium dam was stated by the villagers to be about 18 sq. miles or 11520 acres. There have been attempts several times in the past to divert the Nihing waters to irrigate Goburt area. As a result of the latest such attempt a big conveyance channel from the river bank to the fields is still in tact. The project activity proposes to divert the rivers base flow plus a very small fraction of the flood flow while not obstructing the extremely large flood flows which can occur. Only about 660 acres of land can come under perennial irrigation as a result of this activity. As mentioned before, total land area in Goburt is huge. The following tables give land utilization and present cropping patterns over the 660 acres in the area. Tables 41 - 49 show the gross production value, production expenses, and the net production value.

1. Costs of the Project Component

The diversion - structure is estimated to cost 1.1 million dollars and the construction will be completed in two years time. An annual maintenance cost equal to 1% of the total cost of construction has been included.

ii. Benefits:

The quantifiable benefits included in the analysis are confined to the incremental agricultural benefits indicated by the difference in value of production under with and without Project conditions. Some of the indirect benefits are as follows:

1) The Goberd area people have formed a water users association and have built diversion structures and conveyance channels in the past through cooperative effort construction of the cutoff wall will result in the best utilization of water as the institutions already exist.

2) The Rind Baluch tribe living in the area also inhabits areas in Iranian Baluchistan across the border. This tribe people have been involved in smuggling and sometimes drug trafficking. Although 660 acres irrigation will not change much but it may provide employment and living to some of the erstwhile smugglers and drug traffickers and may encourage others to invest on water resources and agricultural development.

Table 41 and 42 show existing land utilization and cropping patterns and production in Goburt proposed command area. Tables 43 to 49 show gross production value, production expenses and net returns calculations.

TABLE 41

LAND UTILIZATION OF THE PROJECT AREA
(Goburt)

	Area in acres	Percentage of Total area
Total cultivated area	150	22.7
Net sown	50	7.5
Current fallow	100	15.2
Total uncultivated area	510	77.3
Culturable waste	510	77.3
Forests	-	-
Not available for cultivation	-	-

TABLE 42

PRESENT CROPPING PATTERN AND INTENSITIES AND CROP PRODUCTION
IN THE PROJECT AREA

CROPS	CROPPED ACREAGE	PERCENT OF TOTAL AREA	YIELD/ACRE (Mounds)	PRODUCTION (Mounds)
<u>Kharif</u>				
Jowar(Sorghum)	12	24	5	60
Fodder	4	8	240	960
Pulses	5	10	3	15
<u>Rabi</u>				
Wheat	20	40	6	120
Fodder	4	8	250	1000
Pulses	5	10	3.5	17.5

TABLE 43

GROSS PRODUCTION VALUE "WITHOUT" PROJECT

<u>Year</u>	<u>Acres</u>	<u>Gross Returns Per Acre</u>	<u>Total Returns Rs.(In thousands)</u>
1985	150	1400	210
1986		1414	212
1987		1428	214
1988		1442	216
1989		1455	218
1990		1470	220
1991		1484	223
1992		1499	225
1993		1514	227
1994		1529	229
1995		1545	232
1996		1560	234
1997		1576	236
1998		1591	239
1999		1607	241
2000		1623	243
2001		1640	246
2002		1656	248
2003		1672	251
2004		1688	253

TABLE 44

GROSS PRODUCTION VALUE "WITH" PROJECT

Year	Acre	Gross Returns Per Acre	Total Production Value Rs.(In thousands)
1985			
1986			
1987			
1988			
1989	660	8000	5280
1990		8240	5438
1991		8487	5601
1992		8742	5770
1993		9004	5943
1994		9274	6121
1995		9552	6304
1996		9839	6494
1997		10134	6688
1998		10438	6889
1999		10751	7096
2000		11074	7309
2001		11406	7528
2002		11748	7754
2003		12100	7986
2004		12463	8226

TABLE 45

PRODUCTION EXPENSES "WITHOUT" PROJECT

<u>Year</u>	<u>Acres</u>	<u>Production Expenses Per Acre</u>	<u>Total Production Rs. (In thousands)</u>
1985	150	800	120
1986			120
1987			120
1988			120
1989			120
1990			120
1991			120
1992			120
1993			120
1994			120
1995			120
1996			120
1997			120
1998			120
1999			120
2000			120
2001			120
2002			120
2003			120
2004			120

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TABLE 46

PRODUCTION EXPENSES "WITH" PROJECT

Year	Acres	Production Expenses Per Acre	Total Production Expenses Rs. (In thousand)
1985			
1986	—		
1987			
1988			
1989	660	3750	2475
1990		3769	2487
1991		3788	2500
1992		3807	2513
1993		3826	2525
1994		3845	2537
1995		3864	2550
1996		3883	2563
1997		3903	2576
1998		3922	2589
1999		3942	2602
2000		3961	2614
2001		3981	2627
2002		4002	2641
2003		4021	2654
2004		4041	2667

TABLE 47

NET PRODUCTION VALUE "WITHOUT" PROJECT
(Rs. In thousands)

<u>Year</u>	<u>Gross Production Value</u>	<u>Production Expenses</u>	<u>Net Production Value</u>
1985	210	120	90
1986	212	120	92
1987	214	120	94
1988	216	120	96
1989	218	120	98
1990	221	120	101
1991	223	120	103
1992	225	120	105
1993	227	120	107
1994	229	120	109
1995	232	120	112
1996	234	120	114
1997	236	120	116
1998	239	120	119
1999	241	120	121
2000	242	120	123
2001	246	120	126
2002	248	120	128
2003	251	120	131
2004	253	120	133

TABLE 48

NET PRODUCTION VALUE "WITH" PROJECT
(Rs. in thousands)

<u>Year</u>	<u>Gross Production Value</u>	<u>Production expenses</u>	<u>Net production Value</u>
1985			
1986			
1987			
1988			
1989	5280	2475	2805
1990	5438	2487	2951
1991	5601	2500	3101
1992	5770	2513	3257
1993	5943	2525	3418
1994	6121	2537	3584
1995	6304	2550	3754
1996	6494	2563	3931
1997	6688	2576	4112
1998	6889	2589	4300
1999	7096	2602	4494
2000	7309	2614	4695
2001	7528	2627	4901
2002	7754	2641	5113
2003	7986	2654	5332
2004	8226	2667	5559

2004

TABLE 49

INCREMENTAL AGRICULTURAL BENEFITS

Year	Net Production Value "with" Project	Net Production Value "without" Project	Incremental Benefits	
			Rs	\$
1985		90		
1986		92		
1987		94		
1988		96		
1989	2805	98	2707	200
1990	2951	101	2850	211
1991	3101	103	2998	222
1992	3257	105	3152	233
1993	3418	107	3311	245
1994	3584	109	3475	257
1995	3754	112	3642	270
1996	3931	114	3817	282
1997	4112	116	3998	296
1998	4300	119	4181	310
1999	4494	121	4373	324
2000	4695	123	4572	339
2001	4901	126	4773	354
2002	5113	128	4985	369
2003	5332	131	5201	385
2004	5559	133	5426	402

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iii. Conclusion/Economic Feasibility - Goberd

Table 50 shows costs benefits and the net present worth calculations. The B/C Ratio as 2.8% of the NPW 874,000 and the IRR is 49.9 percent. The analysis, therefore, establishes that the Goburt Diversion Dam cutoff wall is economically an excellent investment ensuring an adequate rate of return and, therefore, should be implemented.

