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Program Office

PROJECT PAPER

CENTRAL HELMAND DRAINAGE

USAID/Afghanistan
April 8, 1975

PROJECT PAPER (PP)
CENTRAL HELMAND DRAINAGE
306-11-120-146

KABUL, AFGHANISTAN

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SUMMARY

The Government of Afghanistan (GOA) has recognized that salinization and waterlogging have serious detrimental effects on the current and potential production capabilities of project areas within the central Helmand. The GOA has requested U.S. assistance, beginning as soon as possible, in helping to correct these problems. The USAID and Helmand Arghandab Valley Authority (HAVA) have worked jointly to develop a proposed project to this end. The proposal is for the project to unfold in several phases with each phase building on the successful performance of the preceding phase. This Project Paper proposes U.S. assistance only for Phase I wherein: (1) an attempt will be made to mold a new relationship between HAVA and USAID for the accomplishment of agreed objectives; (2) 70 km of farm drains will be constructed and 50 km of main drains will be improved; (3) the collection and analysis of data for the preparation of a master drainage plan will be accomplished; and (4) an equipment and operations master plan will be developed. Given successful completion of Phase I, a Project Paper will be prepared requesting financing of assistance to the GOA in addressing the central Helmand's drainage problems in a larger Phase II effort.

A. Summary Information

1. Project Title: Central Helmand Drainage

2. Project Number : 306-11-120-146

3. Country : Afghanistan. Executing Agency: The Helmand Arghandab Valley Authority (HAVA)

4. Obligation Span : FY 1975 to FY 1976 including the interim quarter

5. Implementation Span: June 1975 through September 1976

6. Appropriation Category: Food and Nutrition

B. Financial Data

Total Project Cost Table
($ US thousands)

	FY 75	FY 76	FY 76 IQ	Total
GOA:				
Recurrent Expense	$ 10	$ 125	$ 31	$ 166
Drainage Construction	50	66	-	116
Sub-Totals	$ 60	$ 191	$ 31	$ 282
USAID:				
Personnel (D-H, PASA and Contract)	$ 154	$ 271	$ 38	$ 463
Commodities	250	-	-	250
Other Costs (drainage construction)	118	154	-	272
Sub-Totals	$ 522	$ 425	$ 38	$ 985
TOTALS	$ 582	$ 616	$ 69	$ 1,267

better drainage system can prevent for many years any major deterioration.

Moreover, any drainage improvement efforts will benefit the poor of the Valley. Salinization is particularly a problem on lands being farmed by "settled" families. Over the years a major concern of successive Afghan Governments has been that of providing a permanent source of livelihood for its landless tenants and farm laborers. The Helmand Valley with its large tracts of unused land and the largely wasted waters of the Helmand River was viewed as an ideal location to settle these families who owned no land. Irrigation systems were installed and settlers placed on small but livable plots, but drainage was not adequately addressed. The new settlers were often assigned to lands with the least drainage. Consequently farms that should produce a respectable living by Afghan standards deteriorated to the point where some families are barely eking out an existence or even in many cases have abandoned their land. It is these small owners who will benefit most from drainage system improvements.

For these reasons, a positive response to the Afghan Government's request for assistance with drainage system improvement appears appropriate. The response must be phased, however, because the task is a difficult one which will take a number of years to address adequately and we need tangible assurance, i.e., actual performance, that better results will be achieved in the future than were achieved in the past. This paper presents a proposal for an orderly and phased approach to developing a plan of assistance.

B. Project Development Concepts

The general scope of the drainage problem is well known. In some relatively discrete sections of land, specific plans for improvement are available. Overall, however, considerable technical effort is required to verify, upgrade and expand the 15 year old drainage plans for the Helmand project area since land use has proceeded beyond that envisioned at the time the drainage plans were drawn. Moreover, there must be a demonstration of an ability to work together to achieve joint objectives.

What we propose is a three-phase approach. At this time we are only requesting approval of Phase I. Specific planning for Phase II and III activities require more technical information on drainage design which will be developed during Phase I. In prior years the American-Afghan relationship in the HAV was often not a happy one. In retrospect it appears that misunderstandings existed on both sides. The American understanding of the limits of Afghan capability was inadequate.

The American technicians frequently covered their own errors by blaming failures on the HAVA. The Afghans, perhaps in awe of their better paid, more prestigious counterparts, often promised to deliver what they knew was not possible and on more than one occasion did not deliver what they could have. The proposed Phase I is critical to establishing a new, more straightforward and collaborative relationship. USAID does not wish to proceed with longer term, more costly commitments until there is a pattern of understanding between ourselves and HAVA with a firmly indicated mutual desire to achieve jointly defined objectives. For this reason, even if the technical facts were available, we still would not choose to request approval beyond Phase I.

1. Phase I Three basic considerations need to be addressed immediately. First there is the "demonstration" aspect cited above: development of a relationship of mutual confidence based on accomplishment of jointly defined objectives and a demonstration of capacity to do the work required. In addition, are the two areas where improved technical data are needed:

-- Projection of equipment needs and maintenance system required to accomplish probable future project work

-- Verification of and redesign as needed of the overall drainage plan

Demonstration Aspect -- U.S. assistance to HAVA was terminated approximately one year ago. Before any major re-involvement is judged to be workable, a test phase needs to be instituted. During this test phase certain explicit milestones should be achieved as an indication of mutual intent, but equally importantly a psychological atmosphere of mutual respect and confidence can be engendered. We propose that limited drainage construction be undertaken during Phase I as a concrete part of this test period and that the U.S. fund a portion of the cost of this construction to demonstrate our interest. The capacity of the HAVA can be partially demonstrated in this phase through the implementation of the construction. In our preliminary discussions the HAVA has indicated it is willing to commit itself to: 1) the assignment of 10-12 new, educationally-qualified personnel to counterpart positions required to achieve the objectives of a longer-range project; 2) the completion of the field work for redesign of the drainage system in one of the four project areas and 3) the provision of an expanded budget for their year 1355 adequate to allow the needed increased tempo of work. These will provide useful indicators of HAVA's readiness to proceed.

At the same time we will try to assure that highly competent U.S.

technicians will be selected who are also culturally sensitive and technically competent. We will try to proceed with careful attention to Afghan needs. Every effort will be made to avoid carping and undue interference and to achieve an honest, forthright and open relationship with the HAVA. An important judgmental evaluation will be the extent to which this thrust is achieved and reciprocated. Decisions about proceeding into Phase II will depend on a favorable assessment of the achievements of these objectives in Phase I.

Redesign Aspect -- In the technical aspects of Phase I we propose to undertake an assessment and redesign -- upgrading as necessary -- of the plans for master drainage for the four project areas of Nad-i-Ali, Marja, Shamalan and Darweshan (with, as noted, the HAVA being responsible for one area). This assessment and redesign is a straightforward technical task, but one which must be accomplished at least partially before major work on the drainage system can be proposed.

Equipment Aspect -- In Phase I, we must also address future equipment needs if the full drainage system construction is to be undertaken. The long lead time required in getting equipment to Afghanistan dictates that an early decision be made on equipment orders. An adequate maintenance process must be addressed. Before proposing long-term assistance we will address an overall equipment plan. However, not all equipment needs can be deferred; in addition to the long-term plan, Phase I will involve some rehabilitation of existing equipment to permit accelerated operations before the arrival of any new equipment.

2. Phase II The Afghan Government has requested (see Appendix E) our assistance in establishing better drainage systems for the irrigated project areas of Nad-i-Ali, Marja, Shamalan and Darweshan. In addition, the GOA has implied an interest in possible assistance on the establishment of improved water use systems.

The major limit on production in much of the irrigated area of the Helmand Project is that of waterlogging/salinization of land. Although it is true that water use practices contribute to this problem, it is also true that regardless of water use the problem of salinity will continue until adequate drainage structures are installed.

On the other hand, even given existing water use practices, an improved and expanded drainage system can markedly decrease waterlogging and salinization. Other than construction and limited maintenance, a drainage

system is virtually self managed. Consequently, from our view an approach of improving production through better drainage is feasible in the Afghan milieu and has an attractive cost/benefit ratio (demonstrated later).

Water use practices are, in contrast, deeply ingrained in the culture and attaining efficient water use would involve rather complex interactions among technical, bureaucratic and cultural systems. We believe that significant improvement in water use practices is simply beyond the capability (politically and bureaucratically) of this Government in the near and medium term.

At this time, we believe the above arguments indicate that a positive response to the Afghan request for assistance in improving drainage in the HAV project area is desirable if our test efforts in Phase I prove favorable. The problems of water use improvement are much more complex and we do not feel that we are prepared to suggest a definite response for this subject. Our view then is to restrict, at this time, the concept for Phase II to drainage with the objective of reducing and limiting waterlogging and salinization to tolerable levels.

We plan to develop for Phase II a list of needed equipment by December 1975 and to complete the Phase II plan by April-May 1976. This Phase II plan will be for U.S. assistance in the completion of the drainage system.

A specific proposal for approval of a Phase II will, however, depend upon the generation of data from Phase I on:

a. how the USAID/HAVA relationship developed during Phase I

b. a drainage plan

c. a list of equipment needs and a proposed maintenance system

3. Phase III As indicated, the GOA expressed interest in assistance in improved systems for water use. Also, as noted, we feel that achievement of better systems on water input side will be exceedingly difficult. USAID has no desire to propose assistance projects in an area even where the potential payoff for success is high if there is not a good chance of success. Given current concepts, we judge this to be the case in the water use area.

However, several comments have been made by AID/W about the need for better water allocation, for water charges, for improved on-farm water use, etc. We would like to be responsive to judgments from AID/W that more needs to be done in this area, but do not now have promising potential solutions to the need. Further AID/W assistance in pre-project exploration for assistance in improving the water input systems would be useful. We would suggest that perhaps the appropriate course of action is the establishment of a NESA Bureau team to provide the Mission with a suggested set of alternative approaches to exploring this problem area. Given a set of alternatives, perhaps an attractive course of action can be developed. We would be prepared to proceed in this area as rapidly as workable approaches can be formulated.

Several areas appear appropriate for pre-Phase III investigation.

Irrigation Practices -- Currently crops are often over-irrigated, resulting in some loss in production, increase in waterlogging and in a considerable waste of water.

Our estimate is that education to overcome such problems will come slowly and that the education would have to be supplemented by a HAVA-encouraged discipline. It is by no means clear that a joint HAVA/USAID activity in this area would meet with success, given current knowledge and relationships. Perhaps a small test/data gathering activity could be designated.

Water Allocation -- In most of the area traditional ditch tenders allocate water and the system gives preference to the larger landowners and those at the head of the ditch. Some efforts at better water allocation procedures are being tried by HAVA. More time and study are needed to determine how successful these efforts are.

HAVA Revenues/Water Charges -- Currently HAVA collects a negligible $0.20 per year per acre charge for water. HAVA could increase its revenues and provide better services if it made a more realistic charge. If the charge were related to quantity of water used, an incentive for the farmers to use closer to optimum (less) quantities of water could result. But there has been reluctance to pursue seriously a program for water charges, probably grounded in Koranic injunctions against charging for God-given products. Although the USAID believes realistic water charges are highly desirable, we have not found any grounds for believing they are

culturally possible. It is possible that a joint U.S./Afghan study team could make some progress on defining a desirable experimental program in this area.

These are areas of potential improvement but without much promise of success without years of effort. The USAID will want to work closely with AID/W offices in a search for guidelines for future action.

II. PROJECT DESIGN AND IMPLEMENTATION

As indicated earlier, prior to undertaking any long-term assistance project there is a need both for developing more detailed plans and backup data and for establishing a relationship of mutual confidence and cooperation. This paper requests approval for the 18-month action plan described in this section to accomplish those preparatory objectives. The following sequence of events and evaluations are planned, at the end of which -- if the results prove favorable -- we would be prepared to propose moving into Phase II.

A. Goal Envisioned for Phase II

Establish a drainage system in the Helmand Project Area which will assure, for areas now under irrigation and given existing water use, that salinization and waterlogging will be limited to tolerable standards. This will contribute to the goal of improving small farmer productivity and income.

The longer-term project is phased and before addressing the broad goal of Phase II a much narrower testing, probing and data-building Phase I is proposed. This approach is consciously chosen in an effort to allow time for a relationship to be established before major commitments of funds are made. Lack of success in Phase I will, of course, raise major doubts about the possibility of proceeding to Phase II.

B. Project Purposes (Phase I)

Before drainage improvements can be undertaken on a large scale, certain technical conditions must be fulfilled -- the achievement of these conditions may be thought of as the operational purposes of Phase I. In addition, the degree of success USAID and HAVA have in jointly accomplishing these Phase I purposes will provide an objective basis for a decision to proceed, or not to proceed, with Phase II. Thus, the purposes of Phase I are:

1. Demonstration of an ability to work toward joint objectives and to accomplish in a timely manner the construction, organizational, and social decisions and actions planned in Phase I. These are:

- improvement of main drains in agreed lengths

- construction of farm drains in agreed lengths

- provision of required operational budget for Afghan year 1355

- successful use of Fixed Amount Reimbursement (FAR), including necessary criteria and standards

- arrival and successful actions of U.S. advisors

- addition of required personnel to HAVA staff

- HAVA development of a Master Drainage Plan for one area

2. Review of and preparation as required of overall master drainage plan as basis for planning work needed in Phase II.

3. Review of availability of current equipment and of the operational and maintenance capability; and development of a plan for acquiring and effectively utilizing current and to-be-acquired equipment.

C. Logical Framework

Explanatory Note -- Summarizing the Project Design in its entirety spanning Phases I, II, and III would be an insuperable problem for the reason that while the general objectives of the project are known, the specific details -- beyond Phase I -- of the project are not. Among such specific details are the kind and degree of drainage problems in the HAVA administered system and on small farms; the availability, condition, and additional requirements for equipment; the availability and readiness of HAV personnel; and, given these factors, the time required to correct the drainage problem. A major tenet of the Mission's Development Assistance Plan (DAP) is the need to foresake grandiose schemes in favor of a measured, step-by-step approach wherein performance and capability are tested and the resulting experience is built into the next phase of larger scope, increased complexity and quickened pace. This incremental approach is difficult to capture in the logical framework format. This is so because the logical framework is a static instrument: once hierarchical relationships are set among goal, purpose, output and input levels there is no

convenient way to represent what will happen over time or what branching or alternative approaches might obtain as the project progresses, short of re-writing the log frame.

The core of the typical logical framework is the statement of the project purpose for it contains the development assistance hypothesis, i.e., if something is accomplished, then some other condition (poverty, unemployment, illiteracy, etc.) will be alleviated. However, in the case of the project at hand (Phase I) there is no "development" hypothesis per se but, rather, an hypothesis concerning the feasibility of establishing a different, more mature bilateral relationship which, if established successfully, would enable the solution of a development problem (i.e., drainage on a large scale in Phase II). Thus, two logical frameworks are presented in the following pages: one which presents the hierarchical relationships in Phase I from inputs through to the launching of Phase II (at the program goal level); and the second which presents the development hypotheses about the hierarchical linkages among constructing drains (outputs), increasing small farmer productivity (purpose), and increasing small farmer income (program goal). This Phase II logical framework is presented in outline form since much of the data and the formulation of comprehensive plans will be done in Phase I. There is, in short, no way to present the details of Phase II without more specific technical knowledge and in the absence of certainty about the hypothesized new relationship between HAVA and USAID.

D. Implementation Plan

Attached as Figure 1 is a table of events required to permit go-ahead on Phase II by November 1976.

Our proposal is for about an 18 months' Phase I, starting May 1975, to collect the required information and allow the demonstration of intent required to decide on whether and how to proceed with Phase II. During these 18 months, several major milestones must be passed. See Figure 1, following.

1. HAVA Actions Events 6, 13, 21, and 27 -- milestones on actual construction of drains - are scheduled between August 1975 and July 1976. A total of 120 kms of drains will be accomplished to the agreed upon specifications. Reports on actual drainage construction will be made on these dates and verified by USAID personnel. HAVA will add 10-12 new young college graduates to its staff (event 9 on Figure 1) and assign them as counterparts to this and the survey project. These and other HAVA personnel will be

Program Goal	Goal Indicators	Assumptions
To launch Phase II: To increase small farmer productivity by the construction and improvement of drains to reduce soil salinity and water logging.	The successful completion, as verified by joint evaluation, of the Phase I "test" or "pilot" phase including drainage construction, master drainage plan and master equipment plan.	
Project Purpose	**End of Phase I Status Indicators**	**Assumptions**
To develop and establish a working relationship between USAID and HAVA for the accomplishment of defined construction work goals and the collection of technical information.	1. On-farm drains constructed 2. Major drains improved/constructed 3. Master Drainage Plan completed 4. Master Equipment Plan completed 5. Mutual Trust and rapport	1. Feasible to apply fixed amount reimbursement technique to drainage construction. 2. GOA will make necessary decisions to enable achievement of project targets.
Phase I Outputs	**Output Indicators and Targets**	**Assumptions**
1. On-farm drains identified, designed and constructed. 2. Major drains identified, designs updated and improved. 3. Review and up-dating of drainage plan and preparation future construction program. 4. Review of equipment, operations and maintenance capabilities and plan preparation.	1. 70 Kms. 2. 50 Kms. 3. By July 1976. 4. By May 1976.	

