PD-AAS-755
ISN 13291

JAN 14 RECD

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON, DC

PROJECT PAPER

SRI LANKA

383-0073

MAHAWELI BASIN DEVELOPMENT PHASE II

JANUARY 81

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number — DOCUMENT CODE: 3

2. COUNTRY/ENTITY: SRI LANKA

3. PROJECT NUMBER: 383-0073

4. BUREAU/OFFICE: ASIA — 04

5. PROJECT TITLE (maximum 40 characters): MAHAWELI BASIN DEVELOPMENT PHASE II

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 9 DD 30 YY 86

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 81 B. Quarter 2 C. Final FY 84

8. COSTS ($000 OR EQUIVALENT $1 = Rs.16)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. Total	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. Total
AID Appropriated Total						
(Grant)	( )	( )	( )	( )	( )	( )
(Loan)	(14600)	(10400)	(25000 1/)	(52400)	(32600)	(85000)
Other U.S. 1.						
Other U.S. 2.						
Host Country		9800	9800	30000	83600	113600
Other Donor(s)				5000		5000
TOTALS	14600	20200	34800	87400	116200	203600

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. PRIMARY TECH. CODE 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. OBLIGATIONS TO DATE 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. AMOUNT APPROVED THIS ACTION 2. Loan	F. LIFE OF PROJECT 1. Grant	F. LIFE OF PROJECT 2. Loan
(1) FN	200		060				25000		85000
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 010 | 020 | 030

11. SECONDARY PURPOSE CODE: 100

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

A. Code	BR	BL	BS	ENV	EQTY		
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

Development of the area of System B of the Accelerated Mahaweli Program lying along the left bank of the Maduru Oya (River).

14. SCHEDULED EVALUATIONS
Interim MM 2 YY 82 | MM 2 YY 83 | Final MM 6 YY 86

15. SOURCE/ORIGIN OF GOODS AND SERVICES: ☐ 000 ☒ 941 ☒ Local ☐ Other

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

1/ FY81 funding will finance $25 million of the total cost of $42.9 million of the main and branch canals feeding zones one and five of the project area. A subsequent tranche will fund the remaining costs. About 58.3% of these costs are foreign exchange. Thus 58.3% of the FY81 funds will fund FX costs.

17. APPROVED BY
Signature: [signature]
Title: S.J. Littlefield, Director/USAID, Sri Lanka
Date Signed: MM 01 DD 03 YY 81

18. DATE TOTAL ASSISTANCE INCLUDING AMENDMENTS, DATE OF LAST AMENDMENT: MM 01 DD 05 YY 81

AID 1330-4 (8-79)

AID PROJECT NUMBER 383-0073

MAHAWELI BASIN DEVELOPMENT PHASE II

SYSTEM B LEFT BANK DEVELOPMENT

TABLE OF CONTENTS

	Page Nos.
FACE SHEET DATA	
LIST OF TABLES AND FIGURES	
GLOSSARY OF TERMS	
PART I PROJECT SUMMARY AND RECOMMENDATIONS	1
A. Project Description	1
B. Borrower	2
C. Implementing Agency	2
D. Recommendation	2
E. Borrower's Contribution	2
F. Other Donor Contribution	2
G. Summary Findings of Analyses	2
H. Project Issues	11
I. Project Development Team	19
PART II PROJECT BACKGROUND AND DETAILED DESCRIPTION	20
A. Project Background	20
B. Detailed Description and Beneficiaries	21
C. Relationship to AID Objectives	28
PART III PROJECT ANALYSES	29
A. Economic Analysis	29
B. Social Soundness	32
C. Technical Analysis	36
D. Administrative Analysis	45
E. Environmental Analysis	49

Page Nos.

PART IV FINANCIAL ANALYSIS AND PLAN 51

PART V IMPLEMENTATION PLAN 54

PART VI EVALUATION AND MONITORING 65

PART VII CONDITIONS, CONVENANTS, AND NEGOTIATING STATUS

ANNEXES

ANNEX A AID Documentation

1. Borrower's Request
2. PID Approval Message
3. Logical Framework
4. Mission Director's 611e Certification
5. Draft Authorization
6. Statutory Criteria Checklist

ANNEX B Monitoring and Evaluation

ANNEX C Social Soundness Analysis

ANNEX D Draft Implementation Plan

ANNEX E Review of Feasibility Study (CH2M Hill)

ANNEX F Description and Review of Mahaweli Economic Agency (MASI)

ANNEX G Environmental Assessment and GSL Response (the four volume assessment is available in ASIA/PD)

ANNEX H Feasibility Study of System B (the multi-volume study is available in ASIA/PD)

ANNEX I Maps, Tables, and Figures noted in the Text

TABLES IN THE TEXT

Number	Name	Page
1.	Summary of Project Data	3
2.	Summary of Internal Rate of Return for System B	29
3.	Summary of Internal Rate of Return for Proposed Project	30
4.	Summary Cost Estimate and Financial Plan	52
5.	Projected Expenditures by Year	53
6.	IFB/Construction Implementation Schedule	57
7.	Critical Dates in the Implementation Schedu	60

FIGURES IN THE TEXT

1.	Project Location	10
2.	Project Zones, Command Areas, Canal Layout	23
3.	Implementation Schedule for Project Construction	59

GLOSSARY

LUD	-	Land Use Division, Irrigation Department
Maha Season	-	Cultivation season generally lasting from November through February. In the project area this is the time of monsoonal rains.
MASL	-	Mahaweli Authority of Sri Lanka
MDB	-	Mahaweli Development Board
MEA	-	Mahaweli Economic Agency, a (department of MASL)
Ganga	-	A river which does not go dry
Oya	-	A river with very low or no flow for part of the year
Purana	-	An existing or traditional village is referred to as a Purana Village
Yala Season	-	Cultivation season lasting from May to September - a very dry period in the project area.