TABLE 50

BALUCHISTAN AREA DEVELOPMENT PROJECT
COSTS AND BENEFITS FOR GOBERD DIVERSION
(\$000)

YEAR	COSTS	BENEFITS	NET BENEFITS
1			
2			
3			
4	484		-484
5	255	300	45
6	11	317	306
7	11	333	322
8	11	350	339
9	11	368	357
10	11	386	375
11	11	405	394
12	11	423	412
13	11	444	433
14	11	465	454
15	11	486	475
16	11	508	497
17	11	531	520
18	11	554	543
19	11	577	566
20	11	603	592
Internal Rate of Return (%)			49.9
Net Present Value (@ 15%)	a. Costs		498
	b. Benefits		1372
	c. Net Benefits		874
Benefit Cost Ratio			2.8

SPECIAL MEMORANDUM ON WATER

a. Scope of Work for Comprehensive Water Plan Process

In an essentially undeveloped region like Makran both the potential value of a well conceived comprehensive plan and the cost of its development can be truly large. The almost pristine point of beginning provides an immense possibility for generating benefits from water development but the almost complete lack of a data base dictates a long term schedule for actual implementation of a rolling multi-year development plan. The planning process requires an iterative series of compromises and priority selections between investment in data gathering and actual water development. The plan can never be completed until all data needs are satisfied and since the complete data needs will necessarily involve more years than the duration of the current AID BALAD Project, what is detailed here is the first phase of a water development plan. This is followed by a suggested outline for a subsequent phase. The specific tasks required for the initial master plan include:

1. Identify potential types of water development activities and a priority ranking in terms of their potential net benefits.
2. Identify types and resolution of data (hydrologic, geologic, social, economic, land type and use, etc.) which are necessary before implementation of each type of development activity identified in 1. can proceed.
3. Develop scope and preliminary cost estimate for a hydrologic data gathering plan.
4. Procure and install streamflow stage recorders at sites recommended in Task 3.
5. Meet with various line agencies and attempt to obtain commitments for long term data collection, analysis, and publishing. For example, AID could construct streamflow gaging stations and a particular line agency could operate them.
6. Develop the structure of a network type water balance simulation model of the significant sub-basins and river reach surface flows in the Makran Division.
7. Operate the simulation model using estimated streamflow and sediment transport data based upon rainfall-runoff analysis plus the few streamflow measurements that are available.

8. Identify potential water development activities, particularly storage reservoirs and other significant potential river diversions which may effect flows at other sites.
9. Use the simulation model to identify important interactions between the potential development activities identified in 8. and identify critical data gathering needs related to improvement in accuracy of the model results.
10. Transform the preliminary prioritized list of types of proposed water development activities to a more specific agenda. That is, identify specific sites for recommended principal developments such as reservoirs and major surface diversions plus an order of magnitude for recommended scope (by sub-basin) of smaller activities such as recharge and groundwater development activities.
11. Modify the data gathering priorities based upon recommendations in 10.
12. Make recommendations for an institutional and financial plan and schedule for implementation of the proposed water development plan.
13. Identify principal valleys where groundwater development appears to have a large potential and make recommendations for institutional arrangements to initiate groundwater studies resulting in water budget estimates.
14. Improve simulation model by using data collected during 1st year and including important sites identified during Task 10.

The types of water development activities proposed for Makran could for example include:

- a. Hydro-power development incorporated into river diversions for irrigation.
- b. Surface storage dams for irrigation and/or municipal water supply.
- c. Cutoff dams for diversion of river base flows but overflowing large flood flows.
- d. Additional Karezes.
- e. Recharge dams above Karezes.
- f. Activities related to expanding bund type irrigation.
- g. Others identified during the study.

It will be the responsibility of the comprehensive plan consultants to recommend priorities and scopes for these development activities plus data requirement necessary for their implementation. It is not realistic to wait until all types and duration of data records which are desirable have been obtained before proceeding with development activities. Therefore, an important task for the comprehensive plan consultants will be to identify compromises which are realistic--which activities can proceed immediately; which can proceed based upon 5 year's of data; which types of project require long-term data.

It is also important to coordinate and prioritize the data gathering effort with project needs so that data are gathered only for an associated use--not because data are inherently "good." The activities itemized above should be pursued with these basic strategies in mind.

Schedule for Completion and Management of Comprehensive Plan

The following schedule is organized by reference to the task numbers identified in the scope of work. The duration and sequence of activities are displayed in Figure 1.

Items 1, 2, 3, and initiation of item 4 will require a senior level water resources planner for 6 weeks. Item 4 will require meetings with line agencies, time for their response, additional meetings, etc. However, much of this effort could be handled by AID salaried staff, not necessarily the consultant.

Item 4 will require a (local) construction contract for installation of U.S. manufactured recording equipment procured by AID. The construction will involve concrete stilling wells, corrugated steel equipment shelters, and at some sites, suspended cables for one man trolleys across the river flood plain. All equipment other than the recorders should be fabricated locally. Some stage recorders will be float type while others may need to be air bubbler type. The station locations will be recommended by the master plan consultant but the construction contracts should be developed and monitored by the P&D Unit hydrologist.

Items 5, 7, 8, 9, and 14 will require a water resource systems analyst who is also a capable hydrologist for 6 weeks initially and 4 weeks later (see Figure 1), plus a computer programmer for 3 weeks. About half of the systems analyst effort and all of the programmers effort could be out of country if an expatriate is to be used. The software developed, however, must be completely portable for use on whatever computer system is available in Pakistan.

Items 10, 11, 12, 13, plus completion of item 5 will require the following skills and effort:

- a. The senior-level water resource planner/hydrologist--10 man months.
- b. Institutional consultant experienced in Pakistan--4 weeks.
- c. Hydro-geologist experienced with arid climates--8 weeks.
- d. Soils scientist--8 weeks.
- e. Agricultural economist--8 weeks.
- f. Survey crew--3 months.

The survey crew will be provided by the Makran Division PPMU. The ag-economist should be an AID salaried employee if available or a consultant otherwise. The other specialists should be expatriates unless qualified Pakistani consultants are available.

This initial phase of the master plan will represent an important first step in identifying the types and priorities of activities which should be pursued, some specific projects, a tool (the simulation model) for answering "what if" questions related to interaction among these and other potential projects. It should, however, be continually improved as future data become available. A second phase of the plan should be accomplished after several years of data are available. That phase should involve statistical analysis of streamflow, sediment, evaporation, rainfall, temperature, soil, groundwater, and other data. The produce of that effort could be a water atlas for Makran which would be invaluable for future water planning.

DETAILED TRAINING PLAN

This plan is divided into project components and provides examples of the kind of training that is planned, the purpose for such training and targets to be achieved. During the design phase it was found that one of the most serious constraints to development of both the Makran Division and Baluchistan Province in general is the significant shortages of technically trained manpower. Training provided under the BALAD is designed to begin to address this critical shortage of technical skills. In addition to the training component under the BALAD Project development of human resources in Baluchistan will also be supported through other AID training activities in specific projects such as Irrigation Systems Management, Development Support Training, Primary Health Care, and others. Training will be concentrated in the first three years of the project. Final approval of subject matter, and targets at the Provincial level will be under the authority of the Provincial Steering Committee as recommended by the working committee and the Planning and Development Department.

1. Roads Component:

During the pre-implementation phase of the project, staff requirements and training needs for year one will be determined. This action will be repeated for each year of the Project. Some of the staff to be trained will be regular personnel of C&W, others may be new hires, and in some cases if necessary some will be a part of the PPMU in Turbat. Training will consist of short term formal courses at the site and on the job training monitored by the project road staff.

A serious deficiency is the shortage of adequately trained Road Circle personnel in the following occupations:

- Operators for road grader and dozer equipment.
- Mechanics for maintenance of the equipment.
- Foremen for labor gangs able to utilize road crews effectively.
- Engineers at all levels with a good understanding of the basic principles of road engineering. Few, if any engineers have had past experience in road planning and design.

The C&W (B/R) engineer staff in Makran Circle is presently limited in number. One executive engineer post (of three) is vacant and four sub-divisional posts (of eight) remain unfilled. However, it is believed that the present staff with the support of the PPMU is sufficient to commence first year activities but existing personnel will need to be trained in effective

management techniques. The Steering Committee will make efforts to encourage the C&W Department, Quetta to fill the vacancies that presently exist for authorized positions and training if required could be provided by the Project.

- Sufficient road gang staff (including foremen or mates) will be available to carry out demonstration drainage construction using the gabion wire technique. However, the foremen need to be trained to supervise and implement these activities.

The following list is an example of the type of personnel to be trained as of Jan. 84.

For Road Maintenance Program and Road Rehabilitation Work

<u>Professional</u>	Makran	<u>Road Circle</u>	
		Bela	Total
Professional Executives	3	1	4
Engineers, Sub-Divisional level	3	1	4
Sub-Engineers	10	3	13
Foremen/Semi-Professional	2	1	3
	<u>18</u>	<u>6</u>	<u>24</u>
<u>Operational/Mechanics, Skilled and Semi-Skilled</u>			
Grader Operators/Helpers	16	4	20
Dozer Operators/Helpers	8	4	12
Truck/Lube Truck/Helpers	17	6	23
Mechanics/Helpers	18	5	23
Clerks/Recorders	3	3	6
	<u>62</u>	<u>22</u>	<u>84</u>

While on-the-job training will be carried out continually by the PPMU Roads Staff and short-term consultants, the following is an illustrative list of short courses to be given by short-term consultants. Curricula for this type of subject matter has already been developed and can be quickly adopted to the Makran.