Phase I Inputs	Schedule	
	FY 75	FY 76
USAID:		
1. D-H Project Manager	1 MM	15 MM
2. PASA Group: (two drainage design engineers assigned and short term)		36 MM
Soil and Water Data Collection Trainer		4 MM
Soils Laboratory Technician		9 MM
3. Contractors: Master Mechanic		15 MM
Warehouseman		15 MM
Engineering Monitoring		12 MM
4. Spare Parts & Shop Tools/Equipment ($ 000)	$250	
5. Fixed Cost Reimbursement of Farm Drains (70% of agreed costs) ($ 000)		$154 for 70 Km*
6. Fixed Cost Reimbursement of the Improvement of Major Drains (70% of agreed costs) ($ 000)	$118 for 50 Km*	
GOA:		
1. Counterparts to U.S. Technicians	12 to 15	12 to 15
2. Survey and data collection teams	22 staff	22 staff
3. Soils laboratory staff	10 staff	10 staff
4. Design, drafting, technical planning and drainage engineering staff	46 staff	46 staff
5. Construction/heavy equipment operators and support personnel	145 staff	145 staff
6. HAV share of on-farm drainage construction ($ 000)		$66
7. HAV share of major drain improvement ($ 000)	$50	

* period of obligation

Outline of Phase II Logical Framework

Program Goal	Goal Indicators	Assumptions
To increase small farmer income by _____ percentage in the Central Helmand region by 19 ____.	From a 1976 base of afs _____ annually per farm family to afs _____ by 19_____.	Unchanged price relationships cereals or fibres to fertilizers in domestic and international markets.
Project Purpose	**End of Project Status**	**Assumptions**
To increase small farmer agricultural productivity.	Central Helmand production increases: Crops — 1976 Base — To in 197 Wheat Cotton Corn _____ ha. of land held by small farmers brought into production. _____ ha. of land held by small farmers raised from class IV to class II and _____ ha. raised from class III to class II. _____ ha. readied for settlement.	1. Continued availability of seed and fertilzers (the latter at 1975 subsidized prices) on credit. 2. No change in on-farm irrigation practices. 3. No change in traditional practices of water allocation among farms.
Outputs	**Indicators/Targets**	**Assumptions**
Major Drains Improved by 19 ____. Major and Collector Drains Constructed by 19 ____. Farm Drains Constructed by 19 ____.	Marja (km.) — Nad-i-Ali (km.) — Darweshan (km.) — Shamalan (km.)	

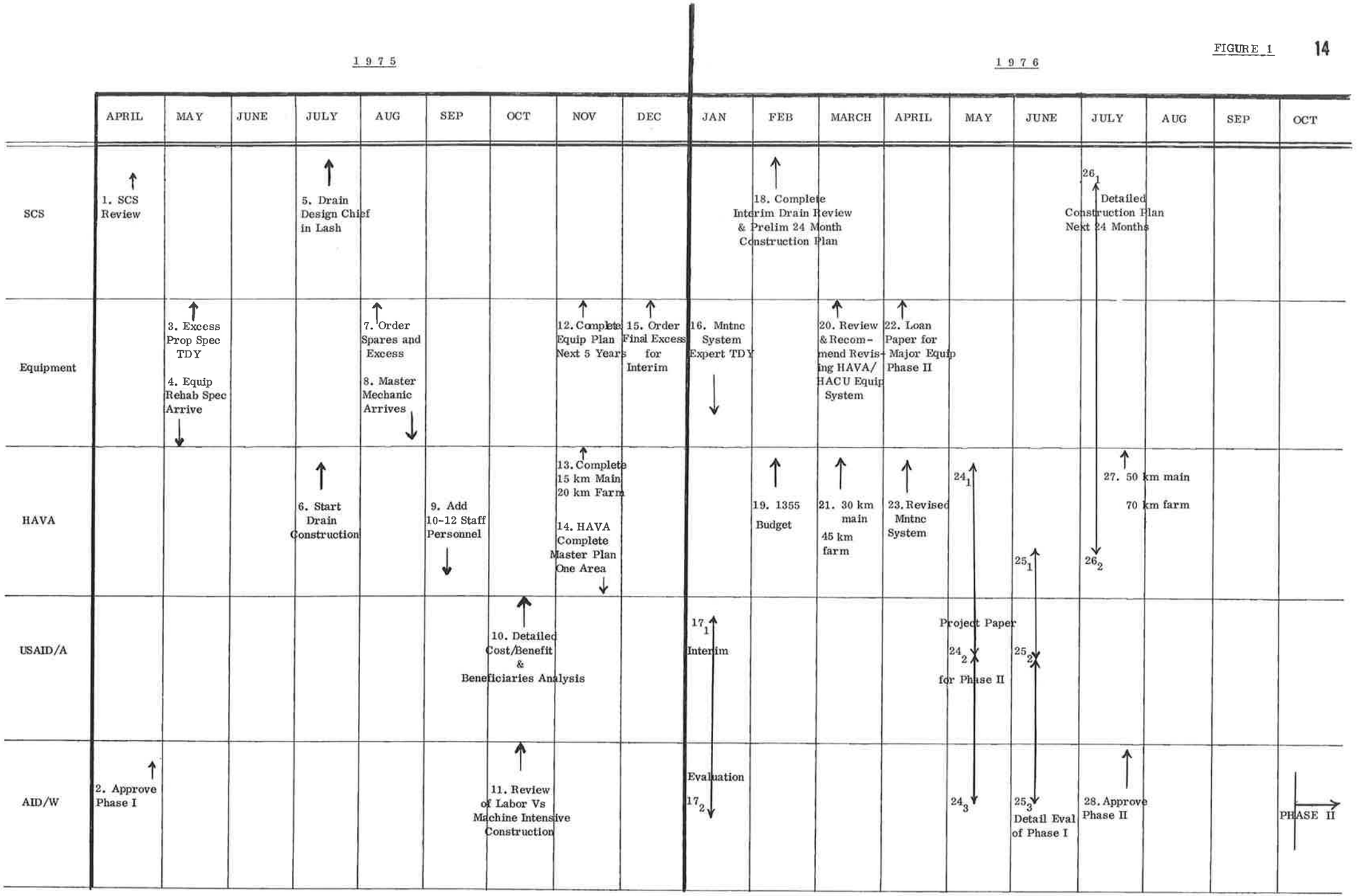
car rying much of the load for drainage system review and redesign. HAVA will have full responsibility for drainage construction once designs and standards are agreed to.

2. Soil Conservation Service A quick field review is scheduled by Senior SCS personnel in late April (event 1) with arrival of the senior drainage design man in July (5). An interim system review and preliminary 24-month construction plan (18) is scheduled for February as a necessary input into the equipment projections (20 and 22) and the Phase II project paper (24). A final 24-month plan is projected for July (26) in time for start-up of Phase II.

3. Equipment Actions Given the long lead time in deciding on ordering equipment and getting it delivered, we feel it will be necessary to address interim means of increasing HAVA/HACU's construction equipment capacity. We expect to look seriously at the prospects of obtaining excess equipment overland from Europe and will request TDY assistance for this purpose (3) in May. We are proposing obligating funds in Phase I for spare parts and excess equipment purchasing as an immediate ad hoc response (event 7. August). An equipment plan will be prepared by November (12). Depending on the specifics of this plan and our experience with HAVA's construction capacity with available equipment, a request for another small grant-funded order of excess equipment may be made for December (15). We are not requesting funds for this purpose in this paper because of the uncertainty. If we conclude that more excess equipment is necessary, we will submit a separate request for the funds. Final equipment recommendations along with a loan proposal will be accomplished in March and April 1976 (20 and 22).

Timing becomes something of a problem at this point. We wish to obligate FY 76 funds for equipment purchases to permit earliest possible go-ahead with long lead time for ordering. However, in order to get maximum time available for demonstrating accomplishment of project purposes of Phase I we wish to schedule final evaluation in June 76. We request AID/W comments on the following or alternative scenario to meet timing needs.

We propose an interim evaluation (17) in January 1976. Assuming favorable findings in this evaluation, we will proceed with loan paper preparation. As a condition precedent to the disbursement of loan funds, any difficulties identified in the final evaluation June 1976 (25) will be resolved. We believe that information obtained in the interim evaluation and general knowledge of project will give sufficient knowledge to recommend go-ahead with Phase II. Thus, as of April 1976, we will have high probability of correct knowledge


1975
1976
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SCS
Equipment
HAVA
USAID/A
AID/W
1. SCS Review
5. Drain Design Chief in Lash
18. Complete Interim Drain Review & Prelim 24 Month Construction Plan
26 1 Detailed Construction Plan Next 24 Months
3. Excess Prop Spec TDY
4. Equip Rehab Spec Arrive
7. Order Spares and Excess
8. Master Mechanic Arrives
12. Complete Equip Plan Next 5 Years
15. Order Final Excess for Interim
16. Mntnc System Expert TDY
20. Review & Recommend Revising HAVA/HACU Equip System
22. Loan Paper for Major Equip Phase II
13. Complete 15 km Main 20 km Farm
14. HAVA Complete Master Plan One Area
6. Start Drain Construction
9. Add 10-12 Staff Personnel
19. 1355 Budget
21. 30 km main 45 km farm
23. Revised Mntnc System
24 1
25 1
26 2
27. 50 km main 70 km farm
10. Detailed Cost/Benefit & Beneficiaries Analysis
17 1 Interim
Project Paper
24 2
for Phase II
25 2
2. Approve Phase I
11. Review of Labor Vs Machine Intensive Construction
Evaluation
17 2
24 3
25 3 Detail Eval of Phase I
28. Approve Phase II
PHASE II

regarding a go/no go recommendation. However, we would prefer to defer the formal decision until final evaluation in June 1976.

4. USAID Actions USAID will upgrade our cost/benefit estimates and beneficiaries by October 1975 (10). In conjunction with AID/W an interim evaluation will be made (17). USAID will cooperate (with AID/W) in the submission of a Project Paper on Phase II in May 1976 (24) and in the detailed evaluation in June 0f 1976 (25).

5. AID/W AID/W's assistance is requested in the two evaluations and the preparation of the Phase II project paper. In addition, we are requesting AID/W assistance in recommending the split between labor and machine intensive construction based on relative costs, labor availability, etc., (11).

We believe that through the careful steps proposed in Phase I we will be in a position to decide whether proceeding with Phase II will be justified. We have discussed these plans with the GOA and they understand the approach being advocated. A copy of this paper (with the budget section deleted) has been given to Ministry of Planning and the HAVA.

E. Project Inputs

1. USAID The implementation plan above specifies the mobilization of U.S. manpower in two stages and from several different sources. Preproject activity in April, May, and June 1975 will include securing TDY equipment and spare parts expertise to assess HAVA's and HACU's equipment situation. During this same period, representatives from the U.S. Soil Conservation Service will visit Afghanistan for a quick review of the existing drainage studies. The USAID and HAVA will execute Project Agreements in FY 75 and FY 76 to cover the services of a SCS group consisting of two full-time Drainage Design Engineers, and the short-term services of Design Engineers for specialized drainage problems, a Trainer for soil and water data collection, and a Soils Laboratory Technician. The Project Agreement will also cover the contract services of the Master Mechanic, who will assume an advisory and quasi-operational role for the rehabilitation of equipment, and the Supply/Warehousing Specialist.

The activities of the PASA group and the contractors will be monitored by a direct-hire Project Manager who will also provide general advice to the HAVA leadership and arrange with the Mission's Capital Development and Engineering Office for the independent engineering monitoring of work constructed under the project. In addition, the Mission's resident social

scientist will conduct such socio-economic surveys as will be required for the assembly of sociological baselines in the project area in Phases I and II. Finally, other elements of the Mission -- the Controller and Program Office -- will be called upon to participate with AID/W consultants in the scheduled project evaluations as well as with the further refinement of the benefit/cost analysis.

Also in FY 1975, USAID plans to obligate approximately $250,000 for spare parts, shop tools, and equipment (the precise dollar amount, kinds, and quantities to be determined upon the recommendation of the TDY spare parts expert).

The construction of farm drains may be accomplished by either machine or manual labor or a combination of the two. In Phase I of the project, HAVA may favor the use of manual labor for the digging of drains due to the limited available construction equipment. Specifications will vary from area to area due to differences in soils. However, it is expected that the typical farm drain would be 2.5 M deep with a bottom width of 30 cm and side slopes of 1/2 to 1. This gives a cross section area of 3.875 M^2. If one man can dig one M^3 per day and if the average daily wage is afs 45 per day (approximately 81¢ at 55.5 afs = $US 1.00) the cost per kilometer will be $3,138. If the U.S. reimburses 70 percent of the cost, the total cost for constructing 70 km of farm drains will be $219,660 and the USAID share $153,762.

Improving major drains will consist primarily of deepening existing drains by an average of one meter and cleaning, reshaping, and restoring to grade the new bottom cross section; spreading and smoothing the spoil to form a road on each side of the drain; rehabilitating existing and constructing new road crossings at two kilometer intervals; and the construction of river protection works. The elements of drains improvement and approximate costs are as follows:

(a) Deepening, cleaning, and shaping 50 km of existing drains	$ 60,000
(b) Spreading and smoothing spoil for the parallel roads (100 km @ $600 per km)	60,000
(c) Rehabilitation of existing crossings and construction new road crossings (25 @ $1,000 per crossing)	25,000

(d) River protection works	$ 10,000
(e) Field drain inlets (70 @ $100 per inlet)	7,000
(f) Contingencies	6,000
The average cost per km is $3,360.	$168,000

If the U.S. reimburses 70 percent of the cost of improving major drains, the total cost for 50 km of drains would be $168,000 and the USAID share $118,000.

USAID Phase I Inputs
($ US 000)

COMPONENT:	Fiscal Year 75	76	76 I Q	Total
Personnel:				
Direct-hire Proj Manager	$ 4 (1 mm)	$ 48 (12 mm)	$ 12 (3 mm)	$ 64 (16 mm)
PASA Group:				
Drainage Design Engr. (2)	$ 20	$ 112 (24 mm)	$ 26 (6 mm)	$ 158 (15 mm)
Design Engr. (Short term)		$ 24 (6 mm)		$ 24 (6 mm)
Trainer for Soil and Water Data Collection (S-T)		$ 16 (4 mm)		$ 16 (4 mm)
Soils Lab Tech (S-T)		$ 36 (9 mm)		$ 36 (9 mm)
PASA Sub Total	$ 20	$ 188	$ 26	$ 234
Contract (Personnel Service):				
Master Mechanic	$ 65 (7/75 thru 9/76)			$ 65
Warehouseman	$ 65 (7/75 thru 9/76)			$ 65
3rd Ctry Engineer for Construction Monitor		$ 35		$ 35
Contracts Sub Total	$ 130	$ 35		$ 165
Personnel Sub Total	$ 154	$ 271	$ 38	$ 463
Commodities: spare parts, shop tools & equipment	$ 250			$ 250
Other Costs:				
Fixed cost reimbursement for farm drains @ 70 percent of the total		$ 154		$ 154
Fixed cost reimbursement for major drains @ 70 percent of the total	$ 118			$ 118
Other Costs Sub Total	$ 118	$ 154		$ 272
TOTALS	$ 522	$ 425	$ 38	$ 985

2. The Government of Afghanistan HAVA and HACU will provide the following approximate number of personnel during Phase I of the project: (a) counterparts to U.S. technicians - 12 to 15 Afghan professionals; (b) survey and data collection teams - 22 staff; (c) soil laboratory staff - 10; (d) design, drafting, technical planning, and drainage engineering staff - 46 professional and technical; (e) construction and heavy equipment operators and support personnel - 145; for a total of about 235 Afghan personnel.

With respect to financing, the Government of Afghanistan has been committing fairly substantial resources through its development budget to the Helmand Arghandab region. In 1973/74 total availabilities were about $1.6 million; in the approved budget for 1974/75 the total is about $2.2 million; and the request for 1975/76 is about $2.7 million. Over the past five years about 45 percent of HAVA's development expenditure has been for land development. Land development plus operations and maintenance and agricultural development have accounted for an average of about 72 percent.

Within the overall development budget for the region, the GOA would be committing about $125,000 per annum for personnel involved in Phase I of the project and about $116,000 for the GOA's minimum share of the direct costs of constructing 70 km of farm drains and improving 50 km of major drains.

III. PHASE I -- TECHNICAL ANALYSES

A. Salinization and the Drainage Solution

The Government has in the past given first priority to expanding the land area under command of irrigation systems. It has given only secondary consideration to providing the irrigated areas with adequate drainage. This policy prevailed although the necessity for drainage was recognized and the benefits from proper drainage were evident. The drainage problem has now reached such a level of severity that major efforts are essential to stop further deterioration of the project lands. HAVA made a survey in the Fall of 1974 to determine the status of the salinity problem. The following table gives the results of this survey.

Land Distribution by Salinity Level. Number of Hectares

Tracts	Total Ha.	Very Severe (EC X 10^3 16+)	Severe (EC X 10^3 8 to 16)	Moderate (EC X 10^3 4 to 8) Ha.
Nad-i-Ali	12,406	1,060	4,000	7,305
Marja	19,520	1,820	9,400	8,300
Shamalan	28,800	4,200	4,400	20,200
Darweshan	20,000	2,160	3,240	14,600

Severe or worse salinization, according to this survey, exists in from 27 percent, Darweshan to 57 percent, Marja, of project land. USDA tests indicate that salinity levels corresponding to an EC value of 9 or 10 will result in a 50 percent decline in expected yield for most crops. Thus, from 1/4 to 1/2 of the lands in the project areas are yielding no more than 1/2 of their potential.

As a further check on current salinity we took, in March, soil samples in the areas to be affected by the drains proposed for Phase I of this project.

In Marja along Drain C, which HAVA has proposed to be deepened and farm drains constructed to drain into it, ten soil samples were taken and tested for salinity. The salinity levels from the samples in the proposed Marja work area are shown below.

Sample No.	EC X 10^3
1	7.0
2	11.7
3	3.3
4	8.5
5	10.3
6	19.0
7	8.5
8	7.0
9	8.5
10	12.6

All the samples above show a severe to very severe salinity level with the exception of sample number three. Sample three was taken in the only field where a farmer had, on his own, dug a farm drain. This farmer's wheat looked very good while the wheat near the other samples varied from poor to a complete failure. A sample of the water from drains near sample 3 was tested and found to contain 5,000 ppm of dissolved salts. Since the irrigation water has only about 215 ppm of salts, this case gives clear evidence of the impact of field drains in removing the excess salts from the farmer's field. This sample also tends to support the HAVA data showing widespread severe salinization and indicates, for one case, the reduction in salinization which will occur when drains are installed.

With the present drainage system it is estimated that only 52 percent of the salts in the irrigation water are being carried away by the drainage water for the Nad-i-Ali, Marja and Shamalan areas. In Darweshan perhaps 60 percent of the salts in the irrigation water are carried away by the drains. If this situation continues, more and more land will become too saline to produce crops and in time much of the land in the Valley will be abandoned.