FIGURES IN ANNEX I

1. MDB Organization
2. MEA Current Organization Chart (Headquarters)
3. MEA Current System C Field Organization
4. MEA Proposed Field Organization System B

TABLES IN ANNEX I

1. Projection of Expenditure by Zone - Rupees - 1980 Prices
2. Projection of Expenditure by year by Zone - US$ - 1980 Prices
3. Projection of Expenditure by year by Zone in US$ with Inflation and Contingency.
4. Projected Costs by Zone - Rupees - with Inflation and Contingency.

Part I Project Summary and Recommendations

A. Project Description

A priority economic development program of the Government of Sri Lanka is the implementation of the Accelerated Mahaweli program. The program includes the construction of major dams along the Mahaweli River to provide hydropower and to bring water to parts of Sri Lanka's dry zone for irrigated food crop production on one hectare farms to be provided to landless or land poor voluntary settlers who will be brought in from all areas of the country. The goal of the program is to increase the opportunity for equitable economic development, employment, and food production and to increase hydropower capacity.

The proposed project is a component of this overall program. Its purpose is to develop that area of System B of the program lying along the left bank of the Maduru Oya. The project area totals 75,000 hectares and lies in the dry zone of central eastern Sri Lanka. Project components include an irrigation system, administrative and social infrastructure, social services, land clearing, and farm development, and settlement and settler support. Under the Ministry for Mahaweli Development and its Mahaweli Authority of Sri Lanka, the Mahaweli Development Board will be responsible for construction and related works, and the Mahaweli Economic Agency will be responsible for settlement, settler support, and post settlement activities. The major irrigation system will be constructed by a Code 941 contractor; other construction will be done by local contractors in conjunction with worker settlers who will be brought in advance of their families. Main and branch canal construction will be supervised by the association of the U.S. firm Louis Berger Int. and International Engineering Company who are preparing the designs for the major irrigation system.

The proposed AID loan will finance the foreign exchange and local costs of construction of the 57 km of main canals and 98 km of branch canals required to serve the project area as well as the foreign exchange costs of procuring miscellaneous equipment. The Government of Sri Lanka will assure financing for the remainder of the project costs excluding the design and supervision of main and branch canal construction funded by AID under a previous loan.

Water will be brought to the project area from the Mahaweli River by a diversion on the River, a transbasin canal, and regulating and storage reservoirs all of which are already under construction as part of other donor funded projects.

The total cost of the project is expected to be $203.6 million of which the cost of main and branch canal construction will $81.4 million. The project is scheduled to be completed in 1986 and will result in the creation of 20,300 small paddy farms. The direct beneficiaries of the project total 154,000 people of whom almost all are rural poor.

Table 1 summarizes key project data and figure 1 shows the project location.

B. Borrower: The Government of Sri Lanka

C. Implementing Agencies:

Mahaweli Development Board, Mahaweli Authority of Sri Lanka, Ministry for Mahaweli Development.

D. Recommendation:

Approval of a life-of-project loan of $85,000,000 over a four year period and authorization of a first loan of $25 million in FY81.

Terms: Repayment of principal and payment of interest within 40 years, including a ten year grace period of repayment of principal with interest at two percent per annum during the grace period and three percent (3%) thereafter.

E. Borrower's Contribution:

The Borrower's contribution is expected to total $113.6 million or 55% of the project costs.

F. Other Donor Contributions:

Canada is contributing US$65 million in a concessionary loan and US$6 million in a grant for the supervision and construction of the Maduru Oya dam and link tunnel.

The Asian Development Bank is contributing a loan of $10 million for major roads in Systems B and C.

FAO will fund a research/demonstration farm in System B, and the World Food Program will assist settlers with food.

The World Bank is considering a credit of U.S.$90 million for System C development. A portion of this amount would finance the major costs of the transbasin canal which feeds Mahaweli water to Maduru Oya reservoir.

Other donors are financing other projects in the Accelerated Mahaweli program.