For Engineers

- Geometric design - 50 km/hr standards
- Road location in mountainous areas
- Design and construction of low cost drainage structures
- Soil compaction in arid areas
- Economics of water crossings, low traffic volume roads
- Effective cost management of equipment
- Maintenance practices for low-traffic volume roads and cost effectiveness
- Upgrading road standards
- Maintaining a Road Master Plan
- Identifying and budgeting for road priority of maintenance and improvements
- Contract document requirements
- Design and construction of water crossings for low traffic conditions
- Geological considerations in road location

For Equipment Operators and Mechanics

Equipment operation practices
Equipment preventative maintenance
Major equipment maintenance
Effective use of equipment
maintenance procedures low traffic volume roads
Improving road geometrics with equipment
Drainage improvements for arid areas, low traffic volume roads
Planning for equipment operation

For Gang Foremen

Drainage maintenance and construction for low traffic volume roads
Surface maintenance of roads
Use of gabion wire technique in drainage construction.

2. Water Component

Training under the water sector is envisioned for two groups: field assistants (FAs) with the Agriculture Department and sarristhas or leaders of Karez Owner's Associations. In the first three years it is planned to train 30 field assistants (FAs) who are already in place in the Makran in improved on-farm water management techniques and 42 sarrishtas in improved water management and irrigation techniques.

Training will be short-term in-country training for both groups. The following training schedule is proposed. The first batch of six FAs will be selected and then sent to the On-Farm Water Management Institute in Lahore for six to eight weeks of orientation and training. An alternate site might be the Agriculture Training Institute in Quetta as this Institute is currently staffing up and should be operational by FY 1985. This will continue until all 30 FAs are trained.

Approximately 6 months after the initial period of training the FAs, the project will either recruit or receive assistance from the TA team for the USAID On-Farm Water management Project, to develop a curricula for training the Sarristhas. The TA consultant with assistance from the Provincial On-Farm Water Management Directorate will develop a short term training program, and form a teaching team. The teaching team will identify two FAs to help train the sarrishtas. The team will work with these two FAs for two weeks preparing them for helping instruct the sarrishtas. Then a training period will begin with 14 sarristhas led by the TA consultant and OFWM personnel and involving the two FAs who, in addition to their other skills, will provide translation services for the sarrishtas. In year two and three the training will be repeated for an additional 14 sarrishtas. The Provincial On-Farm Water Management Unit with support from the PPMU will be responsible for the training during years 2 and 3.

3. Planning Management and Human Resources Development Component

Under this component, the project will provide:

- Long term academic training M.A. (Probably U.S.) - 4
- Short term technical training .. U.S. - 6
- Third Country Training in Agriculture and Engineering A.I.T. - 6
- OJT for Agriculture Extension Field Assistnts - 30
- In-Country Undergraduate Training in Engineering and Agriculture - 12
- In-Country Technical training and OJT for line agency and PPMU personnel in project design/appraisal techniques and planning - 50

A. Graduate Training

Four candidates will be selected for graduate level training for U.S. degrees in such fields as economics, planning, hydrology and agronomy. These candidates will not be selected until the second year of the project when enough time has elapsed to identify quality candidates. Possible institutions from which such candidates might be recruited include the Planning and Development Department, the Commissioner's office or one of the line agencies. The purpose of this training would be to provide further educational opportunities for outstanding GOB personnel who have made significant achievements or who show promise of such achievements in their fields and who demonstrate a willingness to work in the Makran Division.

B. Short term technical training (U.S.)

Short term technical training in project design/appraisal and management of information systems is planned for personnel assigned to the P&D Department and the PPMU, Turbat. Again the training will be tied to the willingness of the candidate to work in the PPMU Makran or the BALAD Project. Short term training in roads and irrigation engineering skills is also planned, under the same criteria of selection.

C. Third Country Training in Agriculture Engineering

Asian Institute of Technology: A limited number of graduate training opportunities is planned at A.I.T. Training will be in such areas as agriculture engineering, hydrology and human settlements.

D. On-the-Job Training for Field Assistants

On-the-job training will take the form of the FAs working directly with the Agricultural Advisor on the Technical Assistance team. During the first three months of assignment, the Agricultural Advisor will familiarize himself

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with agriculture in Makran with a view to identifying better inputs or improved practices. He will then generate informational materials based on this work and will prepare schedule of two or three courses for FAs that is based on the pattern of agricultural activities in Makran (i.e., planting and harvesting cycles). The idea is to plan and hold those mini-courses just prior to a major activity the farmers are planning (i.e., planting vegetables). The FAs - those from Turbat in the first year - could be invited for the course to demonstration farms identified by the project. In addition to instructions, they will receive informational materials to distribute to the farmers. This is in addition to the formal training in on-farm water management which the FAs will receive and is described in the water component.

Following the mini-course the FAs will visit the farmers in their area to pass on the information they had gained and to invite them to the demonstration farm to see the techniques used. The FAs will be made mobile by motorcycles provided by the project. This activity will be announced by the local radio station in Turbat so that the farmers in the area are informed of this extension activity.

E. Undergraduate Training in Agriculture and Engineering

The project will support up to 12 students from the Makran in the completion of their undergraduate education in Civil Engineering and Agriculture. They will be recruited through such line agencies as the Commissioner's Office, Agriculture Extension, Local Government and Communications and Works. They will be sent on full scholarship to in-country agriculture and engineering university. Selection criteria will include an agreement to work in the Makran Division following completion of studies. Commitments will be made by the GOB to place these candidates if they do well in appropriate positions in the GOB.

F. In-Country Technical and OJT for GOB and PPMU Personnel

On-the-job training for 10-20 Pakistani professionals will take place at the PPMU in Turbat. These professionals will be the counterpart staff who will serve with the technical assistance advisors. Through this association they will receive on-the-job training in such fields as public administration, coordination and applied concepts of regional planning. Examples of issues they will receive training in might include the setting of priorities in project planning, the evaluation of cost effectiveness in project activities, methods of checking the allocation of public resources and ways of selecting alternate cash crops.

By nature this training is not a discrete training activity. It will go on during the life of the project but as such it will strengthen the project management capability of BALAD, the new PPMU in Turbat and the human resources in Baluchistan. In addition some special courses in project design/appraisal will be developed and presented in Quetta. An indigenous training institute can give the training with inputs from the project TA staff.

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G. Additional Training

The outlined training activities are planned to take place during the initial years of project activity. During the first project evaluation training will be reviewed to determine whether new or additional training needs to take place, at what levels and in what areas.

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ILLUSTRATIVE LIST OF EQUIPMENT FOR BALAD PROJECT

<u>Equipment</u>	<u>Quantity</u>		<u>Specifications</u>
	<u>PPMU</u>	<u>Quetta</u>	
1. Vehicles	10	4	- RHD; 4 wheel drive carryall type 6 cylinder Diesel Engine; 8-9 pass capacity; equipped with PS/PB and air conditioner.
	2		- Truck 20 ton, cargo type, diesel engine w/ PS/PB/AC.
	30		- Motorbikes; dual purpose road and trail high exhaust system 100 cc w/luggage carriers installed.
	10		- Motorbikes, road and trail 175 cc w/luggage carrier.
	5		- 1/2 ton pickup trucks, 4WD,RHD,AC.
2. Computers	2	2	CPU-16BIT Word Central memory 128K(minimum) Terminals... CRT type 80Char/line; 24 line screen Mass Storage.. 20 ⁰⁺ megabytes hard disk technology
Removable Storage			2-8 inch IBM compatible floppy disk drive.
Printer			200 CPS rated dot matrix W/NLQ capacity ink jet printer.
Software			Basic; Fortran; Statistical routines; Integrated Wordprocessing, Spreadsheet and database management software.