1. Improvement in Land with Drains HAVA has constructed 572 km of major drains and 400 km of farm drains since the drainage plan was developed in 1957-58. HAVA estimates that 208 km of the major drains need deepening and improving. HAVA also estimates that 281 km of new major drains are needed.

In the areas where adequate drainage has been provided, the salinity levels (EC X 10^3) have generally been below four. Also, in the drained areas the yields have been excellent. Appendix C lists a sample of wheat yields related to salinity levels for the project areas. For example, the average wheat yield

in the nine samples taken in Marja in areas with EC levels of 16 or more was only about 1900 kg/ha. For the seven Marja samples taken in areas with EC values ranging from four to eight the average yield of wheat was 4600 kg/ha. We of course do not know what other factors may have been present (for example fertilizer use) to account for these variations in yields. However, USDA tests (see the Table below) indicate that wheat should yield better than 90 percent of its potential at EC levels of 4 to 7 and that production will be cut by more than 50 percent when EC levels reach 9 or more. In the Marja sample, the ratio of yield of 2.4 (4600/1900) for areas of low to moderate salinity compared to highly salted areas would be expected from the USDA tests.

SALT TOLERANCE OF SELECTED FIELD, VEGETABLE & FORAGE CROPS

Crop	Electrical conductivity of saturation extracts at which yields decrease by about 10 percent[1/] EC X 10^3	Electrical conductivity of saturation extracts at which yields decrease by about 50 percent[2/] EC X 10^3
Bermuda Grass	13	16
Barley	12	16
Tall Wheatgrass	11	15
Sugar Beets	10	15
Cotton	10	12
Beets	8	12
Wheat	7	9
Tall fescue	7	8
Sorghum	6	8
Soybean	5.5	-
Corn	5	7
Broad bean	4	-
Tomato	4	9
Alfalfa	3	9
Potato	3	6
Orchard grass	3	7
Onion	2	6
Red Clover	2	3
Beans	1.5	4

1/ Adapted from USDA Bulletin 283

2/ Adapted from USDA Handbook No. 60

It can be seen that for most crops grown in the Helmand Valley the yields are greatly reduced by salinity. Crop yields are also reduced in two other ways in the Valley. One is the poor stand gotten by poor germination due to the high salinity levels. The other reason for poor yields is the high water table that restricts root growth. The combination of these factors causes the yields to be much lower than one should expect. Good drainage would reduce these factors and the results would be much higher yields. Overall improvements in project yields using wheat as an example could be as follows with a fully adequate drainage system.

If we assume that the HAVA survey made in the Fall of 1974 continues to represent the situation in the four project areas, we would expect that land is distributed by degree of salinity as follows:

Percent of Project Land with Indicated Salinity	Indicated Salinity Level
11.4	Very Severe
26.2	Severe
62.4	Moderate

From the samples in Appendix C we get the following average and relative yields for the lands at different salinity levels.

Average Yield kg/ha	Yield Relative to Yield at Severe Salinity	Salinity Level
1704	1.0	Very Severe
2909	1.7	Severe
4247	2.5	Moderate

If we assume that installation of the total proposed drainage systems brings all project land down to no worse than a moderate level of salinity, we could expect an increase in wheat yield for the total project area of at least 35 percent. For Phase I, where the drains are concentrated in highly salinized areas, we will expect far higher average yield increases, in excess of 70 to 80 percent given the 10 samples taken along drain C in Marja. Fruit and other crops less tolerant than wheat will show greater response to improved drainage. In summary, yield increases in excess of 70 to 80 percent

are likely to occur in areas not now provided with adequate drainage. For the total project the installation of a complete drainage system should increase total yield by 30 to 40 percent.

2. Assume Fixed Water Use Another negative effect of salinization is that soils with high salinity levels have to be irrigated more frequently because the plants are not able to extract as much water from the soil. This is caused by the higher soil water tension due to high salinity. In other words, the available water to the plant decreases as the salinity level increases. This situation requires more frequent irrigations resulting in lower irrigation efficiencies which wastes water. The waste is now being evaporated or is building up the water table.

When the land is provided with adequate drainage, it will require less irrigation water for plant use. After the salinity level is lowered, more land can be irrigated with the same water used at present.

B. Phase I Construction

1. General Construction of farm drains and main drains during Phase I of this project will be undertaken in each of the four irrigation areas of Marja, Nad-i-Ali, Shamalan and Darweshan. Maps of the proposed work areas are included in this section, sheets 1 through 4. The basic criteria for selection of the lands to be worked in each area are as described later in Section III F. As the design review progresses and field data upon which to refine these basic criteria become available, some revisions in the location or character of the work may become necessary.

Collection of field survey data will also serve as the basis for the final determination of depth of cut required on the drains to be worked. This collection is estimated to require six weeks for each of the four major areas and will take place prior to construction. These surveys will also provide sufficient cross section data so that precise volumes of material to be excavated can be estimated and negotiations begun with HAVA as to estimated costs per unit of length. Reimbursement to HAVA on a fixed amount basis will be made upon completion of drains, or convenient portions of drains, to pre-agreed standards and specifications. The fixed amount will be 70 percent of the estimated cost of each section of drain. The development of procedures and forms to be used in fixing the amount to be reimbursed will generally follow those established during the Rural Development project with modifications as needed to suit the purposes of this project.

2. Areas Designated by HAVA to be Worked

Marja -- Deepen 12.9 km of outlet drain C as shown on attached Marja map. Design drawings show this drain to have been built with a 2-meter bottom width and an average bottom depth of 3 meters from the ground surface in fields adjacent to the canal. An additional 2.4 km of canal deepening is proposed to Marja outlet drain extension B which has a bottom width of 2 to 4.88 meters and a depth of 3 meters shown on the drawings. Side slopes are in the ratio 1 vertical to 0.75 - 1.25 horizontal.

In addition, another length of 7 km was proposed to be deepened on Marja outlet drain extension B at a slope to be determined. HAVA recommended using new slopes of 0.0003 or 0.0004, which we feel may be too flat for effective flows.

The design drawings for the above sections of B show 3 meters of drop from field to drain bottom with 3.2 meters as that indicated as desired by HAVA, which would require excavation of only 0.2 meters. Preliminary field observations, however, indicate excavation in excess of this may be needed to achieve the desired depth.

Farm drains proposed to be built are in two sections of 24 km total length that flow into drain C and of 8 km total length that flow into Drain D.

Nad-i-Ali -- HAVA proposes 50 km of farm drains on both sides of deep drain 1 (also called Nad-i-Ali wasteway) north of a line through villages A and C, attached Nad-i-Ali map. It is reported that BuRec recommended 40 meter intervals for these drains. HAVA plans to initially install them at 80 meter intervals.

Major drain work proposed is the deepening of major drain 3 which is 8.2 km long with bottom width of 0.60 meter and depth of 1.00 meter. Beyond this point 6.6 km of major drain 2 is to be deepened and then 5.2 km along the Nad-i-Ali wasteway for an aggregate length of major drain work of 20 km.

Shamalan -- The proposal by HAVA is to deepen outlet drain A from juncture with Nad-i-Ali wasteway to the river - a distance of 5.0 km. Bottom width is 2.0 meters and depth is 2.8. Final depth criteria have not been developed by HAVA.

Another proposed area for work in major drains and farm drains is the Zarist area. The Zarist drain, including Spur 1 aggregating 12 km, is proposed to be deepened. This area has 150 newly settled families. Plans would be to introduce wasteway overflows from Nad-i-Ali and Marja into this drain in addition to its local drain load. A large amount of design inputs are needed before this plan can be formulated.

Farm drains in the Zarist drain area of some 10 km in total length are proposed. There is, as yet, no engineering data on which to base a judgment concerning this proposal.

Darweshan -- HAVA proposes that outlet drain C be deepened for its total length of 10.5 km. An additional deepening of the lower 9.5 km of outlet drain A is also proposed. Engineering Surveys have been made, but are not finalized. Farm drains are needed but spacing and location and depth are to be determined. This is the most recently settled area

of the Helmand Valley and has the highest concentration of settlers.

USAID Engineers have made initial observations of the areas for the proposed Phase I construction effort. We are satisfied that the general plans are sensible and of high priority. Details need to be worked out and finalization of depth and width parameters made before construction is undertaken. HAVA Engineers in conjunction with USAID engineers will, before July, finalize the designs for a section of the proposed work. The SCS design review chief will, on arrival, be asked to review these plans at which time construction will start. Further design finalization will be made in order to keep pace with construction capability.

The sum of the proposals for construction made by HAVA are about 90 kms of main drains and 110 kms of field drains. In consultation with HAVA we concluded that in light of funds available and probable HAVA construction capability, a total of 50 kms of main drains and 70 kms of farm drains was more reasonable for Phase I. It is planned to select from among the proposals by HAVA 50 kms of main drains and 70 kms of farm drains for actual construction.

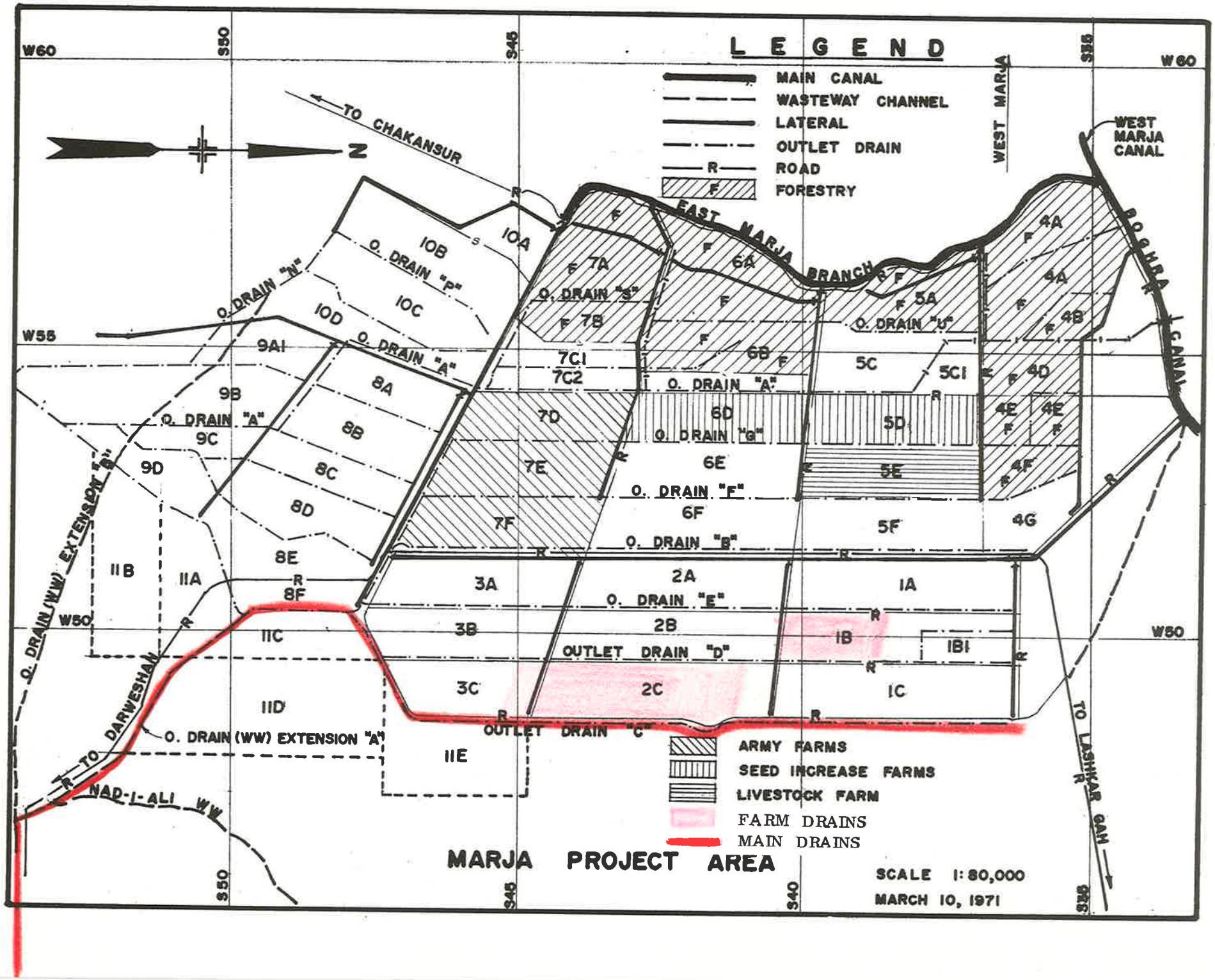
3. Standards and Specifications The design and construction work for this project will have to be done in accordance with certain standards and specifications in order to maintain the desired control of work quality. The standards and specifications established in the past will be applied to the maximum extent possible with revisions and/or additions made as needed.

Standards -- The standards to be established will define the relationships between the various components of the work. Minimum depth of farm drains below field level must be established. HAVA has stated that 2-1/2 meters is the desired depth and this will be used on the initial drains; however, since this depth is also a function of soil characteristics and drain spacing, it may be varied as the design review progresses. As mentioned, drain spacing is another variable that will be addressed. In previous recommendations drain spacing has been placed as close as 40 meters; however, HAVA has stated a desire to start with 80 meter spacing till actual results dictate a change. Other considerations are the different estimations between main drain water and bottom elevations and the farm drain levels feeding into them. Also the range of flows and hydraulic slopes to be used in the drains must be established.

The procedures for sampling and testing the soil and water must be standardized. Selection of standards for the physical cross section of the

drains must be made so that side slopes, bottom widths, berm widths and back slopes can be designed.

Specifications -- Construction specifications currently established by HAVA and used in the execution and inspection of the work by HACU will be reviewed as to adequacy and revised and supplemented as needed.