G. Summary Findings of Analyses:

We find the project to be economically, technically, and administratively feasible, financially viable, and socially and environmentally sound based on an implementation strategy study by the Dutch firms NEDECO, a feasibility study of the project by the Canadian firm of Acres International, a review of that feasibility study by the Mission and the U.S. firm of CH2M Hill,

TABLE 1

MAHAWELI BASIN DEVELOPMENT PHASE II

SYSTEM "B" LEFT BANK DEVELOPMENT

I. Summary

1. Total Area of System B		135,000 ha (approx.)
Project Area (Zones 1 to 5, excluding deferred area)		74,800
(a) Paddy Lands		
Paddy Lands within command		20,311 ha.
Farm Size		1.0 ha.
Cropping Pattern (Maha/Yala)		rice/rice
Number of Paddy Farmers		20,311
Lands for Homestead		6,093 1/
(b) Uplands		
Irrigable upland within command		1,518 2/
Farm Size		1.8 3/
Cropping Pattern		ground nut/soya beans 3/
Number of Upland Farmers		843
Lands for Homestead		226 4/
(c) Settlement		
Farm and Non-Farm Families (Total)		26,446
Farm Families (a) Paddy	20,311	
(b) Upland	843	
Non-Farm Families	5,292 5/	
Farm and Non-Farm Families Present in Area		4,000
		22,446
(d) Land Use		
Agriculture (new lands)		21,829
Agriculture under existing schemes		3,000
Settlement (Homestead)		7,377 6/
Roads and other infrastructure		1,844 7/
		34,050

(e) Population[8/]

Farm and Non-Farm Population		145,410 (approx.)
Farm Population (a) Paddy	111,690	
(b) Upland	4,630	
Non-Farm Population	29,090	
Population Present in Area		20,000
Population from outside		125,410

2. Physical Infrastructure

(a) Canals

Main Canals (km)	57.0[9/]
Branch Canals (km)	98.0
Tertiary System (km)	640.0

(b) Roads

Access Roads (km)	150.0
Primary Roads (km)	90.0
Irrigation System Roads (km)	50.0
Link Roads (km)	139.0
Roads within Settlment	300.0

3. Social Infrastructure

(a) Type of Settlement[10/]

Townships (about 10,000 families)	2
Block Centers (about 2,000 families)	15
Hamlets (about 200 families)	130

(b) Facilities

Townships

Townships will be provided with a senior secondary school, a health unit (36 bed hospital), a post office, a police station, a market and administrative complex and telecommunication services.

Block Centres

Block centres will be provided with a junior secondary school a visiting dispensary, a sub-post office, a public health unit, and stores for agricultural inputs and produce.

Hamlets

Hamlets will be provided with a primary school, a health volunteer, a post box and a unit service centre.

4. Estimated Paddy Yields

	Maha (T/ha.)		Yala (T/ha.)	
Land Class	1R	2R	1R	2R
Base Case	4.4	3.6	4.6	3.8

5. Rate of Development (Total Paddy 20,311)

1983/84	Maha	7610 ha.
1984/85	Maha	6350 ha.
1985/86	Maha	6350 ha.

6. Base Case IRR: 11.8%

7. Project Costs (Rs. Million - 1980 prices)

	Local	Foreign	Total
A. Physical Infrastructures			
(a) Canals and Irrigation			
Main Canals	219.8	358.9	578.7
Branch Canals	116.5	203.6	320.1
Tertiary (Irr./Drain)	101.0	179.0	280.0
Main Drains	13.0	28.5	41.5
Sub-total	450.3	770.0	1220.3
Contingency 10%	45.0	77.0	122.0
Sub-total	495.3	847.0	1342.3
(b) Access Roads	30.0	-	30.0
Primary Roads	135.0	-	135.0
Irrigation System Roads Upgrading	10.0		10.0
Link Roads	41.7		41.7
Roads within Settlements	37.5		37.5
Sub-total	254.2		254.2

Contingency 10%	25.5	-	25.5
Sub-total	279.7		279.7

B. Settlement and Social Infrastructure

Settlement	167.6	-	167.6
On-Farm Development	62.0	101.3	163.3
Social Infrastructure	143.6	-	143.6
Overheads	68.4	-	68.4
Sub-total	441.6	101.3	542.9
Contingency 10%	44.2	10.1	54.3
Sub-total	485.8	111.4	597.2
Total (1 + 2)	1260.8	958.4	2219.2

II. Description by Zones

	Zone 1	Zone 5	Zone 2	Zone 3	Zone 4	Total
1. Project Area & Settlement						
Project Area (excluding deferred area)	20,100	7,600	11,000	12,500	23,600	74,800
Farmland (ha)	6,056	2,309	4,374	3,259	5,831	21,829
(a) Paddy (ha)	(5,400)	(2,210)	(4,228)	(2,887)	(5,586)	(20,311)
(b) Upland (ha)	(656)	(99)	(146)	(372)	(245)	(1,518)
Farm Settlers	5,765	2,265	4,308	3,094	5,722	21,154
(a) Paddy	(5,400)	(2,210)	(4,228)	(2,887)	(5,586)	(20,311)
(b) Upland	(365)	(55)	(80)	(207)	(136)	(843)
Non-Farm Settlers	1,440	572	1,076	774	1,430	5,292
Total Farm and Non-Farm	7,205	2,837	5,384	3,868	7,152	26,446
Farm Population	31,700	12,450	23,700	17,000	31,470	116,320
(a) Paddy	29,700	12,150	23,250	15,870	30,720	111,690
(b) Upland	2,000	300	450	1,130	750	4,630
Non-Farm Population	7,920	3,140	5,920	4,250	7,860	29,090
Total Farm and Non-Farm	39,620	15,590	29,620	21,250	39,330	145,410