3.	Calculators	5	2	Desk size programmable calculators 12 digit; printing capacity.
		5	0	Desk size programmable calculators 12 digit; LCD display; statistical operation
		20	2	hand held; battery operated, 8 digit LCD display.. 2 memory banks.. simple multiplication and division.
4.	Typewriters	10	2	Electric 120 character wide carriage.
5.	Copy Machine	2	1	
6.	Radios	1	1	Single side band. Fixed base station w/ground antenna.
		5	2	Single side band. Mobile w/antenna. Vehicular mount.
7.	Generators	3		150 KW Diesel
8.	Engineer Equipment			
	<u>Item</u>			<u>PPMU</u>

a. ROADS SECTOR

Low Boy (20 Ton)	4
Low Boy (40 Ton)	1
Low Boy Dolley (4 wheel)	1
Front-end Loader/Backhoe	4
Compressor	4
Dump Tracks (6 Ton)	4
Lube Trucks	4
Small Fuel & Water Trailers	12
D-6 Ripper	3
D-8 Ripper	1
D-7 Ripper	1
Lister Diesel Power Plant for Small Mixer	2
Small Cement Mixer	2
Shop Equipment (Lot)	4
Hand Tools (Lot)	4
Spare Parts (Lot)	1
Vehicles (Pick-Ups)	3

b. WATER SECTOR

Current Meter - Portable	2
Sediment Samplers	4
Streamflow Stage REcorders(30 day record)	3*
USBR Proctor Compaction Equipment	2
Sheepfoot Roller (6'-0")	1
Vibrating Plate 30" Diesel Compactor	2
Small Backhoe with Front End Loader (on Tracks)	1
4-Wheel Drive Vehicles	2
3/4 Ton Pick-Up	2
Scottsdale Type Carryall	3
Maintenance Tools for Vehicles	?
Surveyors Transit with Self Levelling Bubble (with Transit)	1
Level Rod	2
Range Pole	4
Construction Type Level	1
Portable Galvanized Steel Flumes (2 to 4 cfs capacity)	20**

*The final number of stage recorders will be determined by the consultants, however, at least 3 should be provided initially at the Kil-Kaur, Gobert, and Niwan sites.

**The number of metal flumes will depend upon the final number of recharge dams constructed, the number of Karezas below each dam, and the number of mother wells drilled. These numbers will vary depending upon site conditions but at least 20 should be provided initially.

9. Other Miscellaneous

Household/Office furniture and equipment/A/V Equipment/Office Supplies.

Up to \$2.5 million has been set aside in the ACEP for the purchase of commodities with sources/origin in U.S.

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DETAILED FINANCIAL ANALYSIS

Section V of the Project Paper gives a summary of all A.I.D. and GOP costs related to the Project, and a discussion of inflation and exchange rate assumptions. This Annex presents detailed Tables from which the Section V quantities were derived. The Tables 3 through 14 which follow are arranged so as to represent each line item in Summary Table 2.

Table 15 gives the imputed value of GOB contribution to the Project.

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Table 1

BALUCHISTAN AREA DEVELOPMENT PROJECT
SUMMARY OF PROJECT COSTS BY COMPONENTS
(\$ 000)

Expense Categories	FY 84		FY 85		FY 86		FY 87		FY 88		FY 89		Total			
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX+LC	
1. Roads																
a. Technical Assistance			67	68	651	140	279	11	292	33			1289	252	1541	
b. Training						9		10		10				29	29	
c. Commodities 1/																
d. Construction			1272	765		4063		4551		4933		198	1272	14510	15782	
e. Others																
Sub-Total:			1339	833	651	4212	279	4572	292	4976		198	2561	14791	17352	
2. Water Sector																
a. Technical Assistance					358	46	427	29	438	44			1223	119	1342	
b. Training						10		11		12				33	33	
c. Commodities				218									218		218	
d. Construction				232	171		375		5285		1389	1900	232	9120	9352	
e. Others																
Sub-Total:				450	171	358	431	427	5325	438	1445		1900	1673	10945	
3. Planning, Management and Human Resource Development																
a. Technical Assistance						374	126	507	102	146	10			1027	238	1265
b. Training						169	59	131	60	137	63			437	182	619
c. Commodities				756	191									756	191	947
d. Construction		57			1330									1387	1387	
e. Local Staff					55		353		675		671		397	2151	2151	
f. Evaluation						38	21			41	25	127	48	206	94	300
g. Others					24		234		306		319		264	1147	1147	
Sub-Total:		57	756	1600	581	793	638	1143	324	1088	127	709	2426	5390	7816	
Total:		57	2545	2604	1590	5436	1344	11040	1054	7509	127	2807	6660	29453	36113	
Contingency															3887	
Grand Total:															40000	

1/ To be imported under Agricultural Commodities and Equipment Program (391-0468)

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Table 2

**BALUCHISTAN AREA DEVELOPMENT PROJECT
SUMMARY OF PROJECT COSTS
(\$ 000)**

Expense Categories	FY 84		FY 85		FY 86		FY 87		FY 88		FY 89		Total			
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX+LC	
1. Technical Assistance																
a. Short-term					420	84	75	37					495	121	616	
b. Long-term			67	68	963	228	1138	105	876	87			3044	488	3532	
Sub-Total:			67	68	1383	312	1213	142	876	87			3539	609	4148	
2. Training																
a. U.S.																
i) Short-term					26	5	28	6	29	6			83	17	100	
ii) Long-term					90	5	47	3	50	3			187	11	198	
b. Third Country																
i) Short-term																
ii) Long-term					53	3	56	3	58	3			167	9	176	
c. In-country						65		69		73				207	207	
Sub-Total:					169	78	131	81	137	85			437	244	681	
3. Commodities																
a. Equipment				909									909		909	
b. Housing and Office				65	191								65	191	256	
Sub-Total:				974	191								974	191	1165	
4. Other Costs																
a. Construction																
i. Roads			1272	765		4063		4551		4933		198	1272	14510	15782	
ii. Water Sector			232	171		375		5285		1389		1900	232	9120	9352	
b. Local Staff				55		353		675		671		397		2151	2151	
c. Travel Costs (PPMU)				8		53		111		117		61		350	350	
d. Vehicle Operation				16		102		104		104		100		426	426	
e. Headquarter costs		57		1330										1387	1387	
f. Recurring Housing and Office Costs						79		91		98		103		371	371	
g. Evaluation						38	21		41	25	127	48	206	94	300	
Sub-Total:		57	1504	2345	38	5046		10817	41	7337	127	2807	1710	28409	30119	
Total:		57	2545	2604	1590	5436	1344	11040	1054	7509	127	2807	6660	29453	36113	
Contingency																3887
Grand Total:																40000

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Table 3 (Table 2 item 1 a)

Summary

Short Term Technical Assistance
(18 pm in FY 1986 and 3 pm in FY 1987)
(\$ 000)

	FY 86			FY 87			Total	
	PM	FX	LC	PM	FX	LC	FX	LC
U.S.								
Roads								
1. Equip. Oper./Mech. Consultant	5	122	16				122	16
2. Road Geologist	2	46	8				46	8
3. Drawing Engineer	3	71	11				71	11
4. Bridge Engineer	2	46	8				46	8
Sub-Total: U.S.-Roads	12	284	43				284	43
Water								
1. Dam Design Engineer	3	71	11				71	11
Sub-Total: U.S.-Water	3	71	11				71	11
P&D Quetta								
1. Consultant 1	1	22	5	1	25	3	47	8
2. Consultant 2	1	22	5	1	25	3	47	8
3. Consultant 3	1	22	5	1	25	3	47	8
Sub-Total: U.S.-P&D/Quetta	3	65	16	3	75	9	141	25
Total: U.S.	18	420	70	3	75	9	496	79
PAKISTAN								
P&D Quetta								
1. Consultant 1	1		4	1		9		14
2. Consultant 2	1		4	1		9		14
3. Consultant 3	1		4	1		9		14
Sub-Total: Pak-P&D/Quetta	3		13	3		28		41
Total	21	420	84	6	75	37	496	120

Note: The following Tables -- 3 a, b, c give detailed unit and total costs from which Table 3 was derived.

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Table 3 a (cont'd)

Short Term Technical Assistance
(\$)

Expenses	FY 84: One PM	
	FX	LC
A. Dollar Expenses		
1. Salary	251	
2. Fringe Benefits (30%)	75	
3. F.I.C.A		
4. DBA (2.25%)	6	
5. Allowances		
a. Post differential		
b. Sunday differential		
6. Overhead	326	
7. Fixed fee	66	
8. Total per day (excluding post differential)	724	
9. Total per month (excluding post differential)	18826	
10. Other direct costs	496	
Total Monthly Dollar Costs	19322	
B. Rupee Expenses		
1. Monthly Per Diem		24986
2. In-Country Travel		5000
Total Monthly Rupee Costs (Excluding international travel and per diem)		29986
C. Per Trip		
1. International Per Diem	400	
2. International Travel		32500
D. Post Differential ^{1/} (for each workday exceeding 42 days in-country)	138	
E. Sunday Differential		

^{1/} Note: This includes provision for overhead and fixed fee.