LEGEND
MAIN CANAL
WASTEWAY CHANNEL
LATERAL
OUTLET DRAIN
ROAD
FORESTRY
TO CHAKANSUR
N
WEST MARJA
WEST MARJA CANAL
EAST MARJA BRANCH
BOGHRA CANAL
O. DRAIN "N"
O. DRAIN "P"
O. DRAIN "A"
O. DRAIN "S"
O. DRAIN "U"
O. DRAIN "G"
O. DRAIN "F"
O. DRAIN "B"
O. DRAIN "E"
OUTLET DRAIN "D"
OUTLET DRAIN "C"
O. DRAIN (WW) EXTENSION "B"
O. DRAIN (WW) EXTENSION "A"
TO DARWESHAN
NAD-I-ALI WW
TO LASHKAR GAH
W60
W55
W50
350
345
340
335
10A
10B
10C
10D
9A1
9B
9C
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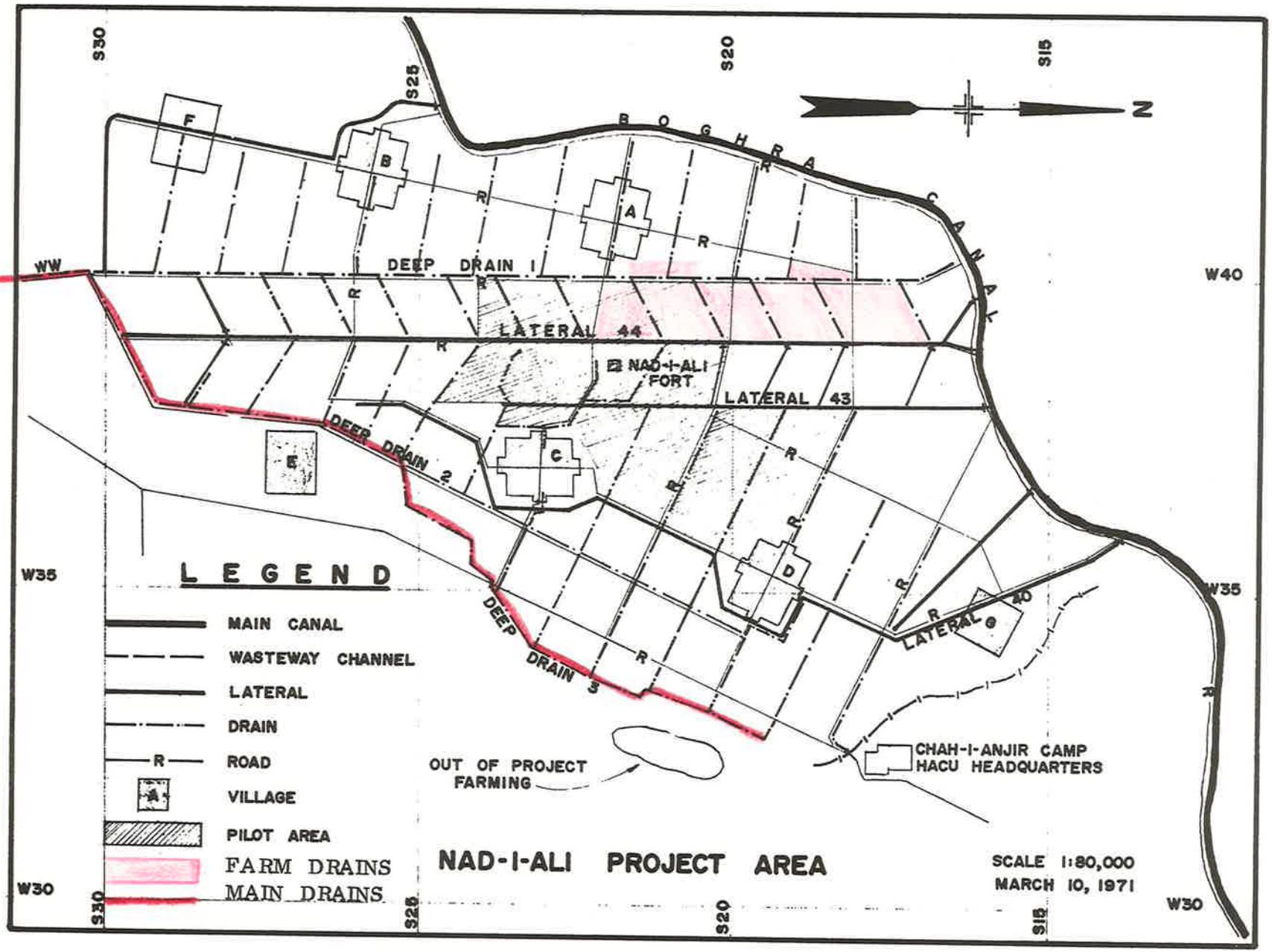
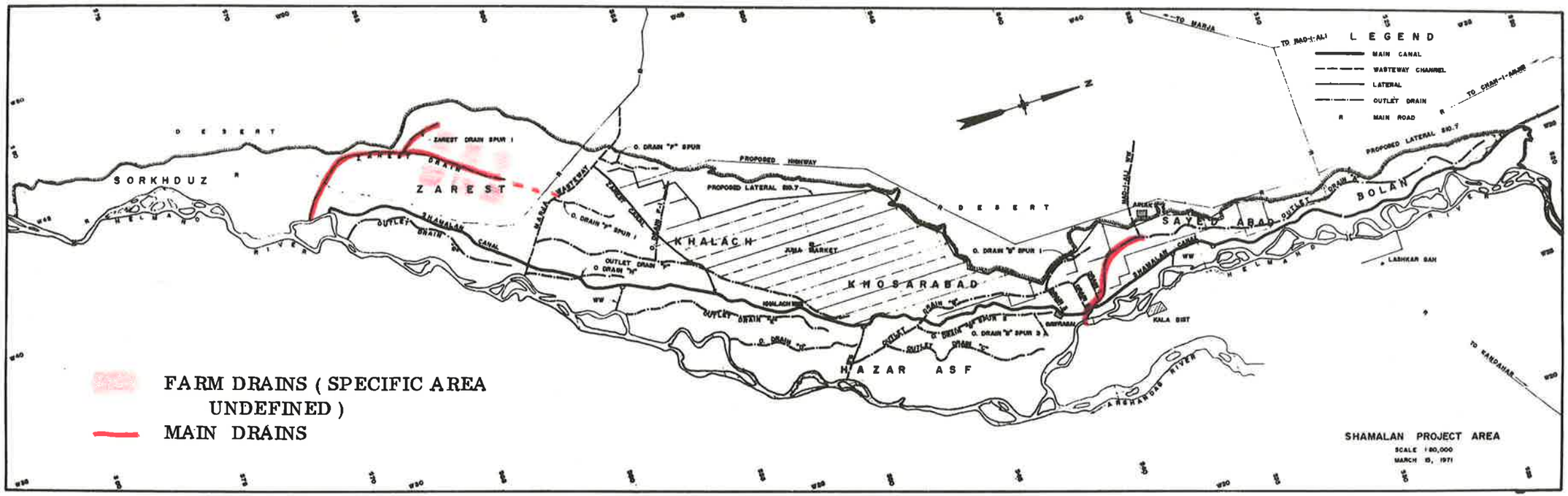
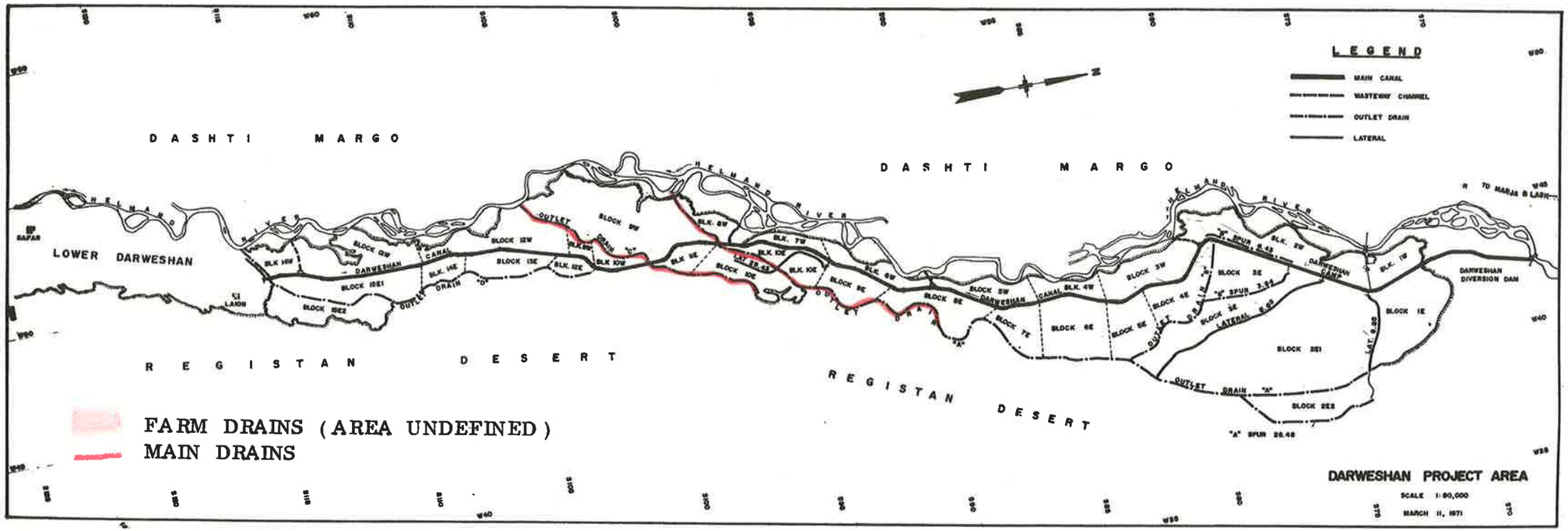
4F
4G
3A
3B
3C
2A
2B
2C
1A
1B
1B1
1C
IIA
IIB
IIC
IID
IIE
ARMY FARMS
SEED INCREASE FARMS
LIVESTOCK FARM
FARM DRAINS
MAIN DRAINS
MARJA PROJECT AREA
SCALE 1:80,000
MARCH 10, 1971


930
925
920
915
N
BOGHRA CANAL
F
B
A
R
WW
DEEP DRAIN 1
W40
LATERAL 44
NAD-I-ALI FORT
LATERAL 43
DEEP DRAIN 2
E
C
D
W35
LEGEND
MAIN CANAL
WASTEWAY CHANNEL
LATERAL
DRAIN
ROAD
VILLAGE
PILOT AREA
FARM DRAINS
MAIN DRAINS
DEEP DRAIN 3
LATERAL 40
G
OUT OF PROJECT FARMING
CHAH-I-ANJIR CAMP
HACU HEADQUARTERS
NAD-I-ALI PROJECT AREA
SCALE 1:80,000
MARCH 10, 1971
W30


LEGEND
MAIN CANAL
WASTEWAY CHANNEL
LATERAL
OUTLET DRAIN
MAIN ROAD
TO MARJA
TO RAD-I-ALI
TO CHAH-I-ANSARI
PROPOSED LATERAL SIO.7
PROPOSED HIGHWAY
DESERT
SORKHDUZ
HELMAND RIVER
ZAREST DRAIN SPUR I
ZAREST DRAIN
ZAREST
MARJA WASTEWAY
ZAREST CANAL
O. DRAIN "F" SPUR
O. DRAIN "F" SPUR I
SHAMALAN OUTLET DRAIN "F"
SHAMALAN CANAL
OUTLET DRAIN "F"
O. DRAIN "F"
KHALACH
JUMA MARKET
KHOSARABAD
O. DRAIN "B" SPUR I
O. DRAIN "B" SPUR 2
O. DRAIN "B" SPUR 3
O. DRAIN "B"
OUTLET DRAIN "B"
HAZAR ASF
ARGHANDAB RIVER
SAYED ABAD
SAYED ABAD OUTLET DRAIN
SHAMALAN CANAL
BOLAN
HELMAND RIVER
LASHKAR GAH
KALA BIST
TO KANDAHAR
FARM DRAINS (SPECIFIC AREA UNDEFINED)
MAIN DRAINS
SHAMALAN PROJECT AREA
SCALE 1:50,000
MARCH 15, 1971


LEGEND
MAIN CANAL
WASTEWAY CHANNEL
OUTLET DRAIN
LATERAL
DASHTI MARGO
DASHTI MARGO
HELMAND RIVER
HELMAND RIVER
LOWER DARWESHAN
REGISTAN DESERT
REGISTAN DESERT
DARWESHAN DIVERSION DAM
DARWESHAN CANAL
OUTLET DRAIN "A"
OUTLET DRAIN "C"
OUTLET DRAIN "D"
"A" SPUR 28.48
FARM DRAINS (AREA UNDEFINED)
MAIN DRAINS
DARWESHAN PROJECT AREA
SCALE 1:50,000
MARCH 11, 1971

C. Social Analysis

1. Calculation of Benefits and Beneficiaries In order to understand the present socio-political situation in the Helmand Valley, the choice of areas made by HAVA in which the requested USAID assisted drainage project is to concentrate, and the importance of this choice for a successful project, the reader must keep in mind the number one government priority of land settlement. This priority was stated first in the early documents justifying HAVA and has been restated and reemphasized since the 1973 change of government in statements by the President. It has also been reflected in actions by HAVA and other regional development projects, e.g., the Russian project in Nangarhar.

There are an estimated 30-35,000 farm families living in the HAVA Region, 5-6,000 of which were settled there over the past 20 years. In the past, land settlement activities have not been particularly impressive (in spite of policy) with an average of less than 300 families settled per year. In some areas such as south Nad-i-Ali, there have been high attrition rates resulting from attempts to settle nomads (who are inexperienced farmers) on marginal land with poor drainage.

In contrast to the past, HAVA figures indicate there have been 3,167 families settled in the region over the past 10 months. Of these the following numbers were settled in areas of present USAID project interest:

Marja	607
Nad-i-Ali	169
Shamalan	217
Darweshan	1,777
Total	2,770 farm families settled

This is an impressive performance by past standards. The facts tend to confirm that the new Government is translating its rhetoric of concern about the landless poor into action.

While the settlers represent nearly every ethnic group in Afghanistan (including Ozbeks, Tajiks, Hazaras, Indians, and numerous Pashtun tribal groups), the dominant ethnic group in the region has been the

Pashtun of the Durrani tribe. Recent field visits suggest that a large proportion of the most recent settlers are also of Pashtun origins. In any case a major fraction of the HAVA population consists of recently settled, formerly landless poor. Moreover, in the areas where drains are most needed the predominance of settled families is much greater than in the project area as a whole.

To estimate the total number of beneficiaries and the amount of the benefit is not a simple task. Improvement of even a segment of a major drain is likely to benefit almost all of a project area. Farm drains are, of course, more area specific. In an effort to make the best possible estimate of beneficiaries we have made map and visual studies on the ground of the areas adjacent to the drains proposed for construction. By estimating the geographic area to be serviced by the drains and combining the results of our ground surveys with the data from the 1970 Farm Economic Survey, we have made some crude (but accurate enough for general planning purposes) estimates of both number of beneficiaries and their general socio/economic class.

Most of the beneficiaries will be relatively poorer farmers, but even in areas where there are some larger landholdings, significant benefits will accrue to the poor from any improvements in productivity. Aside from day laborers who are generally hired only during the seasons of wheat harvest and cotton picking and are a small minority, there are two types of sharecroppers: the buzgar and the kashtagar.

The buzgar is a sharecropper who generally contributes his labor only, makes no farming decisions about the crop and is supervised by the landowner. He receives 1/5 of the crop produced. For the cotton harvest his share will increase depending on the amounts he picks. In any case his income increases more or less in direct proportion to productivity increases.

The kashtagar generally contributes his labor, animal power for plowing, and seed, and he is involved in farming decisions on crops. He receives about one-half of the total crop produced. When fertilizer is used, the tenant will generally be involved in a share of the cost. But again the important point is that a 20 percent increase in production due to better drainage will mean a 20 percent increase in the kashtagar's share.

Within these general bounds the range of sharecrop agreements are many. Some buzgars, for example, may increase their share in the crop by the addition of the use of their own oxen for plowing, if they have any. Some of the larger landowners who own tractors cut their labor costs through mechanization. Some small landowners work as share-croppers on others' land while also working their own. And many small landowners in the long established settled areas like Nad-i-Ali and Marja use the buzgar type arrangement for farm labor.

The use of sharecropper labor on relatively small holdings probably relates more to cultural values than to some kind of "economic man" orientation. It would be simple to overstate the case, but the values have to do with being a landowner, reaching an age when leisure time has status considerations, and an economic situation which allows such freedom even though that economic status is extremely low by Western standards. A widow will also commonly sharecrop her land until her children are old enough to work.

The important point to be made, relating to land development under the proposed AID-supported project, is that the payment of tenants is on a percent of the crop basis. An increase in yields will thus benefit the tenant as well as the landowner.

2. Beneficiaries by Area With this background, we have made the following estimates for areas to be affected by the Phase I project.

Darweshan -- It is estimated that the construction of all the drains planned for the Darweshan area in Phase I will improve production, in varying degrees, on about 15,000 jeribs of land. The land is classed by HAVA as follows:

Private Land	-	3,610 jeribs (2jeribs = 1 acre)
Government land mostly settled	-	8,447 jeribs
Government land not settled *	-	3,244 jeribs
Total		15,301

*This includes 2,694 settleable but needing drainage and 500 jeribs of class six, not irrigable.

Some of this area will only receive marginal benefits from the improved drainage.

The Darweshan area is said to have the highest density of settlement per unit of land in the HAVA region with each family being given 12 jeribs or 2.3 hectares.

The on-farm drains to be constructed in Phase I will benefit only about 120 hectares (620 jeribs) of this or, at the rate of 2.32 hectares (12 jeribs) per farm, about 52 families. If average family size of the Nad-i-Ali settlement groups is used, 8.7 persons, the total settlers benefiting would be 450.

According to the 1970 Farm Economic Survey (FES), the average farm size for Darweshan is about 39 jeribs (7.5 hectares), considerably larger than areas to the north and much larger than the present 12 jeribs (2.32 hectares) for settlers. The FES average is no doubt boosted by the presence of some khans in the area. The estimate of numbers benefited in Darweshan is based on the recently settled population since their land is most in need of drainage. The use of buzgars or sharecroppers among the settlers should be minimal. A weighted average between settlers and indigenous populations would make farm size about 4 hectares, 30 families and perhaps 240 people.

The settlers include some 85 Ozbek families, at least 20 Hazara families, perhaps 20 Shinwar Pashtun families (from the Jalalabad area), and a large number of Achakzai Pashtun families. The indigenous population includes, at least, Sayed, Nurzai, Karkar, Alizai, and Baluch families. These numbers and tribal names are the result of a superficial field visit, subject to future correction. At least 90 percent (1,020 of 1,120 families) of these potential beneficiaries are from the poorest classes. The benefits will vary from very little to considerable, depending on current salinization and proximity to the proposed drains. At this time we have no reason to believe that benefits would in any way be biased toward the better off classes.

Zarist-Shamalan -- This is an area with major drainage problems complicated by seepage from the Marja wasteway. The on-farm drains are to be constructed on undeveloped land to which 150 families have only recently been assigned. They have not yet moved into the area, but because of poor land quality have been given 20 jeribs per family. Only about 100 hectares (516.5 jeribs) will be drained by on-farm drains during Phase I. This means that about 26 families or 224 people will benefit by on-farm drain construction, using the settler rate of 8.6 persons per family.

In the immediate area of the on-farm drain construction, there are 52 other settler families that will benefit from the upgrading of the major drain along which the settlers live. They are of the Alikozai, Alizai, and Wazir Pashtun tribes and have been there between 5 and 8 years.

Considering the general poor appearance of the area and recentness of settlement, a significant number of sharecroppers should not be expected. It is likely that the farmers in the area will not only welcome the drainage work (they stated the urgent need) but probably will also welcome the needed income earned from working on the project. It seems likely that if the on-farm drainage work is an obvious success, the older settlers would become more directly involved.

The work on major drains below this settlement area and also in the Aynak area of central Shamalan will benefit a larger number of farmers, but an estimate at this time could be no more than a guess since settlement patterns of the indigenous populations, mostly Popalzai and Barakzai Pashtuns, are not homogenous and time was not available to do a detailed study.

In any case a major share of those benefited will be recently settled farmers who up to now have been landless tenants and laborers in other parts of Afghanistan.

Marja -- The on-farm drains will be constructed in an older settlement area, i.e., settled over the past 20 years. The work will directly affect about 180 hectares of land, about 35 families on farms averaging 5 hectares, or about 300 people. An additional 35 families might be added as involved sharecroppers. The exact numbers of such families are unknown but the FES estimates just under one buzgar per family farm.

The more entrenched of the 120 landowning families have probably, by Afghan standards, moved upward from the poorest category since their settlement on these relatively large farms, but none will be considered as more than lower middle-sized landowners. The estimated 120 sharecroppers will be among the poorest in all likelihood. Large landowners will not occur in this area.

Work on the major drain selected for improvement will affect a larger body of people including many new settlers. The drain is one that in the past marked the outer limits of the project lands, but within

the past 2-4 years new settlers of the Wardak, Suleiman Khel, and Nurzai Pashtun tribes have been located on the desert side of the drain and face major drainage problems. These groups will not only be available for recruitment to work on the on-farm drains (direct benefits) but the exercise will likely stimulate further drainage work on their own farms.

Nad-i-Ali -- The on-farm drains in this area will affect about 240 hectares or about 52 families with farms averaging 4.6 hectares of cropland. This means about 452 people are to be benefited. They were settled in the area 23 years ago according to HAVA. Again, the numbers of people to benefit might be doubled given the presence of buzgars in the long-term settled areas and the class of beneficiaries will be about the same as cited in the Marja case.

The major drain work is in an area also with similar characteristics to those described for Marja, except that the "new" settlers have been there 5-10 years.

In Nad-i-Ali and to some extent Marja, there will likely be problems recruiting a labor force to work on on-farm drains outside the winter slack season. There does not appear to be a surplus of labor in the immediate area but, with reasonable pay, workers can no doubt be recruited from outside. As noted, many new settlers will likely make a recruitment pool of persons badly needing a source of income until they can start earning from their own harvests.