	Zone 1	Zone 5	Zone 2	Zone 3	Zone 4	Total
Land for Homesteads	2,039	788	1,499	1,062	1,989	7,377
(a) Paddy	(1,620)	(663)	(1,268)	(866)	(1,676)	(6,093)
(b) Upland	(131)	(11)	(16)	(41)	(27)	(226)
(c) Non-Farm	(288)	(114)	(215)	(155)	(286)	(1,058)
Land for Roads and other infrastructure	645	250	480	340	640	2,355
2. Physical Infrastructure						
(a) Canals						
Main Canals (km)	25.5 9/		16.5	7.0	8.0	57.0
Branch Canals (km)	27.4	17.9	13.3	18.2	21.2	98.0
Tertiary System (km)	149	70	161	66	194	640
(b) Roads						
Access Roads (km)	42	16	30	22	40	150
Primary Roads (km)	25	10	17	14	24	90
Irrigation System Roads (km)	14	5	10	7	14	50
Link Roads (km)	38	15	28	21	37	139
Roads within Settlements (km)	83	32	60	45	80	300
3. Project Costs (Rs.Million - 1980 prices)						
A. Physical Infrastructure						
(a) Canals & Irrigation						
Main Canals	286.3	55.0	140.0	37.8	59.6	578.7
Branch Canals	85.7	61.6	59.7	46.3	66.8	320.1
Tertiary(IWR/Drain)	65.3	31.0	69.5	29.1	85.1	280.0
Main Drains	10.5	3.2	9.3	9.2	9.3	41.5
Sub-Total	447.8	150.8	278.5	122.4	220.8	1220.3

	Zone 1	Zone 5	Zone 2	Zone 3	Zone 4	Total
Contingency 10%	44.8	15.1	27.8	12.2	22.1	122.0
Sub-total	492.6	165.9	306.3	306.3	242.9	1342.3
(b) Roads						
Access Roads	8.4	3.2	6.0	4.4	8.0	30.0
Primary Roads	37.5	15.0	25.5	21.0	36.0	135.0
Irrigation System Roads	2.8	1.0	2.0	1.4	2.8	10.0
Link Roads	11.4	4.5	8.4	6.3	11.1	41.7
Roads within Settlement	10.4	4.0	7.5	5.6	10.0	37.5
Sub-Total	70.5	27.7	49.4	38.7	67.9	254.2
Contingency 10%	7.1	2.8	4.9	3.9	6.8	25.5
Sub-Total	77.6	30.5	54.3	42.6	74.7	279.7
Physical Infrastructure (Total)	570.2	196.4	360.6	177.2	317.6	1622.0
B. Settlement and Social Infrastructure						
Settlement	62.0	21.0	19.5	22.8	42.3	167.6
On-Farm Development	38.1	18.0	40.5	17.0	49 7	163.3
Social Infrastructure	39.8	15.2	28.8	21.4	38.4	13.6
Overheads	18.5	6.8	10.3	11.6	21.2	68.4
Sub-Total	158.4	61.0	99.1	72.8	151.6	542.9
Contingency 10%	15.8	6.1	9.9	7.3	15.2	54.3
Sub-Total	174.2	67.1	109.0	80.1	166.8	597.2
Total (A + B)	744.4	263.5	469.6	257.3	484.4	2219.2

NOTES:

1/ Lands for homestead has been calculated at .3 ha. per paddy settler.

2/ Total extent of uplands has been determined by aggregating scattered irrigable plots over 40 ha. in size.

3/ The GSL has so far not finalized either the farm size or the cropping pattern.

4/ Lands for homestead has been calculated at .2 ha. per upland settler.

5/ It is expected that one non-farm family will settle for every four farm families.