Table 3 b (cont'd)

Short Term Technical Assistance
(19 pm in FY 1986 and 3 pm in FY 1987)
(\$)

Expenses	FY 86		FY 87		Total	
	FX	LC	FX	LC	FX	LC
A. Dollar Expenses						
1. Salary (per day)	4981		872		5853	
2. Fringe Benefits (30%)	1494		262		1756	
3. F.I.C.A						
4. DBA (2.25%)	112		20		132	
5. Allowances						
a. Post differential						
b. Sunday differential						
6. Overhead	6475		1133		7609	
7. Fixed fee	1306		229		1535	
8. Total per day (excluding post differential)	14369		2515		16884	
9. Total (excluding post differential)	373600		65380		438979	
10. Other direct costs	9843		1723		11566	
Total Dollar Costs	383443		67102			
B. Rupee Expenses						
1. Per Diem		41861		7675		49536
2. In-Country Travel		6843		1158		8001
Total Rupee Costs		48704		8832		57536
(Excluding international travel and per diem)						
C. Per Trip						
1. International Per Diem	3528				3528	
2. International Travel		21697				21697
D. Post Differential	33407		8169		41575	
E. Sunday Differential						
Total	420377	70401	75271	8832	495648	79233

Table 3 c (cont'd)

Short Term Technical Assistance: Pakistanis
(\$)

	FY 84	FY 86	FY 87	Total
	Base Cost			
1. Salary	13846	3755	3993	7748
2. Overhead	9692	2629	2795	5424
3. Travel and Per Diem	62/day	6977	7675	14651
Total		13361	14463	27823

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Table 4. (Table 2 - Item 1.b.)

SUMMARY OF LONG TERM TECHNICAL ASSISTANCE COSTS
(\$ 000)

	#	FY 85		FY 86		FY 87		FY 88		Total	
		FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
1. Engineers	2			574	70	555	22	584	66	1713	159
2. Agronomist	1					301	36	292	20	594	56
3. Economist	1			309	96	282	47			591	143
4. Road Engineer	1	67	68	80	62					147	130
Total	5	67	68	963	228	1138	105	876	87	3044	488
			135		1191		1243		963		3532

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Table 4.(contd.)

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LONG TERM TECHNICAL ASSISTANCE: TWO ENGINEERS
(c)

Expenses	FY 86		FY 87		FY 88		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
I. Dollar Costs								
A. Annual Recurrent Dollar Costs								
1. Salary	144046		151248		158811		454105	
2. Fringe Benefits (30%)	43214		45375		47643		136232	
3. DBA (2.25%)	3241		3403		3573		10217	
4. Post Differential (20%)	28809		30250		31762		90821	
5. Educational Allowance	2205		2315		2431		6951	
6. Overhead (1+2)	187260		196623		206454		590337	
7. Fixed Fee (10% 1-6)	40877		42921		45067		128866	
8. Home Office Backstopping	74134		77841		81733		233708	
9. Other Direct Costs	11025						11025	
Total - A	534812		549976		577475		1662263	
B. One-Time Dollar Costs								
1. International Per Diem for travel to post	1764						1764	
2. International Per Diem for travel from Post					1945		1945	
3. Shipment of HHE to Post	18743						18743	
4. Shipment of POV to Post	5513						5513	
5. Shipment of UAB to Post	4410						4410	
6. International Per Diem for Medical Travel	882						882	
7. Storage of HHE in U.S.	4410		4631		4862		13903	
8. Fixed Fee (10% of 1-7)	3572						3572	
Total - B	39293		4631		6807		50730	
Total Dollar Costs	574105		554607		584282		1712993	
II. Rupee Costs								
A. Travel and Related Expenses								
1. Annual Recurrent Costs								
a. In-country Travel		14909		15132				30041
b. Home Office Backstopping		6824		6927				13751
Sub-Total (a-b)		21733		22059				43792
2. One Time Rupee Costs								
a. Arrival Costs (1st year)								
i) Travel to Post		12356						12356
ii) Medical Travel (Airfare)		4942						4942
iii) Emergency Travel (Airfare)		4942						4942
iv) Inland Shipment of HHE and POV		1536						1536
Total Arrival Costs		23776						23776
b. Departure Costs								
i) Travel from Post					12743			12743
ii) Shipment of HHE from Post					17331			17331
iii) Shipment of POV from Post					5097			5097
iv) Shipment of UAB from Post					4078			4078
v) Inland Shipment of HHE and POV to Karachi					1584			1584
Total Departure Costs					40833			40833
c. R&R Travel		24711			25486			50197
Total Rupee Costs		70220		22059		66320		158599
All costs in thousand dollars	574	70	555	22	584	66	1713	159
		644		577		651		1872

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Table 4. (contd.)

LONG TERM TECHNICAL ASSISTANCE: ROAD/GENERAL ENGINEER

(\$)

Expenses	FY 85		FY 86		FY 87		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
A. Compensation								
1. Salary	26250		47250				73500	
2. Sunday differential	1312		2362				3674	
3. F.I.C.A.	1543		2778				4321	
4. Post Differential	5250		9450				14700	
5. Educational Allowance	-		10500				10500	
6. Other Direct Costs	-		-				-	
Total - A	34355		72340				106695	
B. Travel and Transportation								
1. Travel to Post (air fare)								
2. International Per Diem for travel to post								
3. Medical Travel (air fare)			2595				2595	
4. Per diem for medical travel			400				400	
5. Emergency travel (air fare)			2595				2595	
6. Shipment of HHE to Post								
7. Shipment of PVO to Post								
8. Shipment of UAB to Post								
9. Inland Shipment of HHE and POV from Karachi to Quetta								
10. Storage of HHE in U.S.	1225		2205				3430	
11. R&R Travel	9886						9886	
12. In-country travel		5149		9710				14859
13. Travel from Post				5190				5190
14. International per diem for travel from post				840				840
15. Shipment of HHE from Post				10168				10168
16. Shipment of POV from Post				2990				2990
17. Shipment of UAB from Post				2392				2392
18. Inland Shipment of HHE and POV to Karachi				930				930
19. Housing Expenses								
i. Annual Recurrent Costs		18307		19443				37751
ii. One Time Rupee Costs	18375	29936					18375	29936
20. Office Expenses								
i. Annual Recurrent Costs		9271		9847				19118
ii. One Time Rupee Costs	2415	5209					2415	5209
Total - B	31901	67873	7795	61510			39696	129383
Total (A + B)	66256	67873	80135	61510			146891	129883
All costs in thousand dollars	67	68	80	62			147	130
		135		142				277

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Table 4 (cont'd)

LONG TERM TECHNICAL ASSISTANCE: AGRONOMIST
(8)

Expenses	FY 86		FY 87		FY 88		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
I. Dollar Costs								
A. Annual Recurrent Dollar Costs								
1. Salary			75624		79405		155030	
2. Fringe Benefits (30%)			22687		23822		46509	
3. DBA (2.25%)			1702		1787		3488	
4. Post Differential (20%)			15125		15881		31006	
5. Educational Allowance			1158		1216		2373	
6. Overhead (1+2)			98311		103227		201538	
7. Fixed Fee (10% 1-6)			21461		22534		43994	
8. Home Office Backstopping			38921		40867		79787	
9. Other Direct Costs			5788				5788	
Total - A			280776		288737		569514	
B. One-Time Dollar Costs								
1. International Per Diem for travel to post			926				926	
2. International Per Diem for travel from Post					972		972	
3. Shipment of HME to Post			9840				9840	
4. Shipment of PVD to Post			2894				2894	
5. Shipment of UAB to Post			2315				2315	
6. International Per Diem for Medical Travel			463				463	
7. Storage of HME in U.S.			2315		2431		4746	
8. Fixed Fee (10% of 1-7)			1875				1875	
Total - B			20629		3403		24032	
Total Dollar Costs			301405		292141		593546	
II. Rupee Costs								
A. Travel and Related Expenses								
1. Annual Recurrent Costs								
a. in-country Travel				7566				7566
b. Home Office Backstopping				3463				3463
Sub-Total (a-b)				11030				11030
2. One Time Rupee Costs								
a. Arrival Costs (1st year)								
i) Travel to Post				6270				6270
ii) Medical Travel (Airfare)				2508				2508
iii) Emergency Travel (Airfare)				2508				2508
iv) Inland Shipment of HME and PVD				779				779
Total Arrival Costs				12066				12066
b. Departure Costs								
i) Travel from Post						6372		6372
ii) Shipment of HME from Post						8665		8665
iii) Shipment of PVD from Post						2549		2549
iv) Shipment of UAB from Post						2039		2039
v) Inland Shipment of HME and PVD to Karachi						792		792
Total Departure Costs						20417		20417
c. R&R Travel				12541				12541
Total Rupee Costs				35637		20417		56053
All costs in thousand dollars			301	36	292	20	594	56