Labor Force

Also, unlike minimally developed areas in Zarist and Darweshan, the Nad-i-Ali-Marja area may present some difficulties in farmers' cooperation with on-farm drain construction. In parts of these areas the farmers will no doubt define their production yields as satisfactory and be slow in agreeing to construction and the resulting loss of field area despite the needs of their neighbors farther from existing drains and need to desalinize their fields.

non-cooperation

As a caution, in some areas of Nad-i-Ali and Marja, the frequency of tractors and the size of Kala (housing) gives the impression of considerable wealth. The question is, given the settlement patterns of the areas (24-28 jeribs per farm), what do these items reflect? While more detailed study would be useful, a few cases suggest that at the time of settlement sons as well as fathers applied for and received an

wealth

allotment of land which is now worked as an extended family. The distribution of wealth within such units is not known but, if the family is organized on the traditional pattern, the father is the patriarch and incomes are pooled under his control. Major decisions for the unit are his. The frequency of such arrangements is not known. Such exceptions will not significantly change the predominant pattern of lower middle to poorest class beneficiaries as far as we can determine at this time.

3. Total Beneficiaries It would appear from our current knowledge, which is reasonably good, that the vast majority (a minimum of 80 to 90 percent) of beneficiaries in Phase I will be either from the poorest or lower middle class elements with very few large landowners receiving benefits. Phase I construction has been oriented toward those areas where the social needs are the greatest, that is the areas inhabited in considerable measure by settlers. Such selection gives very favorable results in terms of social criteria. Field drain construction in Phase I will give large direct benefits to about 2,200 to 2,500 people. Improvements of major drains will cause smaller benefits to accrue to several times that number of people.

In Phase II, if it is undertaken, we cannot expect to have as high a preponderance of benefits going to those most in need, although the total beneficiaries will be many times as high. Nonetheless, the 1970 Farm Economic Survey does document that there are relatively few large landowners in the four project areas. Before submitting a formal proposal on Phase II, we will, as noted in Section II, provide a more thorough analysis of expected beneficiaries.

4. Special Comments: The Role of Khans in Project Areas The Khan, or large landowner, in the Helmand generally is the holder of political power and controls resources (land and water) in a particular area, around which a village is organized. The village will be referred to by the khan's name. The residents generally will be the khan's sharecroppers, farm laborers, servants, relatives, or individuals with some other political tie. In some cases, the Khan will be the administratively recognized village headman or malik. If he does not fill the role himself, one of his political subordinates will. In some cases, the khan will be the mirab or watermaster who controls the irrigation water distribution usually for an area larger than one village. If a khan does not fill the mirab role, he will have a major voice in mirab selection.

Under such a structure, the system of patronage for sharecroppers, farm laborers and other small landowners in the area may be highly developed and complex, being the basis for local political affiliation. The patron has the responsibility to look after the interests of those who work for and politically support him. The ideal qualities of a patron, as landowner or khan, are roughly the same as for a governor, e.g., generous, moral, empathetic.

A khan has obligations to those who support him, but he also has broader obligations to the community since he is a man with worldly goods. Ideally, he will be pious and in the name of religion will perform religiously-defined good or pious acts (sawab) for the benefit of the community as a whole or for needy individuals, e.g., build a mosque, fountain, or some other community facility, aid the poor and destitute, support the mosque perhaps with firewood, or pay a lion's share of the expenses for maintaining the community prayer leader, or mullah.

It should be noted that in the Helmand the stereotype of the conservative village leadership (the khan) blocking development does not hold true. The leaders in farm mechanization, adopting high-yielding varieties of grain and fertilizer, and land development have generally been the khans.

The patterns of social organization outlined above are found mainly in the old, indigenously settled areas predating HAVA development and do not generally apply to the recently settled areas like Nad-i-Ali and Marja. This is not to suggest in these areas that after 20 years of settlement major differences in status and wealth among the settlers are absent. Since the pattern of settlement was based on group applications, it is likely that group leaders-spokesmen and household heads with numerous grown or nearly grown sons began with some status, if not economic, advantage. With land distribution shares limited to 12-30 jeribs per household head, (depending on quality of land, area, and rules in effect at the time of settlement) the chance of accumulating large plots under one individual were limited, one exception being the head of an extended household where the sons also had been alloted land. In short, there will be power figures present in settled areas but generally power will be much more disbursed or fragmented than is the case in the southern regions of Helmand, for example.

In areas like Zarist and Darweshan where the lands surrounding a settlement area may come under the influence of a local khan and where the systems of water distribution also may be influenced, the role should

be carefully studied in baseline enquiries, and monitored as the project develops.

Based on available information and observation, and given the specific areas identified for work by HAVA, there do not appear to be any major problems for project implementation that relate to the role of khan in the first two phases.

D. Economic Analysis

The internal rate of return computed for this project is 40 percent. Even if costs exceed estimates by 30 percent and benefits are overestimated by 30 percent, the rate of return is computed at 25 percent annually. The benefit cost ratio is 2.68:1 when using a discount rate of 15 percent. All costs that could reasonably be attributed to the project were included but only direct benefits were used in the calculations.

1. Area to be Drained Under this project, 70 kilometers of farm drains are to be constructed and 50 kilometers of main drains are to be renovated. The spacing of the farm drains, the kilometers to be constructed and the area to be drained are shown immediately below:

	Farm Drains			
Project Area	Spacing (Meters)	To be constructed (Kms)	Area drained per km (HA)	Total area drained (HA)
Nad-i-Ali	80	30	8	240
Marja	90	20	9	180
Shamalan	100	10	10	100
Darweshan	120	10	12	120
Totals		70		640

The main drains are spaced approximately one kilometer apart and would service 100 hectares per kilometer of main drain for a total of 5,000 hectares.

2. Benefits from Farm Drains

Project Area -- Total cropland on which farm drains are to be constructed amounts to about 640 hectares. All cropland in Nad-i-Ali and Marja on which farm drains are to be constructed is currently under cultivation. Thirty-three percent of land affected by drains in Darweshan is under cultivation, but none of the area in Shamalan is cultivated.

Project Area	Number of Farms	Cropland/Farm Average, HA	Total HA	Now Cropped %	Now Cropped HA
Nad-i-Ali	52	4.6	240	100	240
Marja	35	5.2	180	100	180
Shamalan	26	3.9	100	0	0
Darweshan	30	4.0	120	33	40
Total	143	4.48	640	72	460

Cropping Pattern, Production and Economic Value of Production -- The current cropping pattern in the project area as shown below is based upon observation and HAVA records. The proportion of land planted to cotton has increased sharply over the past 2-3 years. The yields shown immediately below are based upon the research and records of HAVA.

Crop	% of Cropland	HA	Yield Mt/HA	Production MT	Gross Unit Value($/MT)	Total Value $1000
Wheat	33	152	1.66	252	200	50.5
Cotton	38	175	0.80	140	550	77.0
Fruit	14	64	4.00	256	125	32.0
Melons	5	23	5.00	115	22	2.5
Misc	10	46	8.00	368	32	11.8
Total	100	460		1131		173.8
Corn Equiv	10	46	1.20	55	55	3.0
Total	110	506		1186		176.8

For the following reasons, the world commodity price, plus transportation costs to Afghanistan was used for wheat. There is an export ban on wheat and wheat importation is conducted by the State. Afghanistan will not be exporting wheat in the future, but it is highly likely that it will be importing occasionally. Wheat is valued at $200/MT. It is assumed that internal distribution costs would be the same for domestically produced wheat as for imported wheat.

The market for cotton is also a controlled one -- the price to farmers is fixed by the Government. The appropriate price at which to value cotton would seem to be the world farmgate price, approximately $550/MT for seed cotton. The markets for fruits and melons are essentially free. The fruits of the project area are composed mainly of grapes and pomegranates which have approximately the same price. The appropriate price would seem to be the farmgate price. The farmgate price was converted at the rate of afs 60/US$ 1.00.

The miscellaneous item in the above Table is composed mainly of vegetables and some legumes. The farmer price was used for this item.

The market for corn is internal and free. A negligible amount is imported and little or none is exported. The price used is the farmer price.

Yields and Production Attributable to the Farm Drain Project -- The increases in yields that are projected to arise from this project are based in large part on HAVA records of yields on land of varying degrees of salinity and waterlogging in HAV. The yields are based to some extent, however, on the general literature dealing with the subject. It is assumed that the yield response to drainage will be slower on the land that is not now under cultivation than it will be for land now under cultivation.

It is estimated that only 10 percent of the (farm drain) project cropland now under cultivation is double-cropped. As a direct result of the project, it is expected that the area double-cropped will increase from 10 percent to 36 percent of cropland, more in line with the average of the Valley.

No benefits are projected in the first year of the project when the drains are being constructed. While it is expected that the drains will be maintained, production projections are made on the assumption that they will not be. Production projections for the 460 ha of cropland now under cultivation are:

Crop	Year 1	Year 2	Year 3	Year 4
Wheat	252	313	374	435
Cotton	140	181	222	263
Fruit	256	336	417	497
Melons	115	140	166	191
Misc	368	423	479	534
Total	1131	1393	1658	1920
Corn Equiv.	55	183	387	664
Total	1186	1576	2045	2584

Year 1 is the year during which the drain construction would take place. After Year 4, production is projected to be level. The item, "Corn equivalent" is projected production from double cropping. On these production estimates, the gross value of farm production would be:

	Year 1	Year 2	Year 3	Year 4
Gross Value of Production ($ 1000's)	176.7	230.8	289.3	351.6

Economic Value of Output -- Studies suggest that costs may increase by as much as 15 percent of the increase in gross output under situations similar to the above. Here, it is assumed that 15 percent is a fair estimate of the economic costs associated with the increased output. Farmers in the project area use commercial fertilizer on wheat, cotton, and corn. While the crops do not respond well, the use of fertilizer is still economic and generally required to produce the output that currently prevails. It is assumed that fertilizer application rates will continue at the present level. Using 15 percent of the increase in the value of farm output as the increase in costs, the "net" increase in the value of farm output would be in $1000's:

Year	Gross Value of Output	Increase in Value of Output	Increase in Costs	Net Increase in value of Output
1	177	0	0	0
2	231	54	8	46
3	289	112	17	95
4	352	175	26	149

The values of Year 4 are assumed to remain constant through Year 12 and then begin to decline owning to a deterioration of the drains (an assumption made to be conservative). It is assumed also that the project will have no effect upon the livestock enterprises of the Valley. Relative prices are assumed to be constant throughout.

Drains for Land Not Now Cultivated -- There are 180 hectares of land that are not now cultivated because of generally swampy, salted conditions but which land is to be drained and settled. There are less data on which to base estimates in this case than for the above case where land is already under cultivation. The production estimates are accordingly more speculative. The cropping pattern for new land likely will be different from that on old, with more wheat and less fruits. For the first several years, the pattern is assumed to be the following with corn, mung beans, or cotton being the second crop of a double cropping scheme:

Crop	Percent
wheat	55
cotton	30
melons	5
misc.	10

Production increases are likely to be slower than for the case where land is already under cultivation. In the absence of anything better, it will be assumed that in the first two years after the drains are dug, the additional benefits will be equal to the cost of production for no net benefits. By the third year, yields will be at about the level that they now are on the land that is cultivated but which is to be drained under this project. Crop yields will then grow linearly until they reach (in Year 8) approximately the level that the drained cultivated land is projected to reach in Year 4. For lack of a better estimate, it will be assumed that 60 percent of the gross value of the output in Year 4 is a net addition to the economy's output. It is assumed that costs, including fertilizer costs,[1/] after Year 4 will increase by 20 percent of the increase in output until Year 8 is reached at which time yields and double cropping will level off. On the assumptions, the following net production values are obtained:

Year	Net Value of Production	Year	Net Value of Production
1	0	5	$ 50,000
2	0	6	62,000
3	0	7	74,000
4	$ 39,000	8	86,000

Benefits from Main Drain Rehabilitation -- In addition to the 70 kms of farm drains to be constructed, 50 kms of main drains are to be renovated under this project. It is estimated that the main drains will service in varying degrees 4,400 hectares of irrigated cropland in addition to the 640 hectares on which farm drains are to be constructed. The main drains will be deepened. This will lower the water table (and salt concentration) of the cropland serviced

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1/ It is difficult to know how to value fertilizer. Afghanistan imports diammonium phosphate (DAP) but produces urea domestically. It plans to export urea but will have to continue to import phosphatic fertilizer. The domestic price of domestically-manufactured urea is $135/MT but the GOA expects to receive perhaps $300/MT FOB for urea exports. The delivered cost of DAP is now about $450/MT. The world fertilizer market is very imperfect. If anything, the $300/MT is high.

by the main drains and consequently have a salutory effect upon the land's productivity. It has been estimated that the renovation of the main drains will increase the productivity of the 4,400 hectares serviced by the drains by a minimum of 20 percent over a three-year period.

The estimates of the cropping pattern, yield production and value of production on the 4,400 ha are:

Crop	% of Cropland	HA	Yield (MT/HA)	Production (MT)	Value of Production ($1,000)
Wheat	38	1,672	2.6	4,347	869
Cotton	33	1,452	1.7	2,468	1,358
Fruits	14	616	6.8	4,189	524
Melons	5	220	7.2	1,584	35
Misc	10	440	10.2	4,488	144
Total	100	4,400		17,076	2,930
Corn Equiv.	30	1,320	3.1	4,092	225
Total	130	5,720		21,168	3,155

On the assumption that the increase in economic costs would be 15 percent of the increase in the gross value of production, the net increase in the value of production attributable to the renovation of main drains would be:

Year	Net Increase in Value of Production $1,000)
1	0
2	179
3	358
4	537

3. Economic Costs

Labor for Digging Farm Drains -- The farm drains are to be hand dug. One worker can excavate one cubic meter of dirt per day. Since there is an average of 3.9 cubic meters of dirt per running meter of drain, it would require approximately four man-days of labor to dig a meter of farm drain. The project calls for 70,000 meters of farm drains to be constructed. This would require 280,000 man-days of labor or an average of 1958 days per farm.

Project Area	Meters	Man-Days of Labor	Number of Farms	Average Days Per Farm
Nad-i-Ali	30,000	120,000	52	2,308
Marja	20,000	80,000	35	2,286
Shamalan	10,000	40,000	16	1,538
Darweshan	10,000	40,000	30	1,333
Total	70,000	280,000	143	1,958

The slack periods during the year are mid-December to mid-March (three months) and some of August and September (1.5 months), a total of 4.5 months, or about 90 working days. It is safe to assume that there are two able-bodied members per household capable of digging drains. These two members could provide only 180 of the 1,958 days required, per farm, on the average, to dig farm drains and there would be a need to hire 1,778 more days of labor. It is assumed that, were they not digging drains, farmers would be doing constructive work on their farms during two-thirds of the slack period time. Such work, when valued at the consumption level of farmers, would be worth about afs 40 per worker per work day in rural areas, with two wage earners per family and a family size of 9. That is to say, the opportunity cost of farmers digging drains on their own farms would be: 2/3 x 180 days x afs 40/day = afs 4,800 per farm or afs 0.69 million or $11,440 for all 143 farms on which farm drains are to be constructed.

An additional 1778 days of labor would be required per farm. Laborers would probably have to be paid afs 45 per day for an average per farm total of afs 80,000 which is more than a year's gross income for the average project farmer. The total labor bill for all farms would be afs 11.44 million

($191,000). However, if one asks the question, what output would society have to forego if this much labor was used to dig farm drains, the answer is probably next to nothing. The labor (850 man-years) may not now be available in the Valley, but if the estimates of the unemployment and underemployment for the country have any validity at all, labor now unemployed would be available. We will accordingly place economic costs at one-fourth of the financial costs of the labor needed to dig the drains. On these estimates, the economic costs of the labor required to construct 70,000 meters of farm drains would be:

	afs million	dollars
For owners, operators, tenants	0.69	11,440
For hired labor	2.86	47,667
Total	3.55	59,107

Adding 35 percent for contingencies[1/] gives a total of approximately $80,000.

The implementation schedule is :

		Farm Drains to be Constructed	Average Man-Days Per Farm Required
By	11/15/75	20 km	560
	11/15/75 - 2/15/76	20 km	560
	2/15/76 - 6/30/76	30 km	840
	Total	70 km	1,960

Cost of Renovating Main Drains -- The direct cost of renovating main drains has been estimated at $3,894 per km for a total cost for 50 kms of $194,700. This latter figure includes $32,450 for contingencies. There is no breakdown

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1/ If a substantial part of drain construction is done during the peak of agricultural activity, the wage rate for laborers may be more than afs 45 per day and economic costs may be understated.

of the costs with respect to labor, depreciation, fuel, etc. The cost estimate of $194,700 will accordingly be used as the direct economic cost of renovating 50 km of main drains.

Other Costs -- All costs to be incurred by the project will be assigned to the project (but costs will not be double counted -- e.g., fixed cost reimbursement will not be included). The U.S. will contribute $448,000 in personnel, $35,000 for inspection, and $300,000 in commodities. It is estimated that the project will require the services of 90 Afghans in administrative, planning, and technical areas. The average wage would be afs 35,000 annually for a total of afs 3.15 million or $52,500. Support facilities -- e.g., transportation, office space, etc. -- for this staff is estimated to be 100 percent of salaries. After the second year, project personnel is expected to fall rapidly reaching a level of 17-20 people.

4. Net Benefits On the foregoing estimates, the benefit-cost ratio is 2.68:1 when a discount rate of 15 percent is used. This latter figure is perhaps a fair approximation of the social cost of capital in Afghanistan. As is shown in the following Table, the internal rate of return is slightly greater than 40 percent. Even if costs were to over-run by 30 percent and benefits were overestimated by 30 percent, the internal rate of return would be 25 percent annually.