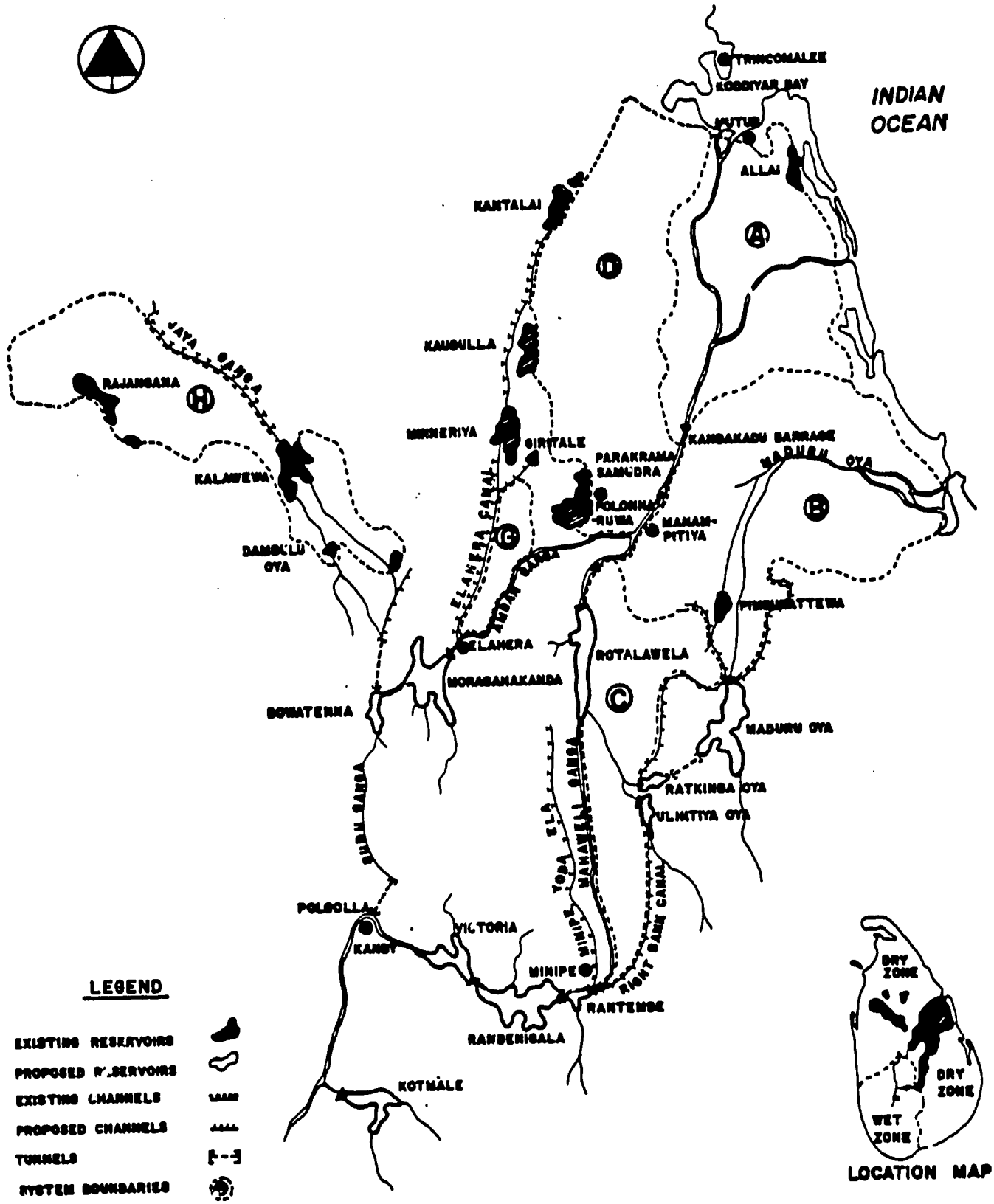
6/ Includes 1058 ha. of land for homestead for non-farm settlers at .2 ha. per non-farm settler.

7/ Land required for roads and other infrastructure has been estimated at 25% of the land area on settlement.

8/ Based on 5.5 persons per family.

9/ Includes 2 km of Tailrace canals.

10/ Based on project area population of 145,410.



ACCELERATED MAHAWELI DEVELOPMENT PROGRAM

FIGURE I

a review of the Mahaweli Economic Agency by the U.S. firm of MASI, an Environmental Assessment of the AMP by the U.S. firm of TAMS, a draft implementation plan prepared in conjunction with the implementing agencies, numerous other surveys and reports, the GSL's experience in settlement and irrigation projects, and the Mission's own analysis of the project.

H. Issues:

The following issues were raised in the APAC cable, were noted in other communications during the past year, or have been identified by USAID.

1. Financing

The question of financing relates to three subjects (1) the gap between donor financing and the foreign exchange costs of the Accelerated Mahaweli program through 1985; (2) the difference between the total requirements for the AMP in the period 1981-1985 and the amounts earmarked in the 1981 GSL budget as well as the 1981-1984 GSL investment plan; and (3) the availability of GSL funding for the proposed System B project. Each subject is treated below.

(1) Foreign Exchange Gap

The analysis in the Mahaweli Sector Support program paper showed that through 1985 the foreign exchange costs of the AMP as currently planned exceeded known donor support by about $200 million which is 20% of the total FX cost. Overall the GSL will have to finance this gap with their own resources, find other donors to support the program, get more funds from current donors, or defer some elements of the program. We think all the above are likely to occur. The GSL is already using some non-Mahaweli foreign exchange to import items required, the Japanese and some other donors are considering new funds for Mahaweli, and adjustments in the timing of Kotmale, Randenigala, the power component of Maduru Oya, and the total System B program have already been made. Further adjustments, particularly on headworks are likely. The foreign exchange required to develop the proposed project does not exceed the amount of the proposed loan.

(2) Earmarked expenditures vs. Projected Costs for the Accelerated Program.

Fiscal requirements resulted in a budget allocation of funds in 1981 to the AMP of Rs.3 billion which was considerably below the amount the project authorities estimated would be needed to proceed at the pace they intend. The Ministry of Finance currently intends to stick fairly closely to the investment plan level of financing in the following four years except for adjustments related to exchange rates. The table shows the difference between the amounts for Mahaweli in the 1980-1984 medium term investment budget as modified by the current 1981 budget and the Mission's estimates of the amounts expected to be required for the Mahaweli program if the program had proceeded as scheduled.