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Table 4. (contd.)
LONG TERM TECHNICAL ASSISTANCE: ECONOMIST
(\$)

Expenses	FY 86		FY 87		FY 88		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
I. Dollar Costs								
A. Annual Recurrent Dollar Costs								
1. Salary	72023		75624				147647	
2. Fringe Benefits (30%)	21607		22687				44294	
3. DBA (2.25%)	1621		1702				3322	
4. Post Differential (20%)	14405		15125				29529	
5. Educational Allowance	1103		1158				2260	
6. Overhead (1+2)	93630		98311				191941	
7. Fixed Fee (10% 1-6)	20439		21461				41899	
8. Home Office Backstopping	37067		38921				75988	
9. Other Direct Costs	5513						5513	
Total - A	267406		274988				542394	
B. One-Time Dollar Costs								
1. International Per Diem for travel to post	882						882	
2. International Per Diem for travel from Post			1852				1852	
3. Shipment of HHE to Post	9371						9371	
4. Shipment of PVD to Post	2756						2756	
5. Shipment of UAB to Post	2205						2205	
6. International Per Diem for Medical Travel	441						441	
7. Storage of HHE in U.S.	2205		4631				6836	
8. Fixed Fee (10% of 1-7)	1786						1786	
9. Household Appliances and Equipment (including freight and insurance)	19294						19294	
10. Office Equipment	2536						2536	
Total - B	41476		6483				47959	
Total Dollar Costs	308882		281471				590353	
II. Rupee Costs								
A. Travel and Related Expenses								
1. Annual Recurrent Costs								
a. In-country Travel		7454						7454
b. Home Office Backstopping		3412						3412
Sub-Total (a-b)		10867						10867
2. One Time Rupee Costs								
a. Arrival Costs (1st year)								
i) Travel to Post		6178						6178
ii) Medical Travel (Airfare)		2471						2471
iii) Emergency Travel (Airfare)		2471						2471
iv) Inland Shipment of HHE and POV		768						768
Total Arrival Costs		11888						11888
b. Departure Costs								
i) Travel from Post				6270				6270
ii) Shipment of HHE from Post				8528				8528
iii) Shipment of POV from Post				2508				2508
iv) Shipment of UAB from Post				2007				2007
v) Inland Shipment of HHE and POV to Karachi				779				779
Total Departure Costs				20093				20093
c. R&R Travel		12356						12356
B. Housing Expenses								
1. Annual Recurrent Costs		17716		17982				35698
2. One Time Rupee Costs		28969						28969
C. Office Expenses								
1. Annual Recurrent Costs		8972		9107				18079
2. One Time Rupee Costs		5041						5041
Total Rupee Costs		95808		47181				142989
All costs in thousand dollars	309	96	282	47			591	143

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Table 5. (Table 2 item 2)

SUMMARY OF TRAINING COSTS
(\$ 000)

	FY 86		FY 87		FY 88		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
1. Long Term U.S.	89.96	5.42	47.23	2.88	49.59	3.07	186.78	11.38
2. Short Term U.S.	26.46	5.42	27.78	5.77	29.17	6.14	83.41	17.33
3. Long Term Third Country	52.92	2.60	55.57	2.77	58.34	2.95	166.83	8.31
4. Long Term In Country		25.03		26.62		28.34		79.99
5. Short Term In Country		19.19		20.41		21.73		61.32
6. Short Term In Country (OJT)		20.28		21.56		22.95		64.78
Total	169.34	77.96	130.58	80.01	137.11	85.17	437.02	243.11

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Table 5 (cont'd)

PARTICIPANT TRAINING

Category		FY 86	FY 87	FY 88	Total
A. Road Sector					
1. Short Term In Country					
a. Engineers and Professionals					
No. of persons		8	8	8	24
Person months		8	8	8	24
Cost per person month (\$)	FX				
	LC	250.34	266.20	283.37	
Total cost (\$ 000)	FX				
	LC	2.00	2.13	2.27	6.40
b. Mechanics and Semi Skilled					
No. of persons		28	28	28	84
Person months		28	28	28	84
Cost per person month (\$)	FX				
	LC	250.34	266.20	283.37	
Total cost (\$ 000)	FX				
	LC	7.01	7.45	7.93	22.40
Sub-Total Road Sector	FX				
	LC	9.01	9.58	10.20	28.80
B. Water Sector					
1. Short Term In Country					
a. Field Assistants					
No. of persons		10	10	10	30
Person months		20	20	20	60
Cost per person month (\$)	FX				
	LC	250.34	266.20	283.37	
Total training cost (\$ 000)	FX				
	LC	5.01	5.32	5.67	15.99
Travel cost (\$ 000)	FX				
@ \$153.85/person	LC	1.67	1.77	1.89	5.33
Total cost (\$ 000)	FX				
	LC	6.68	7.10	7.56	21.33
b. Welders					
No. of persons		14	14	14	42
Person months		14	14	14	42
Cost per person month (\$)	FX				
	LC	250.34	266.20	283.37	
Total cost (\$ 000)	FX				
	LC	3.50	3.73	3.97	11.20
Sub-Total Water Sector	FX				
	LC	10.18	10.83	11.52	32.53

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Table 5 (cont'd)

C. Planning Management and Human Resource Development

1. Long Term U.S.

No. of persons		2	1	1	4
Person months		40	24	24	16
Cost per person month (1)		1874.25	1957.96	2464.34	
Total training cost (1 000)	FI	99.96	47.73	49.59	104.78
	LC				
Travel cost (1 000)	FI				
@ Rs 32500/person	LC	5.42	2.88	3.67	11.38
Total cost (1 000)	FI	99.96	47.73	49.59	104.78
	LC	5.42	2.88	3.67	11.38

2. Short Term U.S.

No. of persons		2	2	2	4
Person months		8	8	8	24
Cost per person month (1)		3387.36	3472.88	3444.52	
Total training cost (1 000)	FI	26.44	27.78	29.17	83.41
	LC				
Travel cost (1 000)	FI				
@ Rs 32500/person	LC	5.42	5.77	6.14	17.33
Total cost (1 000)	FI	26.44	27.78	29.17	83.41
	LC	5.42	5.77	6.14	17.33

3. GJT For Agr. Extension

No. of persons		10	10	10	4
Person months		10	10	10	30
Cost per person month (1)		300.69	332.40	366.73	
Total training cost (1 000)	FI				
	LC	3.01	3.32	3.67	14.94
Travel cost (1 000)	FI				
@ Rs 30000/person	LC	2.30	2.66	2.83	7.79
Total cost (1 000)	FI				
	LC	7.31	7.99	8.50	23.99

4. Long Term Third Country

No. of persons		2	2	2	4
Person months		40	40	40	140
Cost per person month (1)		1162.36	1157.63	1215.51	
Total training cost (1 000)	FI	32.92	33.57	36.34	144.83
	LC				
Travel cost (1 000)	FI				
@ Rs 15600/person	LC	2.64	2.77	2.95	8.31
Total cost (1 000)	FI	32.92	33.57	36.34	144.83
	LC	2.64	2.77	2.95	8.31

5. Long Term in Country (Undergraduate)

No. of persons		4	4	4	12
Person months		96	96	96	288
Cost per person month (1)		230.34	266.20	283.37	
Total training cost (1 000)	FI				
	LC	24.63	25.56	27.29	74.79
Travel cost (1 000)	FI				
@ Rs 30000/person	LC	1.00	1.04	1.13	3.20
Total cost (1 000)	FI				
	LC	25.63	26.62	28.34	79.99