One should expect fairly high returns on this project, for it utilizes infrastructure put in place in the past. The project does not have to bear any of the (sunk) costs which was incurred in the past to construct dams, water control structures, irrigation canals and main drains, but which the project will utilize. Furthermore, the benefits of the project will begin flowing shortly after the project commences. For the main drains, it is mainly a matter of deepening existing ones, not constructing new ones. And for the farm drains, land will not have to be taken out of production while the drains are being constructed.

Undiscounted and Discounted Economic Benefits & Costs ($ 1000's)

	Undiscounted			Net Benefits Discounted at 40%	Discounted at 15%		Net Benefits Discounted at 25% with benefits overestimated by 30% and a cost over-run of 30%
	Benefits	Costs	Net Benefits		Benefits	Costs	
1	0	1,163	-1,163	-831	0	1,011	-1,210
2	225	105	120	61	170	79	23
3	453	20	433	158	298	13	165
4	725	20	705	184	415	11	218
5	736	20	716	133	366	10	177
6	748	20	728	97	323	9	144
7	760	20	740	70	286	8	117
8	772	20	752	51	252	7	95
9	772	20	752	36	219	6	76
10	772	20	752	26	191	5	61
11	772	20	752	19	166	4	49
12	772	20	752	13	144	4	39
13	675	20	655	8	110	3	27
14	579	20	559	5	82	3	18
15	483	20	463	3	59	2	12
16	386	20	366	2	41	2	8
17	290	20	270	1	27	2	4
18	193	20	173	0	16	2	2
19	97	20	77	0	7	1	1
20	0	20	-20	0	0	1	0
TOTAL				36	3,172	1,183	26

Benefit Cost Ratio = 2.68:1

E. Financial Analysis

1. Past Experiences HAVA does not have a source of funds independent of those approved and allocated to it by the central Government. For many years AID has been urging HAVA to obtain an independent source of revenue, especially emphasizing the need to finance operations and maintenance at a level which would at least prevent a deterioration in the irrigation system. This recommendation, viewed as undesirable by the Afghans, has been something of a sore point. However, the funds allocated to HAVA have never been sufficient to make possible a really adequate level of maintenance for equipment and system. The problem of an inadequate budget has not of course been unique to HAVA; on the contrary, it has been the typical situation throughout the country. Furthermore, Governors of other provinces have pointed out that they viewed Government resources going into the Valley as disproportionately large. Budgets large enough to provide the wherewithal to properly maintain HAVR irrigation systems were not, it seems, politically possible. There was the matter of equity.

In this environment, past developmental efforts in the Valley have resulted in substantial benefits accruing to the rural residents. Yet these recipients have had to contribute little on a direct basis to funding the cost of providing these benefits.

Self-Financed Agency, American View -- : The American view has been that, both in an equity/justice and efficiency sense, the HAVA should finance its operations by generating revenues from the beneficiaries of the services it, HAVA, provides.

Thus, it has been argued that the farmers should pay a fair value for the water they use, since the water creates a wealth for the farmers and since someone must pay for the construction and maintenance of the system for delivering this water. This would be a just charge for direct services received. It has also been argued that a charge based on quantity of a scarce resource, water, would contribute to the more efficient use of that resource. By imposing water use charges HAVA could in a just manner help to solve its problem of inadequate operational funds as well as contribute to improved water use efficiency. If not direct charges based on quantity of water used, there should at least be some fixed fee or tax annually levied on irrigated land to provide the needed HAVA revenues.

Afghan View -- A water charge based on quantity, of course, implies difficult administration problems, not the least of which is measuring the volume of water used. Aside from this difficulty, a water use charge is an alien concept

to Afghan farmers generally and seems to be in conflict with popular interpretations of the Koran to which there is no higher recourse. But, special assessments could be made on land to help defray the cost of constructing, renovating, and maintaining communal or major drains, canals, and water control structures. This would be acceptable on religious grounds and apparently is also now legal. President Daoud signed a decree on July 23, 1974, which permits the Government to recover the costs of developing and maintaining irrigation systems from the owners of the irrigated land. And in 1974, HAVA officials did prepare a plan which would, if approved by the GOA, permit HAVA to levy such charges with the proceeds from the levy to go directly to HAVA -- the proceeds not having to be remitted to the Central Government and their utilization not having to be approved by the GOA. This plan was submitted to Kabul for approval. Apparently no action has been taken to approve the plan. Our judgment is that it is unlikely that the scheme will be approved. Generally, our experience is that the Government is rather inclined to avoid charging for its services perhaps because of an awareness of its limited ability to implement forcefully and administer effectively unpopular charges for services. This reluctance is not restricted to services performed by HAVA.

2. Current Assessment Charges for Government services conflict with various cultural attitudes. Imposition of an American bias toward direct charge for services is not likely to occur, much less be palatable.

It would appear, then, that HAVA will have to continue to rely upon appropriations from the Central Government. This is not all bad when viewed objectively. Over the past 3 - 4 years, there has been a sharp increase in the fiscal effort of the Government and the effort is continuing, perhaps accelerating, this Afghan year 1354. Thus, the resources available to the Government are increasing sharply and the amounts that will be budgeted to HAVA could easily increase accordingly, especially if HAVA performs well. 1/ The Government is anxious to make a positive economic impact on the people that the people can perceive. It is true that increasing HAVA's budget will not address the problem of directly recovering public investment from the major beneficiaries of the investment. While land tax rates will undoubtedly be increased sometime in the not too distant future, the tax now yields next to nothing, slightly more than the tobacco tax and one percent of the total Government revenue generated internally. Special assessments, or something similar, will also be imposed

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1/ The Planning Ministry asserts that this is the case.

some time in the future, but significant revenues from this source may be further away. The Government will thus not recover its investments in the Valley directly from the major beneficiaries. But indirectly, the recovery may be significant. This we will look at later, but first we will return to the Government's fiscal effort.

3. Government Fiscal Effort As noted, there has been a marked increase in the Government's fiscal effort over the past few years and that this effort appears to have accelerated in 1975. Domestic revenue rose by an estimated 27 percent in 1974/75 after a 16 percent increase in the prior year. T he 1354 State Budget forecasts domestic revenue rising by 36 percent in 1975/76 over the estimated actual of 1974/75. While this increase may not fully materialize, we expect a sharp increase of 25 percent or more. The year-to-year growth rates in domestic revenues are:

	Percent Increase from Prior Year				
				Estimated	Budgeted
	1971/72	1972/73	1973/74	1974/75	1975/76
Domestic Revenue	2	5	16	27	36

The surplus in the current budget (i.e., domestic revenue less ordinary expenditures was up sharply in 1974/75 even though ordinary expenditures were up by 16 percent. Thus:

	Actual			Estimated	Budgeted
	1971/72	1972/73	1973/74	1974/75	1975/76
Domestic Revenue	5,821	6,111	7,071	8,947	12,152
Ordinary Expenditure	5,450	5,656	6,531	7,550	9,855
Current Surplus	371	455	540	1,397	2,297

Thus, with the new Government and its greater willingness to collect fees and taxes, public resources are markedly greater than in past years. At the same time, the Government has increased its authority on how public resources are to be allocated. With increased public resources, HAVA budgets can be increased to be more in line with real needs. One of the arguments, increased funds, for advocating direct HAVA financing is less valid given this new central Government's revenue situation. The second argument of paying directly for services received is not, as noted, particularly powerful with the Afghans. They view as attractive their approach of taxing the more developed sectors of the

economy with indirect (export and import) taxes and then using the revenues generated to fund development activities for the rural poor.

4. Source of Revenues to Cover HAVA Budgetary Needs As noted, there is expected to be very little recovery directly by the Government of its investment in the drainage project. Some taxes should begin to be paid on land which was not previously taxed. Some land is expected to move into higher tax rates -- from class 3 to class 2 and from class 2 to class 1. Given the low tax rates, however, land tax receipts in the HAV will probably increase by a maximum of afs 120,000 ($2000) annually.

The major sources of domestically generated central Government revenues are the various export and import taxes. Particularly, import taxes are borne heavily by the modernized/urban, i.e., better off, sectors of the economy. Export taxes are levied largely on farm products. To the extent they are borne by Afghan farmers they fall disproportionately, and significantly so, on the larger commercial farmers. The revenue-generating structure of the central Government is such that the subsistence farmers contribute very little.

Consequently, the GOA's propensity to rely on central Government funding of development projects aimed at the rural poor gives, in effect, a wealth re-distribution from upper to lower classes. It isn't, by U.S. values, an efficient way of proceeding. Nonetheless, there is an element of consistency with our legislatively instructed concern with the wealth distribution consequences of development actions.

For these reasons, although there is much to be said for HAV directly generating revenues, it does not seem appropriate to discard as completely invalid the Afghans' solution to the problem of revenue generation.

5. Project Contributions to Central Government Revenues Two of the commodities produced in the project area and whose production will be affected by the project are subject to an export tax -- cotton and raisins.

As of March 1, 1974, the Government imposed an export tax on cotton, oilseeds, walnuts, and raisins to tax away windfall profits accruing to exporters due to high world commodity prices. The foreign exchange received is to be converted to the current effective exchange rates at the banks or at the bazaar and the export taxes are imposed on the afghani receipts at the Da Afghanistan Bank in the case of cotton, or at the commercial banks or the customs office at the border in the case of oilseeds, walnuts and raisins. The export tax on cotton is equivalent to the receipts in excess of afs 51,472 per ton for multilateral exports and to the receipts in excess of afs 46,222 per ton for bilateral

exports. The tax on raisins is 10 percent of the proceeds in excess of afs 30,000 per ton for uncleaned raisins and afs 35,000 per ton for cleaned raisins. The tax is collected when the foreign exchange is converted at the banks and is credited to the special account of the Government. These taxes were initially imposed for a period of six months. The taxes are still in effect and are likely to continue to be so although their yield will be lower due mainly to lower world cotton prices.

Over the 20-year economic life assumed for the Phase I project, it is estimated that an additional 10,400 MT of seed cotton will be produced in the project area. 1/ This would yield 3470 MT of lint cotton. Afghanistan exports most of its cotton to the USSR. If it is assumed that all the 3470 MT of lint cotton would be exported to the USSR at the present export price of about $900/MT, the revenue from the export tax (all proceeds in excess of afs 46,222 per ton) would amount to $450,000.

It is estimated that the increase in grape production due to the project over the 20-year economic life of the project would be 12,600 MT which if 75 percent were dried and exported, the tax receipts would be about $110,000.

Over the past five years, for every dollar increase in export earnings, commercial import expenditures increased by 85 cents. And for every dollar's worth of commercial imports, revenue from customs duties averaged over 34 cents during the past two years. The increased export of cotton and raisins referred to above would have earned FOB $5.5 million over the 20-year economic life of the project. If the past relations hold, the export increase would be associated with a $4.7 increase in commercial imports and an increase in Government revenue from customs duties of $1.6 million.

There would be project-induced exports other than cotton and raisins. Cottonseed cake and melons are exported as are pomegranates and other fruits such as peaches, apples, and apricots. Some vegetables are also exported. There would be other public revenue generated by the project because of secondary increases in income. T here would be a multiplier effect which would increase nonfarm personal incomes from increased employment and increased

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1/ The 10,400 MT increase is based on the assumption that production in the project area would continue, in the absence of the project, at the same level as during the year when construction of the drains began. If, however, increased salting of the soil would continue without project, then, the 10,400 MT understates the production increase.

business activity. Consequently, receipts from direct taxes -- personal and business income tax receipts -- should rise. The net revenue of some Government enterprises should also increase.

The above would seem to account for the major sources of increased revenue that would be generated by the project. The increased revenue could easily total $3 million over the assumed economic life of the project, clearly more than ample to recover all project costs incurred by both the Government of Afghanistan and the U. S.

The project, too, would create additional indirect costs for the GOA. It seems clear, however, that the increased costs would be minor compared to the additional revenue. Given the tax system of the country which relies heavily upon taxes on foreign trade, if the project output were solely for the domestic market, it would seem that the public revenue yields would be much less promising.

6. Direct Benefits to Farmers For the project land which is now under cultivation and on which farm drains are to be constructed, the average output produced by the farms is large enough to provide a living only slightly above subsistence for the farm families. Income is supplemented by some such families through off-farm employment. The project land not now under cultivation, but on which farm drains are to be constructed, produces negligible farm income. The average incomes of the remaining farms that will be affected by the project are relatively high, however. The net benefits to all three groups of farmers will be substantial with the farmer on whose land farm drains are to be constructed and whose land is now under cultivation receiving the most benefits.

A Comparison of Gross Average Farm Income -- The 1970 Farm Economic Survey (FES) [1/] shows the following farm income and cost data for Nad-i-Ali, Marja, Shamalan, and Darweshan in 1970:

1/ Tables 42 and 23

Area	Average/Farm in Afghanis, 1970 Gross Farm Income	Production Costs	Net Farm Income	Net Income/ Gross Income
Nad-i-Ali	96190	35881	60409	0.63
Marja	54362	17972	36390	0.67
Shamalan	197991	68662	129329	0.65
Darweshan	88493	41959	46534	0.53

The FES also shows that the average family size, net farm income per person and the value of livestock production as a percent of gross farm income were:

Area	Average farm family size	Average net farm income per person	Value of livestock production:gross farm income
Nad-i-Ali	8.7	6944	0.05
Marja	8.6	4231	0.05
Shamalan	9.5	13614	0.08
Darweshan	8.1	5745	0.06

Excluding income from livestock, we estimate the average gross farm income for the farms that will be serviced by the renovating of main canals (but are not scheduled to have farm drains constructed on them) to be afs 135,845. The average farm would have the following cropping pattern and yields:

Crop	HA	Average per farm, 1975 Yield (MT/HA)	Production (MT)	Unit Value (afs/MT)	Total Value (afs)
Wheat	1.98	2.6	5.15	5660	29149
Cotton	1.72	1.7	2.92	14000	40880
Fruit	.73	6.8	4.96	7500	37200
Melons	.26	7.2	1.87	1320	2468
Misc	.52	10.2	5.30	1920	10176
Corn Equiv	1.56	3.1	4.84	3300	15972
Total	6.76				135,845

Excluding Shamalan, the average gross income per farm for Nad-i-Ali, Marja, and Darweshan was afs 79,715 in 1970. The corresponding estimate for 1975 is afs 142,500 assuming that the value of livestock production is approximately 5 percent of the gross value of farm production. This is an increase from 1970 of 79 percent, or an average growth of 12.3 percent annually.

Two big factors in the increase are the production and prices of cotton and fruits. Cotton was valued at afs 9,510/MT in 1970, but almost 50 percent higher for 1975. The value of cotton amounted to less than afs 6,000 per farm in 1970 but is projected at over afs 40,000 in 1975. Fruits (grapes and pomegranates) were valued at afs 3,850/MT in 1970 but at afs 7,500 for 1975. Wheat is valued about the same price in both years. Yields have grown since 1970 due mainly to increased use of commercial fertilizer. Double cropping has increased.

The comparable estimates for the farms on which farm drains are to be constructed and which are now under cultivation are:

		Average per farm			
Crop	Ha.	Yield (MT/HA)	Production (MT)	Unit Value (afs/MT)	Total Value (afs)
Wheat	1.54	1.66	2.56	5,660	14,490
Cotton	1.78	0.80	1.42	14,000	19,880
Fruit	0.66	4.0	2.64	7,500	19,800
Melons	0.23	5.0	1.15	1,320	1,518
Misc	0.47	8.0	3.76	1,920	7,219
Corn Equiv	0.47	1.2	0.56	3,300	1,848
Total	5.15				64,755

Benefits to Farmers from Renovation of Main Drains -- We have estimated that the renovation of main drains will cause production on the cropland to be serviced by the drains to increase 20 percent by the third year after the drains are renovated. This is exclusive of the farms on which farm drains are to be constructed. On this estimate, gross farm income would increase by an average of afs 27,170 per farm by the third year after the drains were

renovated. Our best estimate is that costs will increase by 20 percent [1/] of the increase in gross farm income. On the above estimates, the projected schedule of net farm income due solely to the renovation of the main drains would be:

Year	Net Income per Farm Due to Project Afs
1	0
2	7,245
3	14,491
4	21,736
.	.
.	.
.	.
12	21,736
.	.
.	.
.	.
20	0

Net income due to project is projected to decrease linearly from afs 21,736 in year 12 to zero in year 20. Over the 20-year economic life of the project, the net increases due to the project will amount to an estimated afs 293,436 per farm which when discounted at 15 percent annually amounts to afs 92,815 or $1,547 per farm. There will be 845 such farms benefiting.

Benefits to Farmers on whose Land Farm Drains Are to be Constructed -- There is a greater potential for increased production on the farms on which farm drains are to be constructed than on the farms to be serviced by the renovated major drains but on which farm drains will not be constructed. On our estimates, farm costs for the former will increase by 20 percent of the increased gross farm income. And on our production estimates, the net farm income directly attributable to the farm drain project for the average farm now under cultivation would be:

1/ Based on the premise that increases in private costs are some greater than increases in social costs

Year	Net Income per Farm Due to Project Afs
1	0
2	18,981
3	37,961
4	56,942
.	.
.	.
.	.
12	56,942
.	.
.	.
.	.
20	0

Again, it is assumed that net farm income due to the project will decrease linearly from afs 56,942 in year 12 to zero in year 20.

If our estimates are any place close to being accurate, the farm drain project will be a valuable project to the landowners on whose land the drainage ditches are to be constructed. On the average, the project will result in an increase in net income of over afs 768,718 per farm over the assumed 20-year economic life of the project. The present worth of the flow of income, when discounted at 15 percent annually, is afs 243,221 or $4,054 per farm. Farm drains are expected to be constructed on 97 farms now under cultivation.

It is clear that during Phase I of this project, substantial effort should be made to document, demonstrate, and publicize the benefits of drainage so that in the future farmers will be willing to incur debt, if necessary, to build farm and main drains.

The last group of farmers to be discussed are those that will acquire land that is not now under cultivation. The benefits of drains to these 46 farm families will be less than to farmers whose land is now under cultivation. Production increased will come more slowly. If the new land to be drained will grow crops, there will be net benefits to the farm operators of the land. But it will require more work and take more time to obtain the benefits. It is estimated that at the end of the fourth year, production will provide subsistence for the families and by the eighth year, net farm revenue will reach afs 48,000.