	(Rs.000,000)			
	1981	1982	1983	1984
Planned Expenditures[1/]	3000	4014	4471	4310
Required Expenditures[2/]	4668	6281	8639	5596
Difference	1668	2267	4168	1286

The size of the difference between planned expenditures and required expenditures indicates major adjustments will be necessary. These adjustments could take one or a combination of the following forms:

(a) adjustments will be made within the capital budget to provide more funds for Mahaweli;

(b) the capital budget will be increased to provide more funds for Mahaweli (this was the case in 1980 - the Mahaweli budget increased about 75%);

(c) a project or projects will be further deferred. (This was also the case in 1980. The System B project was cut back to the size of the proposed project, construction of Kotmale was deferred to bring the dam to a lower height by 1984 and subsequently after the 1981 budget was presented, major construction was deferred until 1982,

---

1/ 1981 budget plus 1982-1984 investment plan.
2/ From data used to develop Mahaweli Sector Support Annex 3 table. Does not reflect deferment of Kotmale Dam.

and adjustments were made in the Randenigala project time schedule).

It is the Mission's view that the GSL will use a combination of the above measures to keep Mahaweli moving at an acceptable pace. Conceivably an adjustment could be made in the pace of downstream development which would in effect add time to its implementation period. We do not expect major adjustments here however because:

(a) downstream costs are a fraction of headworks costs;

(b) substantial production benefits would be affected;

(c) substantial visible benefits to the voting population would be foregone; and

(d) senior officials in the government are aware of these effects of deferring downstream development and express strong support for moving forward.

We believe that if there are major cuts in the Mahaweli program it is the headworks that will be affected. An example is the Kotmale Dam project. Kotmale will provide considerable power benefits but the storage it will provide is not needed for either System B or System C; its costs account for 65% of the above gap in 1981, 79% in 1982, 70% in 1983 and more than the gap in 1984; the major contract for its construction has not been let; it is funded with donor assistance originally intended for use as the GSL saw fit; and construction which was to start in 1981 is not now planned to start in this year.

(3) ~~Availability of GSL Funding~~ for the Proposed Project

As explained in the Mahaweli Development Support project paper, the Mahaweli program was provided a Rs. 3 billion allocation in the 1981 budget. This ceiling was set for fiscal reasons before its effects on component projects could be analyzed. This amount is insufficient to carry out everything that was planned for 1981 and as a result project authorities have been forced to cut back their program. A major adjustment was deleting about Rs.800 million from Kotmale intended for initiation of major construction. Even with these and other adjustments, the budget shows only Rs.100 million for System B. Of this amount about Rs.46 million will be required to be set off against payments made from A.I.D. funds and from GSL funds to the U.S. firms and associated local firms

doing the canal designs. The amount that would remain is insufficient to carry out work that would have to be done in 1981 if the project authorities were to keep to the schedule in the draft implementation plan (Annex D). While the Mahaweli Authority has the flexibility to adjust between line items in their budget, payments for contracts in force and administrative costs leave little scope for shifting funds within the Mahaweli program budget.

The Mahaweli Authority estimates that an additional Rs.279 million in 1981 will permit them to carry out all downstream (B,C,H) work planned. This represents less than a 10% increase in the new budget which would still put it at a lower figure (Rs.3.28 billion) than that earmarked for 1981 in the published five year investment plan (Rs.3.397 billion).

Having considered the 75% funding increase provided to the Mahaweli program during 1980, the fact that additional donor funds such as those provided under the Mahaweli Sector Support program were identified for 1981 after the budget was prepared, and the relatively small additional funds required, the Mission thinks it reasonable to assume budget adjustments will be made to provide the funds required.

There are several very good reasons why the Government cannot at this time provide assurances of a budget increase. The budget has just recently been presented and is still being debated in Parliament; in February the IMF will review with the GSL the total economic picture; the rolling five year investment plan is being reviewed and a new plan will be announced this Spring; and finally the new budget year is only beginning and it's possible progress in the Mahaweli program headworks may not require disbursements at the level projected in the current budget thus freeing up more funds for downstream development.

The Mahaweli Authority intends to proceed with the money they have been allotted pending any revisions in the budget.

As noted under paragraph (3) above the gap between funds indicated in the investment plan and those needed in 1982 is wider than the 1981 gap. We have explained in paragraph (3) how we think this gap will will be closed. Barring unforseen developments such as an infusion of funds from oil exporting nations, it appears a major adjustment in at least one of the dam projects will have to be made.

The Mission intends to closely monitor GSL plans to finance the Mahaweli program and to take these plans into consideration before we make recommendations regarding authorization of the second tranches for this project and the Mahaweli Sector Support project.

While we are optimistic about the provision of needed funds on a timely basis we have explored the implications of no increase from the GSL in System B funding in 1981. These are that while some work in 1981 will be done by the implementing agencies, this work will be insufficient to meet the tight schedule in the draft implementation plan. Settlement would still occur in the years indicated but it would be at a rate less than that in the plan. There are in addition some positive trade-offs because a slower pace in the Government's System B program in 1981 could be partially offset by better progress in later years because project authorities would have more experience in operating in other areas. Basically however if less work in 1981 can be done than planned, the result will be some delay in full implementation of the proposed project. The impact of such delays on the project is treated in the economic analysis section of the project paper. The analysis shows the impact of such delays does not affect the project sufficiently to make it economically unfeasible.