6. GJT in Country (Lao Agencies)

No. of persons		17	17	17	51
Person months		17	17	17	51
Cost per person month (1)		330.69	332.40	366.73	
Total training cost (1 000)	FI				
	LC	6.31	9.05	9.63	27.99
Travel cost (1 000)	FI				
@ Rs 30000/person	LC	4.26	4.33	4.82	13.40
Total cost (1 000)	FI				
	LC	12.77	13.38	14.45	44.79

Table 6 (Table 2, Item 3)

LIST OF COMMODITIES
(\$ 000)

Equipment	PPHU		Quetta		Total		Remarks	
	Unit Cost	No. of Units	Cost	No. of Units	Cost	No. of Units		Cost
1. Vehicles	18	10	180	4	72	14	232	4 wheel drive carryall type 6 cylinder diesel engine; 8 to 9 passenger capacity equipped with PS/PB and air conditioner.
	40	2	80			2	80	Truck 5 ton cargo type, diesel engine with PS/PB/AC.
	1.2	30	36			30	36	Motorbikes; dual purpose road and trail high exhaust system 100 cc with luggage carriers installed.
	1.5	10	15			10	15	Motorbikes road and trail 175 cc with luggage carrier.
	1.5	5	7.5			5	7.5	1/2 ton pickup truck, 4 WD, RH, AC.
2. Computers	17	2	34	2	34	4	68	CPU-16 bit, built in memory 128 K (minimum) Terminals, CRT type 80 char/line, 24 lines screen mass storage 20 megabytes hard disc technology.
Removable Storage								2-8 inch IBM compatible floppy disc drive.
Printer								200 CPS rated dot matrix W/MQ capacity ink jet printer.
Software								Basic; Fortran; Statistical routines; Integrated Wordprocessing, Spreadsheet and database management software.
3. Calculators	0.3	5	1.5	2	0.6	7	2.1	Desk size programmable calculators 12 digit; printing capacity.
	0.3	5	1.5			5	1.5	Desk size programmable calculators 12 digit; LCD display; statistical operation.
	0.015	20	0.3	2	0.03	22	0.33	Hand held; battery operated, 8 digit LCD display; 2 memory banks, simple multiplication and division.
4. Typewriters	1.2	10	12	2	2.4	12	14.4	Electric 120 characters wide carriages.
5. Copy Machine	5	2	10	1	5	3	15	Single side band.
6. Radios	3.5	1	3.5	1	3.5	2	7	Fixed base station with ground antenna.
Mobile	1.5	5	7.5	3	4.5	8	12	
7. Generators	60	3	180			3	180	150 KW diesel.
Totals			568.8		122.03		690.83	

Table 8. (Table 2 item 4,a.,ii)

WATER SECTOR: CONSTRUCTION ACTIVITIES
(\$ 000)

Activities	FY 85		FY 86		FY 87		FY 88		FY 89		Total	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
1. Drilling Operations		10.00		25.95		56.20		60.91		82.61		235.670
2. Karez Capping		-		82.23		356.10		578.95		837.55		1854.83
3. Small Delay Action Dams												
a. Gabions		-		38.93		140.49		152.28		198.26		529.961
b. Earthfill		-		17.30		56.20		81.21		88.12		242.830
4. Kil Kaur Dam						3072.38						3072.38
5. A&E Costs	232.00	121.52									232	121.52
6. Goherd Diversion Structure						1247.58						1247.58
7. OFWM Activities												
a. Watercourse Improvement		38.40		207.62		337.18		487.28		660.89		1731.36
b. Precision Land Levelling		1.20		3.46		18.73		28.42		33.04		84.8615
8. Equipment	218.00										218.00	
TOTAL	450.00	171.12	0.00	375.50	0.00	5284.86	0.00	1389.06		1900.47	450.00	9121.01
TOTAL: FX+LC		621.123		375.498		5284.86		1389.062		1900.46		9571.01

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Table 9. (Table 2 item 4.b)

PROJECT PLANNING-MANAGEMENT UNIT (PPMU)
(\$ 000)

Staff Category	Salary Rate	No. of Persons	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	Total
TURBAT								
1. Executive Officer	16.2	1	2.8	17.6	18.7	19.9	21.2	80.1
2. Senior Roads Engineer	18.0	1	3.1	19.5	20.8	22.1	23.6	89.0
3. Senior Water Engineer	18.0	1	3.1	19.5	20.8	22.1	23.6	89.0
4. Roads Engineer	15.6	1	2.7	16.9	18.0	19.2	20.4	77.1
5. Water Engineer	15.6	1	2.7	16.9	18.0	19.2	20.4	77.1
6. Water Engineer	15.6	1	2.7	16.9	18.0	19.2	20.4	77.1
7. Irrigation Engineer	15.6	1	2.7	16.9	18.0	19.2	20.4	77.1
8. Survey/Design Engineer	15.6	1	2.7	16.9	18.0	19.2	20.4	77.1
9. Economist	14.4	1	2.5	15.6	16.6	17.7	18.8	71.2
10. Social Scientist	13.2	1	2.2	14.3	15.2	16.2	17.3	65.3
11. Sr. Contract Officer	14.4	1	2.5	15.6	16.6	17.7	18.8	71.2
12. Sr. Accountant	12.0	1	2.0	13.0	13.8	14.7	15.7	59.3
13. Jr. Accountant	10.8	1	1.8	11.7	12.5	13.3	14.1	53.4
14. Surveyors/Draftsmen	10.8	2	3.7	23.4	24.9	26.5	28.3	106.8
15. Contractor Overhead (70% on 1-14)			25.8	164.5	174.9	186.2	198.4	749.8
Sub-Total		15	62.7	399.5	424.8	452.2	481.8	1820.9
QUETTA								
1. Systems Analyst	14.4	1	2.5	15.6	16.6			34.7
2. Secretaries	4.0	2	1.4	8.7	9.2			19.3
3. Drivers	1.5	2	0.5	3.3	3.5			7.2
4. Contractor Overhead (70% on 1-3)			3.0	19.3	20.5			42.8
Sub-Total		5	7.4	46.8	49.8			104.0
1. Accountant	5.0	1	0.9	5.4	5.8	6.1	6.5	24.7
2. Secretaries	5.0	4	3.4	21.7	23.1	24.6	26.2	98.9
3. Clerks	2.0	6	2.0	13.0	13.8	14.7	15.7	59.3
4. Draftsmen	5.0	1	0.9	5.4	5.8	6.1	6.5	24.7
5. Drivers	2.0	6	2.0	13.0	13.8	14.7	15.7	59.3
6. Generator Operators	3.0	3	1.5	9.8	10.4	11.1	11.8	44.5
7. General Maintenance	3.0	1	0.5	3.3	3.5	3.7	3.9	14.8
8. Guards	0.5	6	0.5	3.3	3.5	3.7	3.9	14.8
9. Support Staff	0.5	10	0.9	5.4	5.8	6.1	6.5	24.7
Sub-Total		38	12.6	80.3	85.4	90.9	96.8	365.9
1. Sr. Construction Support	8.0	15	20.4	130.2	138.4	147.4	157.0	593.4
2. Jr. Construction Support	3.0	15	7.7	48.8	51.9	55.3	58.9	222.5
Sub-Total		30	28.1	179.0	190.3	202.6	215.9	815.9
Total		88	110.7	705.6	750.3	745.6	794.6	3106.8
Staff Load Factor			0.5	0.5	0.9	0.9	0.5	
Total (after adjustment)			55.4	352.8	675.2	671.1	397.3	2151.7

Notes: 1. Salary Rate: per annum, 1984 level.
2. FY 1985 costs are for two months only.
3. Inflation factor: 10 percent per annum.

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Table 10. (Table 2 item 4c)

TRAVEL COSTS FOR PPMU STAFF
(\$ 000)

	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	Total
	8	53	111	117	61	350

1. Estimated for professional and technical staff only (20 persons).

2. Assumed travel status days per person per month:

Year Days/Month

1	5
2	5
3	10
4	10
5	5

Table 11. (Table 2, item 4.d)

VEHICLES OPERATION COST
(\$ 000)

	FY 85		FY 86		FY 87		FY 88		FY 89		Total	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
Four Wheel Drives		11.55		73.60		75.56		75.08		72.26		308.05
Motorbikes		4.40		28.04		28.79		28.60		27.53		117.35
Total		15.95		101.64		104.35		103.68		99.79		425.41

Basis:

	Cost/Y
#	(\$)
21	3000
40	600

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Table 12. (Table 2, item 4.e.)