F. Fixed Amount Reimbursement and Criteria

1. Concept Key to this project is the concept that we are going to encourage and allow the Afghans to do the major portion of the design and construction proposed. Historically, there has been a tendency for the typically better trained, always better equipped and supported American, operating in a more flexible and responsive bureaucracy to become impatient with lack of timely Afghan action. Responding to this impatience, the American has charged ahead and "got things done." Sometimes the Afghans tolerated or perhaps even partially admired this, and sometimes they tossed banana peels in front of the hard-charging foreigner, who often promptly plowed his nose into the ground. It seems likely in most cases considerable resentment and tension was generated. Certainly, personal and institutional growth on the part of the Afghans was inhibited.

Today, after 20 years, HAVA has considerable actual and/or potential capacity. If a permanently operating system is ever to be established, the Afghans must create a tradition of accomplishment. As was demonstrated in the pilot phase of the Rural Works effort, American resources can be used as a carrot to encourage accomplishment and to supplement local resources to allow more rapid action with the attendant benefits of pride in moving ahead.

In this project, only the American personnel necessary to assure that the U.S. money is spent for jobs done to agreed specifications and standards and to fill in on a couple of tasks where Afghan technical competence is not yet very great will be provided.

2. Procedures After a drainage component design is accepted by HAVA and USAID technicians, a letter of agreement will be exchanged. The HAVA will then proceed to have the work on this segment done to design and standards. A USAID representative will monitor the work periodically to ensure early detection of deviations from design or specification. In case of an observed deviation, a letter will be sent to HAVA informing them of the deviation and indicating that no reimbursement will be made for this segment unless the deviation is corrected.

After the work on the segment is completed, a joint HAVA/USAID observation will be carried out. If the segment conforms to the design and specifications, USAID will forward to the GOA a previously agreed upon sum of money.

The sum of money to be given upon completion is meant to reimburse the GOA for a fixed share of the "reasonable costs" for doing the job. The sum is determined based on a jointly agreed to estimate of a reasonable cost for

doing the job. The USAID intends to reimburse HAVA 70 percent of the direct costs for improvements of main drains and 70 percent of the direct costs of farm drains.

3. Criteria for Selection of Areas to be Worked The selection of the areas in which work should be done in Phase I is complicated by the numerous factors which exist concerning the lands, their condition, the people on them, and HAVA's goals. This very complexity requires that a variety of areas be marked in order that the Phase I experience can be used to point the way toward the areas in which to concentrate in any Phase II undertakings.

Accordingly, the basic criteria outlined below have been developed in a broader general sense so that application will bring a wider grouping of lands under the Phase I scope.

HAVA has expressed a desire to work on farm drains and main drains in all four of the main project areas in order to avoid discontent in any given area. This Project Paper is structured on this basis and will support both farm and main drain work in all farm areas that meets the basic criteria for selection.

Farm Drains -- Farm drains within the regularized field patterns of Marja and Nad-i-Ali will be about 1 kilometer long and any given drain will cross the land of five to ten farmers. In the less regularized farming areas such as Shamalan and Darweshan, any given drain may cross the land of fewer farmers. In all cases, however, the drains will cross the lands of more than one farmer, therefore the first criteria for selection of farm drains to be worked would be that all farmers on whose land the drain is to be built will agree to the installation of the drain.

Another consideration is that the land must indeed need drainage as evidenced by existing drains being too shallow or by not having drains at all.

The soil must be of such quality that development is warranted. Therefore, no drains will be built on lands that were not classified as Class III or better.

An additional requirement would be that 80 percent of the farms to be affected by any given drain belong to small farmers. A small farmer is defined as one having a farm of six hectares or less.

Farm drains will not be built on lands where the existing main drains cannot accept the farm drain flows unless concurrent efforts are taken to increase the flow or depth of the main drain as needed.

Main Drains -- Selection of main drains to be deepened is simpler than the selection of farm drains, since the main drains are accessible without the permission of any farmers, and once field physical survey data is final the areas needing deepening are readily determinant. In general, it will be the policy to do main drain work in the lower rather than the upper areas of any given project where the number of farms to be benefited will be greater.

4. Payment Required for On-Farm Drain Construction The question is asked, "why pay farmers to dig drains on their own land?" The simplest answer is, because they will not dig them otherwise.

Of the four areas in which the project will work, two are areas settled over the past 20 years and two are areas settled this year or to be settled in the immediate future. In all areas the farmers are aware of the need for drainage and in the long term settled areas of Nad-i-Ali and Marja some on-farm drainage ditches have been dug. Apparently, most of this work has been done in the past five years. Some of it was done under the Food-for-Work project. It has not been done on a systematic basis; but apparently on an individual farmer initiative basis. But the drainage done at farmer initiative does not represent coverage of a large percentage of the total area and probably represents primarily exceptional cases. At the same time, many farmers express a belief that they need better drainage. There appear to be a variety of reasons why this is so.

The comprehensive, systematic nature of the proposed project, digging on-farm drains on a block of land containing large numbers of farmers, defines it as a government action in the minds of farmers. As a total block to be developed, all the farmers will have to be contacted and agreement reached. There will not be total agreement. Some farmers will not want to lose their land necessary to build ditches. Some will think their crops are satisfactory. Some will disagree because of a basic distrust of government action. The point is that the farmers will define the activities as a government project with U.S. support. Work cannot proceed if one segment of a drain cannot be completed because one owner does not agree to contribute his share. Assurance of cooperation seems most easily obtainable by offering significant payment for the work to be performed.

In the recently settled areas the problem is worsened since the settlers must earn income in order to live until their land starts to produce. Thus, they have no way of living while doing unreimbursed work on their land, even though such work will benefit them in the long run. Payment appears to be the only solution.

Thus, HAVA feels that in order to expedite the construction of drains, which it deems necessary for the people of the area, payment to farmers is necessary. Society benefits justify such payments.

IV. PREPARATION FOR PHASE II

A. Evaluation Approach

The evaluation approach described here is restricted to Phase I. The primary objective in the evaluation is to provide the information required to make an informed decision about whether to proceed with Phase II or not. The evaluation needs are for two aspects: 1) technical desirability and 2) implementability.

1. Technical Desirability The need for drainage improvement is clearly demonstrable and the benefit/cost ratios are sufficient to more than justify the required investments. Moreover, it has been tentatively justified that a major share of the expected benefits of drainage system construction will go to the poorer farmers. And, the drainage system, if constructed and loosely maintained as in the current approach, will have a very long lifetime, meaning that the benefits approach permanency. Thus, from a technical and social point of view, the project is desirable and the only further evaluation of this aspect necessary is the proposed more detailed statement on beneficiaries.

2. Implementability However, these conditions have not been sufficient to give a "happy" situation in the Valley in past years. Something more is required, if we are to succeed; both the USAID and HAVA are going to have to want to work together to achieve these technically desirable objectives. Both parties must assign adequately competent people to accomplish required tasks and they must be willing to make the bureaucratic decisions required in order to allow these competent personnel to act in timely manner. Sufficient resources must also be allocated.

It is primarily these parameters which the evaluation will attempt to measure, albeit imperfectly. The indicators which appear most appropriate and observable given the above needs are judged to be:

1. Timely arrival and indicated competence of Soil Conservation Service (SCS) personnel.

2. HAVA counterparts' judgments of the contributions of SCS personnel.

3. Timeliness of SCS /HAVA review of master drainage system requirements.

4. Ability of master mechanic and warehouseman to work with Afghans and to help keep equipment operating.

5. Ability of HAVA to construct drains on agreed-on schedule.

6. Hiring and assignment by HAVA of 10-12 qualified new personnel.

7. Adequate preparation by HAVA of drainage plan for one area as agreed.

8. Ability of HACU to keep equipment operating.

9. HAVA funds available and usable and a 1355 budget as required to accelerate activity.

10. USAID and SCS personnel's perception of interest of HAVA/HACU in achieving joint goals.

As noted in Figure 1, two evaluations are scheduled. In order to compress time, a preliminary assessment should be done in January 1976 even though Phase I will still be very young. This should, we believe, be primarily a USAID/A and AID/W effort. It will be the basis for deciding to proceed with equipment ordering (loan paper) and the preparation of a technical assistance project paper.

A more thorough evaluation is scheduled for June 1976 to precede a decision to proceed with Phase II. This evaluation should be led by an outside contractor with USAID/A, AID/W, and GOA participation. The above listed indicators of progress will be examined in detail with verbal or quantitative assessments prepared on each. The joint GOA/USAID panel on HAV development will review the results of the evaluation and make a recommendation for subsequent action.

B. Drainage System Review

1. General Description of Project Areas The proposed project for providing adequate drainage includes the irrigated areas of Marja, Nad-i-Ali, Shamalan, and Darweshan. HAVA has selected these four areas for the Phase I project because of the serious problems of increasing salinization and waterlogging and because the irrigation/drainage systems of these areas are interrelated. Whatever affects one of these areas has a direct impact upon the others.

The source of irrigation water for the first three areas is the Boghra Canal. The Boghra Canal is fed by a diversion on the Helmand River, downstream from Kajakai Dam. Morrison-Knudsen Afghanistan, Inc. (MKA), completed the Boghra Canal, the Shamalan Canal, and the Nad-i-Ali and Marja irrigation complex in 1949. The Darweshan Canal was completed in 1953. The diversion capacity of the Boghra Canal is 2600 cubic feet per second (cfs) and the Darweshan Canal is 1000 cfs., which is sufficient water to irrigate 180,000 to 190,000 acres.

The quality of the irrigation water is good to excellent. Both Nad-i-Ali and Marja are relatively smooth areas lying on one of the major breaks between desert benches. Both slope generally to the south at an almost uniform grade of 0.001. The desert bench east of these two areas slopes toward the Shamalan and the Helmand River. While the two areas appear relatively uniform, there is wide variation in the effective depth of the soils, in their content of gravel, gypsum, and lime, and in the relative drainability of the underlying materials. Generally, the two areas are underlaid by a conglomerate of gravel cemented with a matrix of calcium and other silicates. The conglomerate occurs at depths of five feet to 30 or more and in discontinuous beds.

The soils of the Shamalan are alluvial but are widely variable in texture, depth, degree of waterlogging and salinization.

The Darweshan area begins on the left bank of the Helmand River about where the Shamalan area ends on the right bank. In general, the soils of Darweshan are deeper than those of Marja, which are deeper than those of Nad-i-Ali. Most Darweshan soils are underlaid by gravel lenses that provide some natural drainage.

2. The Drainage Problem The irrigation systems in Nad-i-Ali and Marja came into operation in 1952 and 1953. Almost immediately these areas as well as parts of Shamalan and Darweshan began developing higher water tables due to the flat topography, underlying gravel, conglomerate, and lack of drainage. In 1953, drainage trials were initiated on 80 acres in Nad-i-Ali. The crop yields in the test area were dramatic evidence of what could be accomplished with adequate drainage. Corn yields were, for example, (even with the low-yielding varieties available at that time) 75 bushels per acre; wheat was produced at 80 bushels per acre, and cotton at over 2,000 lbs per acre.

Beginning as early as 1953, MK/Afghanistan undertook surveys to determine drainage requirements. These surveys were updated in 1956 and 1957 with more detailed studies including logging deep open pits on 200 meter centers in the project areas and even closer spacing in selected areas. Meanwhile, nearly half of the irrigated land in Nad-i-Ali was abandoned and crop yields in Marja fell due to rising salinity. In general, it was known by HAVA technical personnel and U. S. advisors from the mid-1950s onward that areas which had adequate drainage and which could therefore lower salinity and reduce waterlogging to acceptable levels would have sustained good crop production and, conversely, in areas with inadequate drainage the salinity and water tables were building up with the concomitant decline of crop yields leading, in some areas, to the abandonment of the land. While the facts were known and the necessity of drainage was recognized, the stated first priority of the Government was to expand indigenous irrigation systems and to develop new ones. These priorities related to the Government's social and political goals of settling landless people within modern irrigation systems. Roughly speaking, these priorities, which may have excluded drainage for a lack of financial resources, prevailed from the beginning of the modern Helmand-Arghandab Valley project until about 1973. From time to time, the old MK/A reports and studies were updated by HAVA staff with Bureau of Reclamation assistance, but an integrated drainage study for the whole area encompassing the four project tracts was never done.

3. Drainage Review -- Outline of the Scope of Work The area which has probably been most thoroughly studied is Shamalan. MK/A prepared reports and maps indicating drainage requirements in the 1950s. In the late 1960s, a complete feasibility study, inclusive of drainage requirements, was undertaken by the U.S. Bureau of Reclamation in preparation for the Shamalan loan. This feasibility study is available for updating. There are also technical reports, as well as some detailed maps, prepared by MK/A and BuRec over the years for Nad-i-Ali and Marja, but in less detail than for the Shamalan. It would appear there is less information on drainage available for the Darweshan tract than the other three.

In general, the scope of work will include the following:

a. The collection of all available reports, studies, and maps prepared over the years on drainage in the four project areas by the various technical consultants and HAVA over the years.

b. Check and verify the above data, or if the required information does not exist, it would be generated by field work. The field work will develop information for each project area on: (1) soil chemistry, including salinity and other characteristics; (2) the water table, including direction and amount of flows and hydraulic conductivity; (3) drainage barriers, permeability, etc. ; and (4) cropping patterns, parcel sizes, and ownership.

c. Once the basic data in b., above, is collected and verified, the drainage designers would establish standards and specifications for the improvement of existing major drains, lay out the networks of collector drains to the major drains, establish standards and specifications (including depths, widths, and spacing) for new main drains, new collector and on-farm drains, and establish minimum economic criteria for the provision of drainage.

4. Execution of the Drainage System Review Technical personnel from the U.S. Soil Conservation Service will visit Afghanistan in April 1975. During this orientation tour it is anticipated that the availability of previously done studies, reports, and maps will become fully known and thereafter assessment of the time and technical manpower, expatriate and Afghan, to accomplish the review can be established.

The USAID's current estimate of the manpower requirements for the drainage system review is: two drainage design engineers for up to 30 man-months beginning in July 1975 plus short-term engineering design expertise for special problems in FY 76; a short-term trainer to prepare Afghan staff for soil and water data collection; and a short-term specialist to revitalize the soils laboratory.

HAVA has technical staff who are available for field survey and data collection as well as a soils laboratory staff and design engineering staff. One element of the Phase I project will be to agree with HAVA that it will assume complete responsibility for collection and analysis of data for one of the four project areas and for preparing the final report. HAVA will, of course, also do all of the data collection work in connection with

preparing reports for the other three areas, but these will be done with the advice of the SCS resident and short-term advisory staff.

These studies of drainage requirements and a system layout would receive a preliminary review in February 1976, at which time future workload requirements, as identified in the studies, would be built into the equipment projections. The drainage studies and the Phase II drainage construction plan would then be finalized by July 1976.

C. Equipment Requirements

This section describes the equipment picture as we currently see it. We believe that with the addition of some rehabilitation, current HAVA/ HACU equipment is adequate to accomplish Phase I. We must address longer term needs during Phase I.

1. Description of Work

Farm Drains -- The farm drains to be constructed will be of varying depths, with a maximum of $2\frac{1}{2}$ meters at their lower ends where they flow into the collector drains. Side slopes will vary with actual soil conditions, but will generally be at the steepest slopes possible that will assure stability. Bottom widths will be 30 centimeters or the width of a shovel.

Hand excavation will be used to the extent that men are available to perform the work during slack periods in the cropping cycle. Tools to be used will be picks and shovels. Simple templates will be used to shape the final ditch cross-section. Material excavated will be spoiled along the drain and shaped into berms on both sides.

Machines may be employed to supplement the hand excavation of farm drains in order to attain the targeted number and lengths of drains, particularly in Phase II. Farm tractors with backhoe attachments capable of excavating a maximum depth of $2\frac{1}{2}$ meters might be used. Dirt and stone would be side cast immediately along the ditches. Hand labor would be required to dress up drain bottoms and side slopes and to shape the berms along the drains.

Major (Collector and Main) Drains -- Collector drains that conduct farm drain flows to a juncture with the larger main drains, are to be improved by lowering the water level and/or increasing their capability to carry off drainage flows. In most cases this will be accomplished by deepening the existing drains to the required depth or in some instances, where underlying conglomerates are too hard to move without blasting, the drains may be improved by widening the existing cross-section rather than deepening. This work will be done by cranes with dragline fronts that will cast the spoil on the berm for spreading by dozers and graders. Access to the drain areas by the draglines will be along the existing berms which in some instances are quite narrow. In such cases, dozers would be used to build access roads into the work area.

Main drains will be excavated as described above, but will require larger pieces of equipment. Access to main drains will be easier because the existing berms are wider, but equipment will still be needed to dress up the spoil.

Diversion and control structures will in some cases require modification or replacement. These structures are of reinforced concrete construction, generally cast in place. Necessary equipment to perform this work will include cranes (truck and crawler), concrete and aggregate handling and mixing plants, trucks, pumps, and shop support equipment for form building and reinforcing steel fabrication.

2. Equipment Requirements The type and quantities of equipment required to perform the work described herein are estimated as listed below. Note that the requirements for Phase I and Phase II are estimated and listed separately and that the number of pieces of equipment in HACU's current inventory is also shown. This latter figure does not represent operable pieces of equipment in HACU's inventory; rather it is a listing of available equipment, some of which is deadlined for major repairs or which may be only marginally operable at low efficiency.