ACRES also considered the effect of spreading implementation over a longer period in their feasibility study of System B. They found that if 20,000 hectares were in production in 1985 (as shown in the draft implementation plan) and the remainder of System B developed by the end of 1987 the IRR would be 10.1. If instead 22,000 hectares were developed by 1987 (essentially tacking two years on the draft implementation plan) and all of System B developed by 1990 the IRR would fall only to 9.8. Thus the economic feasibility of the project is not very sensitive to reasonable delays in implementation.

Having considered the financing situation and the impact of less GSL funds in the near term than those necessary to support the draft implementation plan we also considered the ramifications of deferring AID financing until more firm assurances of 1981 and 1982 System B funding levels could be provided. Our finding is that the impact of deferring financing would be extremely negative for the project, on the overall AMP, on other donors, and on the perceptions of U.S. interests in Sri Lanka's development.

Near term delays in authorization would give rise to uncertainties about AID's commitment to the project weakening the project authority's case for getting more funds for System B and therefore force them to slow work in B and shift resources to other areas. It would also have an effect on the development of the updated rolling investment plan which would be negative for the project.

Delays in authorization of longer than three months would directly affect the project by delaying mobilization of the canal construction contractor insuring the project would be delayed because the canals would not be ready at the time water from the headworks is available. This would in turn have a direct impact on the viability of the Canadian financed Maduru Oya Dam.

2. Implementation Capability

The ability of the Government of Sri Lanka to implement the Accelerated Mahaweli Program has been an issue since the program was first announced in November 1977. Originally the issue was the capability to simultaneously construct six major dams and develop all of System A, B, C, and D covering 128,000 hectares of new land and 32,000 hectares of existing land with little external technical assistance except on the major headworks. One agency, the Mahaweli Development Board was to handle all downstream development. All work was to be completed in 1983.

The situation today is far different. The program now planned in the next five years includes not six but four dams (one of which will not get underway until 1983) and about 45,000 hectares of new land instead of 128,000 hectares. In addition there are now two agencies involved in the downstream work one of which will handle construction, and the other settlement and production.

The project authorities recognized additional capacity was needed downstream to augment the work of these agencies. International firms are now engaged in the design of major downstream systems and in the supervision of international contractors who will construct the major systems. Also the authorities are amenable to technical assistance for the downstream works other than that for canals. Technical assistance for the proposed System B project will be provided by AID from funds in the Mahaweli Basin Development Phase I loan in the areas of land use and settlement planning, implementation management, groundwater hydrology for domestic water, private sector non-farm

development, and heavy equipment management. Additional technical assistance is also forseen.

The two major downstream implementing agencies are the Mahaweli Development Board and the Mahaweli Economic Agency (MEA) which currently is a department of the Mahaweli Authority. Both are described in Part III D and MEA is further described in Annex F which contains a report on MEA by Multi-National Agribusiness Systems Incorporated prepared under a contract with A.I.D.

The Mahaweli Development Board was established in 1970 and in the period 1974-1981 it will have completed development of all aspects of the System H project bringing 71,000 acres of new land under cultivation. The Board, as with other public agencies in Sri Lanka, continues to have difficulty retaining senior engineers. Recognition of this problem was inherent in the GSL's decision to turn over a major share of the downstream works - design and supervision of the major irrigation system-to expatriate consultants, and to create a new organization to deal with settlement and production related matters.

The Board has filled the major Colombo and field positions needed now for System B's development and will soon shift additional staff from System H to System B.

Given the decreased workload on the Board resulting from creation of another organization and hiring consultants for design and supervision, we think this organization has the capability to complete implementation of their share of the project, covering roughly 20,000 hectares, by 1985-1987.

The Mahaweli Economic Agency was created about a year ago and has moved quickly to hire necessary staff and begin work. MEA operates a pilot project in System H which focuses on credit, production, and marketing and has had considerable success. MEA has also initiated work in System C training its own staff and bringing in the first few thousand worker settlers, organizing them to carry out work which has been successfully undertaken. Experienced upper management staff for System B have been brought on and have begun preparations for major field work which will begin in 1982. During the first six months of 1981 new staff for lower level work in System B will be hired and will be in place in the field in September 1981. There they will become acclimated to the System and receive a series of training course to prepare them for the first influx of worker settlers in February 1982.

MEA is ably led and has attracted a number of experienced people. The experience they will have gained from two years work in System C and System H before System B field work begins will be of special value to the System B project. The training effort they propose is reasonable and the plan to station people in the field five months before worker settlers arrive shows great foresight. The organization is new but to date gives good evidence it will have the capability to implement its responsibilities.

3. Implementation Plan

In consultantion with MASL, MDB, and MEA, an experienced Consultant of Berger/IECO has prepared a detailed and comprehensive draft implementation plan for the project which is included as Annex D of the PP and which is summarized in Part V. Information regarding the provision of social infrastructure is contained in the plan. AID will play an important part in settlement and social infrastructure through its funding for case studies and settlement monitoring as part of the evaluation program and by financing technical assistance directly related to this aspect of the project (paragraph 2 above). The draft implementation plan is being reviewed by the consultant and project authorities. A final agreed on implementation plan will be a condition precedent to disbursement from the proposed loan.