Cost Estimate for Project Headquarters at Turbat
(\$ 000)

Expenditure Categories	Area (SFT)	Unit	
		Cost (Rs/SFT)	Cost (\$ 000)
1. 6 Expatriate Housing Units	9372	360	241
2. Residential Block for 12 Pakistani Engineers	9196	360	236
3. Support Staff Block for 24 Staff Members	6624	360	170
4. Generator shed and operators room	800	280	16
5. Storage Warehouse	2000	280	40
6. Compound wall (Adobe construction)	3600	100	26
7. External Electrification			14
8. External Sewerage			21
9. Tubewell and Underground Water Tank			29
10. Pumps, pump house, etc			18
11. Gaurdposts, gates, landscaping			14
12. Fuel Depot including tanks			21
Sub-Total			847
1. Office Block	8744	360	225
2. Guard House for Office Block	225	280	5
3. Extension to Residential Block to accommodate 12 additional residents	4780	360	123
4. Extension to staff-block to accommodate 24 additional residents	3970	360	102
5. Additional development of parking sheds, curbs, landscaping, etc.			14
6. External sewerage			14
Sub-Total			483
Total		FY 85	1330
A&E Costs		FY 84	57
Grand Total			1387

Table 13 (Table 2, Item 4.f)

HOUSEHOLD AND OFFICE EQUIPMENT AND RECURRENT COST: PPMU TURBAT
(\$)

Item	No. of Units	Unit Cost	FY 85			FY 86	FY 87	FY 88	Total	
			FX	LC					FX	LC
I. One time cost										
A. Household Equipment										
Furnishing for 2-bed units	6	17143			102857				102857	
Furnishing for 1-bed units	24	1071			25714				25714	
Beds	48	71			3429				3429	
Desert Coolers	58	429			24857				24857	
Refrigerators	12	850	10200					10200		
Freezers	8	850	6800					6800		
Cooking stoves	9	700	6300					6300		
Washing machines and dryers	3	1300	3900					3900		
Hot-water Heaters	18	800	14400					14400		
Table lamps	50	100	5000					5000		
Matresses	32	250	8000					8000		
Security Radios	3	2200	6600					6600		
Miscellaneous	3	1400	4200					4200		
Sub-total			65400	156857				65400	156857	
B. Office										
Desks	24	429			10286				10286	
Executive Chairs	20	200			4000				4000	
Steno Chairs	4	143			571				571	
Visitor Chairs	20	107			2143				2143	
Filing Cabinets	20	214			4286				4286	
Tables	10	286			2857				2857	
Intercom sets	1	714			714				714	
Desert Coolers	20	429			8571				8571	
Telephone installation	1	179			179				179	
Sub-total					33607				33607	
Total: One-Time Cost			65400	190464				65400	190464	
II. Recurring Costs										
Maintenance and Utilities	Lump sum	10000			11000	12100	13310	14641		51051
Generator PDL	Lump sum	55000			60500	66550	73205	80526		280781
Office Supplies	Lump sum				7143	10345	10000	6452		33939
Telephones	Lump sum				143	1655	1600	1548		4946
Total: Recurring Costs					78786	90650	98115	103167		370717

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Table 14. (Table 2 item 4.g)

EVALUATION COSTS
(\$ 000)

Expenses	FY 86		FY 88		FY 89		Total	
	FX	LC	FX	LC	FX	LC	FX	LC
A. Dollar Expenses								
1. Salary (\$ 251/day)	13.28		14.64		46.13		74.06	
2. DBA (2.25%)	0.30		0.33		1.04		1.67	
3. Overhead (166 %)	22.05		24.31		76.58		122.94	
4. Other direct costs	1.04		1.14		1.80		3.98	
5. International Per Diem	0.88		0.97		1.53		3.39	
Total Dollar Costs	37.55		41.40		127.07		206.02	
B. Rupee Expenses								
1. In Country Per Diem		4.37		5.29		17.45		27.11
2. International Travel		5.42		6.14		9.81		21.38
3. In-Country Travel		0.83		0.94		1.51		3.29
Total Rupee Costs		10.63		12.37		28.78		51.78
Total	37.55	10.63	41.40	12.37	127.07	28.78	206.02	51.78
AID/W Personnel								
1. In Country Per Diem		4.37		5.29		11.63		21.29
2. International Travel		5.42		6.14		6.54		18.11
3. In-Country Travel		0.83		0.94		1.01		2.79
Total		10.63		12.37		19.18		42.19
Grand Total	37.55	21.26	41.40	24.75	127.07	47.96	206.02	93.96

- Notes: 1. Persons other than AID/W will be through IQCs.
 2. In-country per diem is based on 25% time in Islamabad and the rest in Baluchistan.
 3. Personnel details:

Year	No. of Persons		Duration
	IQC	AID/W	
FY 86	2	2	4
FY 88	2	2	4
FY 89	3	2	8

TABLE 15

IMPUTED VALUE OF GOB CONTRIBUTION TO BALAD PROJECT

Position	Grade	% of Time	Per Month Salary (Rs.)	Value Per Month (Rs.)	Imputed Value of 5 Years (Rs.000)
I. <u>Secretariat</u>					
1. <u>P&D</u>					
<u>ACS</u>	20/21	5	6000	300	18
Secretary	19/20	10	5000	500	30
Chief Agri.	19	10	4500	450	27
Chief Water	19	10	4500	450	27
Chief Roads	19	10	4500	450	27
P&D Staff				3000	180
2. Sec Irrigation	19/20	5	5000	250	15
3. Sec C&W	19/20	5	5000	250	15
4. Sec Finance	19/20	5	5000	250	15
5. Sec Agri.	19/20	5	5000	250	15
Secretaries				3000	180
Staff					
II. <u>Commissioner Makran</u>					
Commissioner	20	10	5000	500	30
D.C.	19	10	4500	450	27
Staff				3000	180
III. <u>Makran Line Agencies</u>					
SE Irrigation	19	10	4500	450	27
SE C&W	19	10	4500	450	27
DD Agri.	19	10	4500	450	27
Makran Based Staff				3000	180
IV. <u>C&W Field Staff</u>					
Annual Recurrent Budget Rs. 167.3 Million					
1/5th Charge to Makran Rs. 33 Million					
10% Charge to BALAD Project Rs. 3.3 Million					
Rs. 3.3 Million X 5 Years				= 16,500	

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V. Irrigation Field Staff

Annual Recurrent Budget Rs. 84.1 Million
1/5th Charge to Makran Division Rs. 17 Million
10% Charge to BALAD Project Rs. 1.7 Million
Rs. 1.7 Million X 5 Years = 8,500

VI. Agriculture Department

Annual Recurrent Budget Rs. 84 Million
1/5th Charge to Makran Division Rs. 17 Million
10% Charge to BALAD Project Rs. 1.7 Million
Rs. 1.7 Million X 5 Years = 8,500

VII. Commissioner's Office for Project Activities 200
Land for New Building 100

VIII. 12 Graders @ \$150,000 = \$1.8 Million
5 Dozers @ \$200,000 = \$1.0 Million
From Japan to be used for Project Activities 38,640
@ \$1.00 = Rs. 13.8

TOTAL 73,487

Imputed GOB Contribution to BALAD Project = Rs. 73.5 Million

Total GOB

1. New PPMU Staff (See Table 1) Rs. 2.7 Million
2. P&D Unit Quetta (See Table 3) Rs. 1.7 Million
3. Imputed GOB Contribution (See Table 4) Rs. 73.5 Million

Grand Total: Rs. 77.9 Million

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Table 7. (Table 2 item 4,a., i)

ROAD COMPONENT
(\$ 000)

	FY 85		FY 86		FY 87		FY 88		FY 89		FY 90		Total	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
1. A&E Services 55 km Road	1272	586											1272	586
2. Commodities														
3. Road Const. (55 km)			3486		3775		4091							11352
4. Demonstration Drainage Construction			34		73		79		72					258
5. Road Maintenance Operations		73	177		214		232		126					822
6. Road Rehabilitation Operations		45	209		347		376							977
7. Equipment Maintenance Service/ Training			157		142		154							454
8. Feasibility Study Kech Crossing		61												6
Total:	1272	765	4063		4551		4933		198				1272	1451
		2037	4063		4551		4933		198					1578