Item	Estimated Requirements Phase I	Phase II	HACU Current Inventory
Cranes (dragline - crawler)	8	16	20
Cranes (service-truck)	2	4	Not Available
Dozers	8	12	17
Graders	4	8	10
Service Trucks	2	6	2
Pick-up Trucks	10	30	13
Tractors (with backhoe)	0	20	0
Dump Trucks	0	15	10
Compressors	0	6	Not Available
Transit Mix Trucks	0	2	2
Concrete Plant	0	lot	lot
Aggregate Plant	0	lot	lot
Lab Equipment	0	lot	lot
Miscellaneous Equipment (See Section 3 below)			

3. Reconditioning Existing Equipment The existing equipment in HACU's inventory is currently being listed and surveyed for operating condition and spare parts requirements. This data will be available for the use of the equipment and spare parts specialist who is being requested to analyze future parts and equipment needs. The existing equipment ranges in age from 1 to 30 years old. In general, the cranes are the older equipment, some of them having been brought into the country by MK/A -- prior to U.S. Government efforts in the Helmand Valley. Age may make spare parts acquisition difficult or impossible, but is not the only determinant of equipment condition. Some of the newer equipment purchased under AID Loan 012 is deadlined for rebuilding or parts. For instance, four pieces of automotive equipment, two stake body trucks, and two fuel tankers are inoperable with engines that need rebuilding. This is stated to have been caused by the extreme dust conditions in the "Soldiers' Canal" area of the Chakhansoor, where this equipment had been working. Several of the newer 10 cubic yard dump trucks are deadlined because of tire tread separation.

The reconditioning of most of this equipment can be performed at the HACU shops in the Helmand Valley if spare parts are obtained and if the miscellaneous equipment and supplies discussed below are procured so that all necessary shop and service facilities are functioning. Spare parts lists are being prepared by HACU and will be available for review by USAID and the equipment specialist by May 1975.

The miscellaneous equipment and supplies that are needed in addition to spare parts are of the following types:

tires and tubes
bearing stock
screens for aggregate plant
parts for oxygen and acetylene plant
raw materials for acetylene plant
lightweight dragline buckets
cable for cranes
lubricants
hydraulic fluid
welding rod
special tools

The technical expertise for performing most of the operations necessary to recondition this equipment is available in Afghanistan, although highly qualified supervisory capability is lacking. HAVA has 195 mechanics and 80 equipment operators on its payroll at the present time. The need for U.S. technical advisory service is covered in item 6 below.

4. Additional Equipment Requirements The scope of work which will be covered by this project, in its later phases, will require that additional equipment be added to the already existing inventory in order to complete the work within the estimated time frame. Additional equipment that is needed will be of two types: that similar to existing equipment such as cranes, and that needed to fill a new need, such as the backhoe-equipped tractors for the farm drain excavation program.

Additional equipment can be obtained from two sources: the U.S. excess property system or normal commercial channels. HACU has had some experience maintaining excess cranes which were rebuilt in Europe. HACU will accept excess property of types familiar to their mechanics and for which they have a stock of spare parts. Since U.S. excess property has not previously been extensively used in Afghanistan, it will be only considered where adequate supplies of spare parts could also be assured.

A preliminary estimate is that the following pieces of equipment will be required, in addition to the current inventory, to meet workload requirements beyond Phase I. However, an early task under this phase is to develop a careful equipment plan to include purchase, rehabilitation and maintenance. As indicated in the implementation plan, final equipment requirements will be proposed for loan-financing for Phase II.

Cranes (crawler)	8
Cranes (truck)	2
Tractors (farm type with backhoe)	20
Dozers	4
Graders	4
Service Trucks	4
Pick-up Trucks	20
Dump Trucks	10
Lab Equipment	lot
Misc. (See item 3 above)	lot

5. Other Commitments for HACU Equipment There are other needs and demands on the HACU organization and its equipment. These needs are: (a) HACU's ongoing normal workload in the Helmand Valley as contractor to HAVA; (b) HAVA's operation and maintenance activities which have just been transferred to HACU; and (c) HACU's activities in the Helmand Valley as a joint venture firm or subcontractor on such projects as the ADB Road Project, the ADB Kajakai Gate Project, the AID Transmission Line Project, and the proposed Kwaja Ali Dam Project.

The extent to which these other demands will affect the amount of equipment available for this project will be determined in May and June 1975. Some of HACU's equipment needed for other commitments would not affect the drainage improvement efforts. For example, the scrapers procured under AID Loan 012 can only be utilized for excavation work under dry conditions such as will exist on the ADB road project.

6. U.S. Advisor Requirements HACU has a large group of well-trained technical personnel, but has identified two areas in which U.S. supervisory technical assistance is desired. Both of these skills were previously provided under AID Loan 012, but expired in mid-1974 and are still needed.

The first need is for a master mechanic to supervise the reconditioning and overhaul of the equipment. The second need is for a material control and warehousing supervisor to assist in stock control, disbursement, and reordering.

HACU has expressed the desire that these men not only supervise the work under their special skills, but that they also attempt to put more effort into teaching Afghan technicians so that more expertise will remain behind when the technicians leave.

D. Detailed Cost Benefit Analysis and Social Analysis

This paper contains the best available cost benefit and social analyses for Phase I. These analyses are limited in two respects. First, they only cover Phase I. The final project will involve somewhat different parameters since Phase I is concentrated in the areas most in need of drains and the areas with the highest percentage of small farmers. Phase II will cover areas where the conditions will not be as favorable.

Second, the data available on which to base the analyses was of varying quality. In some cases good information was available (landownership patterns in the Shamalan) and in others very poor information was all that could be collected in the time frame we were working on. Prior to submitting a proposal for Phase II we plan on conducting more thorough analyses to represent the area as a whole.

1. Cost Benefit Analysis The methods we used in this paper for calculating cost benefit ratios are quite satisfactory. In the follow-up study we will use the same procedures. Our intent is to cover the entire project area and to utilize better data for the follow-up analysis.

It may be necessary to conduct a survey similar to the 1970 Farm Economic Survey in order to establish an adequate baseline. We will spend some time exploring HAVA files before deciding if such a survey is desirable. In any case a second cost benefit analysis is scheduled for the Fall of 1975.

2. Beneficiaries Analysis Little specific information existed on which to base our statements about beneficiaries in Phase I. In order to gather the best available facts our USAID sociologists spent several days talking to farmers in the areas adjacent to the proposed drainage work. This data collection effort provided reasonable estimates about the social consequences of the proposed limited Phase I work. We anticipate a considerably more thorough effort prior to Phase II. The following paragraph outlines a preliminary scope for increased data collection.

3. Base Data Research on Beneficiaries For the purposes of planning implementation, monitoring for possible problems with an eye to solution, and eventual evaluation, baseline data should be collected on the social and the economic conditions of the people to be affected.

Some of the categories of information to be collected are: (this would be mainly for the on-farm drain areas)

1. Numbers of people, families and farms involved

2. Nature of settlement groups involved:

   (a) Origins ✓
   (b) When Settled ✓
   (c) Agriculture Experience ✓
   (d) Group Leadership and Organization

3. Distribution of farms on the land (cadastral information checked in the field)

4. Economic status and differences within group ✓

5. Off the farm employment

6. Farming Practices ✓

   (a) Use of Modern Agricultural Inputs ✓
   (b) Cropping Patterns ✓
   (c) Use of Sharecroppers ✓

7. Organization of water distribution ✓

8. Attitudes toward drains and project ✓

9. Nature of Construction laborers involved

   (a) Numbers and Origins
   (b) If migrants, timing of arrival
   (c) Agricultural Experience
   (d) Group Leadership and Organization

ENVIRONMENTAL IMPACT STATEMENT

In determining the effect that the project might have on the environment, two main factors were considered. The first was the amount of salts that would be dumped into the river and carried to the irrigated land in the lower Helmand and what would be the consequence. The other factor was what effect the project might have on the health of the people in the area. The analysis below shows that the drainage water, when diluted by the river water, is still first-class water for irrigation. The project will also have a beneficial effect on the health of the farm families in the project area.

A. Effect of Current Drainage on Salt Content of River below the Project Area

Israelson's book "Irrigation Principles and Practices" gives the standards for irrigation waters as follows:

Water Class	(Contains)	Total Salts PPm
1		0 - 700
2		700 - 2000
3		over 2000

The Helmand river water at the Boghra diversion, at the start of the project areas, has an average salt content of 215 ppm. This is excellent quality irrigation water. The following analysis discusses what is happening with current drainage to the river's salinity during the month of June. At this time, the drainage water is at its maximum salinity and the river is at its lowest flow. In other words, during the month of June, the river below the irrigation area is more salty than any other time during the year.

Drain Water

Drainage Area	Q cms	Total Salts - ppm	Q x ppm (cu cm of salt)
Nad-i-Ali	2.06	980	2,020
Marja	2.14	1,400	2,996
Shamalan	3.31	771	2,552
Zarist	0.15	3,500	252
Total	7.66		8,093

Note: Q cms equals quantity in cubic meters per second.
ppm equals parts per million.

The Helmand River below the above irrigated areas has a flow of 200 Q cms and 259 ppm of salts. This gives a Q cms x ppm of 51,800. When the drainage water is mixed with the river water the quality of the mixture is $\frac{8093 + 51,800}{7.66 + 200}$ or 288.4 ppm. This is the salt content of the water entering the Darweshan irrigation area. The drain water from Darweshan has a Q cms of 3.38 and contains 1400 ppm of salts. This gives Q cms x ppm of 4732. The Helmand River just above the Darweshan drains has a flow of 180 cms and contains the indicated 290 ppm of salts. The Q cms x ppm is 52,200. When the drainage water is mixed with the river water, the quality is: $\frac{52,200 + 4,732}{180 + 3.38}$ or 310.5 ppm. Although this is the month when the river would be the saltiest, the water is still very high quality irrigation water.

B. Effects of Increased Drainage

The drainage water from Nad-i-Ali, Marja and Shamalan now amounts to 10.4 percent of the irrigation water diverted into the Boghra Canal. The drain water from Darweshan is 14.2 percent of the irrigation water introduced into the area. It is expected that the drain water from all areas will be leveled at about 15 percent of the irrigation water used when all the drains are completed.[1/] Field tests conducted by HAVA and BuRec in 1967 indicate that drainage water from the present undrained land will, when the area has adequate drainage, have 2500 ppm of salt the first year, decreasing at the end of the third year to a level which will remove about the same amount of salt as is being brought in with the irrigation water. It is estimated that in the steady state (leaching completed) the drainage waters of Nad-i-Ali, Marja, and Shamalan will contain an average 1425 ppm of salt. The actual area to be drained in Phase I is only 5,000 ha which is about 6-1/4 percent of the project land. It can be seen that at any one time, only a small part of the total project lands will have drainage water with a salt content as high as 2500 ppm. However, for this analysis, we will assume that all the drainage water entering the river will contain 2500 ppm of salt.

Using the same method of calculation as above, the increased drainage water and salt removal would raise the salt content of the river to only 381 ppm at the lower end of the Darweshan area. Irrigation water with 381 ppm of salts is of very good quality. When the project is completed and the drainage water levels off at the expected 1425 ppm of salts the quality of the downstream river water will only contain 303 ppm of salts.

1/ The 15 percent is estimated to be that necessary to maintain a steady salt level in irrigated areas once the excess salts have been leached.

Listed below are some of the USA Western rivers with their quality for comparison.[1/]

River	Location	Dissolved Salts ppm
Missouri	Williston, N. Dak.	838
Arkansas	La Junta, Colo.	981
Canadian	Conchos Dam, N. Mex.	586
Rio Grande	El Paso, Tex.	754
Colorado	Yuma, Ariz.	740
Pecos	Carlsbad, N. Mex.	2,380
Sevier	Delta, Utah	1,574

Thus we do not anticipate a significant negative impact on water quality downstream of the project area.

The O&M section of HAVA is continually monitoring the quantity and quality of irrigation water entering the project and the drainage water leaving the project. This is done to determine if the project is maintaining a favorable salt balance. At present salts are still being deposited in the soils of the four areas. If this continues, the Helmand Valley will have to be abandoned in time because the land would not produce crops due to the high salinity level.

C. Waterlogging and Malaria

At present there are large areas (over 5,000 ha) where water has ponded because of drains overflowing their banks. These ponded areas have been a major factor in the increased number of malaria cases in the Helmand Valley during the last few years. When the drainage work is completed, the ponded, marshy areas will not exist, thus reducing the mosquito breeding area. This in turn will reduce, probably significantly, the incidence of malaria.

1/ USDA Handbook No. 60

Director's 25 Percent Certification Requirement

The Government of Afghanistan's Development Budget includes monies for the financing of all HAVA activities including Planning, Land Development, Operations and Maintenance, Agriculture, Health, Education, Settlement, Marja Farm, and "Green Forces." Total HAVA Development Budget Expenditures were about $2.2 million in 1974/75, are requested to be about $2.7 million in 1975/76 and are projected at $3.4 million for 1976/77. Of these totals, the line items presented in the Table below are most directly related to the purposes of the proposed Phase I project for the construction and improvement of drains and the collection and analysis of technical data for future Phase II activities.

Line Item	Requested 1975/76	Projected 1976/77
Planning	$ 98,000	$ 145,000
Land Development	989,000	1,454,000
Maintenance	360,000	363,000
Sub Total	$ 1,447,000	$ 1,962,000
As Percent Total HAVA Budget	54%	57%

By comparison (though the accounting periods are not the same) the estimated cost of the Phase I project -- including a portion of USAID's overhead but excluding HAVA's indirect contributions -- is $1,267,000 during the period from about June 1, 1975 through September 30, 1976. Thus, the GOA's direct and indirect contribution exceeds the 25 percent requirement several fold. A written assurance that the GOA's contribution will not fall below the 25 percent minimum requirement will be received prior to or incorporated within the Project Agreements.

Vincent W. Brown
USAID/Afghanistan Director
April 8, 1975

APPENDIX C

TABLE: SALINITY LEVEL AND WHEAT YIELDS (1974)

Marja Block	Salinity Level EC 16+ Kg/Ha	EC 8 - 16 Kg/Ha	EC 4 - 8 Kg/Ha
1 A			3920
1 B			4630
1 C	2250		
2 A	2190		
2 B		2725	
2 C		3665	
3 A			4535
3 B			5425
3 C			5805
5 C	2545		
6 E			3920
6 F	2200		
11	750		
West	2185		
T.O. 57	1305		
T.O. 60	1500		
8 A		2560	
8 B		2790	
8 C			4070
9 A		2760	
9 B	1900		
Shamalan			
Khusra Abad		2945	
Said Abad			3910
Khar a Ka			3630
Nigareen		3120	
Lach Me			3910
Shakh Achiczaic		3315	
Taband			4030
Kalach		3135	
Surkhdas		3270	
Hazar Asp		3180	
Bolan		2850	
A.ainak		2540	
Babaji			4875

Shamalan (cont'd)

Bushnan			4890
Jangle Bush	1300		
T.O. 29			3880
T.O. 25			4260
Shamalan Village	1230		
Bala Khana			3030
Yaka Ling	640		
Twela	650		

Darweshan

Hazar seft		2680	
De Zekria		3135	
Husain Abad			3435
Birtaka			3960
Darweshan Village			4080
Keshty			4880
Pushta			3325
Toby			3660
Khowara Ko			4720
Laky			4255
Safar	2145		
Katory Safar	2615		

Nad-i-Ali

A		2350	
B		2565	
C		2480	
D	2115		
E	1045		
Chad Mirza		3210	
Nakel Abad	2115		
Total	30,680	55,272	101,935
Average	1704	2909	4247

APPENDIX D

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MINISTRY OF PLANNING
SECRETARIAT

APPENDIX E

NO._____
DATE: February 12, 1975
Ref:_____

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REPUBLIC OF AFGHANISTAN
KABUL

Mr. Vincent W. Brown
Director,
United States Aid Mission to Afghanistan
Kabul, Afghanistan

C
O
P
Y

Dear Mr. Brown:

As a result of suggestions made by the Joint Afghanistan-United States Helmand Planning Committee set up during the visit of Mr. Parker and Mr. Nooter, we request that the United States of America give us grant assistance leading to the further development of the Upper Helmand and Arghandab Valley Region.

The assistance so requested will have to meet the urgent requirement of the two important objectives explained hereunder:

(a) As was pointed out to Mr. Parker and Mr. Nooter, the drainage situation in the Valley is quite serious, and more assistance is needed in order to complete this vital part of the work. We, therefore, request that you assist us in the Upper Helmand Drainage and Irrigation Improvement Project which would involve rehabilitating many of the lateral and farm drains, building new farm drains, revising and bringing up to date the major drainage plan and installing new major drains.

In order to accomplish this task we will need the services of your experts to provide technical assistance, some old equipment repaired and new equipment purchased, and some training with emphasis on-the-job training. Any assistance that you can give us over the next few years in this regard will be greatly appreciated.

We expect that, when this improved drainage system is completed and when the farmers are taught how to better manage the use of water, yields will be increased by over 100 per cent.

(b) As you are aware, the United States has assisted in the development of the area for over twenty years but the job is not yet completed. However, it is recommended that the creation of a system to select a project for completing work in the Upper Helmand and for determining priorities of investment in that area seems to be an urgent requirement. We, therefore, request that you assist us in conducting a soil and water survey of the Upper Helmand, Arghandab and Tarnak River Basins, including their drainage areas on the high plateau which serve as a source of the water for these rivers down to Deshu. In the first phase, we would like to have this survey inventory the soil and water resources of the river basin and make recommendations as to their optimum use. Since we would like to have this survey be immediately useful, we would expect the team conducting it to not only do the main survey but, as useful projects are unearthed, we would like them to do the pre-feasibility surveys and, perhaps, a number of feasibility surveys on the project areas that look to be highly profitable immediately.

In the second and later phases of this survey, other aspects of the area could be investigated which, hopefully, would lead to something approaching a total basin survey over time and would include not only the soil and water resources but all resources in the Upper Helmand area. The recommendations made would include plans for the optimum development of the Upper Helmand and would focus on Agriculture, Agro-based industries, Power, Irrigation and other Social Services including Education and Public Health.

In order to complete this work we will need several experts to provide technical assistance, and some survey and other necessary equipments.

This project should be started as soon as possible because its completion is essential to establish priorities among possible future investments in the Upper Helmand and we need the recommendations to guide our own future development actions.

In view of the fact that intensification of development activities in the Upper Helmand has the top priority with the Republic Government of Afghanistan, we would, therefore, appreciate your early consideration of our request.

Yours sincerely,

/s/ A.A. Ferogh
A.A. Ferogh
Deputy Minister of Planning