4. Means and Funding to Address Environmental Questions

This issue is addressed in Part III E of the project paper.

5. Donor Coordination

AID/W asked that this paper include an update on inter-donor coordination and a proposal that the GSL retain a general consultant to ensure basin-wide planning.

On the program-wide level the Mahaweli Authority continues to successfully coordinate with donors and to coordinate activities on the various projects through regular meetings of senior officials, preparation of monthly management reports by the Authority's Progress Control Unit, and regular meetings with all interested Heads of Mission. The Authority understands concerns earlier raised by CIDA and AID regarding the value of a general consultant but feel they can best carry out this function themselves with technical assistance already in place. We are not aware of other donors supporting this proposal and it does not appear to be required at this time.

There continues to be excellent cooperation and coordination at the project level. MASL established a Coordinating Committee for the project which includes CIDA and AID representation and which meets regularly to consider substantive matters. CIDA and AID officials are routinely in contact regarding the project both in the headquarters offices and the field missions. AID-financed downstream consultants and CIDA-financed Maduru Oya consultants meet often to resolve questions affecting both groups. AID officials continue to have ready access to Mahaweli officials at all levels.

6. Baseline Data Collection

Baseline data on the population in System B has been collected and procedures have been developed to collect this data on future settlers. Details of this plan are provided in Part VI of the project paper.

I. Project Development Team

This project paper was drafted by Jeff Evans, Chief of the Mahaweli Development Division, Gil Haycock, the Mission's project engineer; Randy Cummings, Behavioral Anthropologist; Susan Holloran of ASIA/DP's Evaluation Office, Ken Lyvers, the Mission's project officer for Water Management contributed to discussion of this element in the paper, and Ralph Singleton, the Chief of the Project Development Division prepared much of the supporting documentat on in Annex A.

The paper draws extensively on material contained in the feasibility study done by ACRES International, on the Environmental Assessment carried out by TAMS, the draft implementation plan prepared by Wade Jones of Louis Berger Int., and the review of the project by CH2M Hill (particularly the economic and financial sections).

PART II Project Background and Detailed Description

A. Project Background

The initial reconnaisance level plan for developing the resources of Sri Lanka's major river, the Mahaweli Ganga, was funded by AID's predecessor, USOM, during 1958-1961. Following on this plan, between 1965 and 1968 UNDP/FAO in conjunction with the Irrigation Department developed a Master Plan for the utilization of the Mahaweli Ganga and its tributaries to irrigate major areas of Sri Lanka's dry zone and provide hydroelectric power. The plan envisaged a 30 year program to construct fifteen reservoirs, eleven of which were to include power stations, and to develop 900,000 acres of land of which 246,000 acres were partially irrigated and 654,000 acres were new land.

Work on the first phase of the program began in 1970. Under this phase a diversion dam was constructed on the Mahaweli at Polgolla and a reservoir was constructed at Bowatenna which along with two tunnels, diverted a portion of the river toward the north, augmenting irrigation on 132,000 acres of existing land, and enabling 71,000 acres of new land to be settled and brought under cultivation. Polgolla Diversion, including a 40 MW power station, and Bowatenna reservoir, were completed in 1976. A 40 MW power station at Bowatenna will be completed in 1981. Existing land began receiving benefits in 1976. Settlement of new lands is well underway and will be completed, with irrigation and most social infrastructure, by mid 1981, about a year ahead of schedule.

The World Bank provided assistance for construction of headworks. AID and other donors are providing assistance for civil works construction and local costs associated with development of 41,000 acres of the new land. Lessons learned from this earlier project which are applicable to the proposed project were discussed in Part VI of the Mahaweli Basin Development Phase I project paper.

In November 1977, the newly elected Government of Sri Lanka announced that its major development project to address unemployment and food problems and to enhance the livelihood of the rural poor would be the completion of the Mahaweli Ganga program in five years. Following this announcement the Government agreed that NEDECO, a Dutch firm, would undertake an implementation strategy study essentially to update the UNDP/FAO master plan. At the same time the Government sought donor financing to undertake feasibility studies of specific projects within the program and expressions of donor interest in financing the actual projects. In 1978 studies began on the various dams in the program and on the downstream areas to be irrigated and developed. In May of 1978 USAID submitted its first PID for the project outlining various ways in which AID might contribute to the program, and initiated action leading to an AID financed environmental assessment of the program. Following a request by the Ministry of Mahaweli Development that AID focus on the development of System B of the project area, AID submitted a revised PID in June 1979.

This PID was followed by a project paper justifying an initial AID loan of $10 million for design and supervision of construction of the main irrigation works in System B, technical assistance for the development of the System, and environmental activities. That project paper served as the PID for the proposed loan.

At the time the first loan was authorized it was envisioned that the follow-on project would primarily finance major canal construction throughout System B. Subsequently due to various resource constraints, including significant increased costs due to inflation, the GSL decided to focus near term development of System B on development of most of the area lying to the west and north of the Maduru Oya river. As a result, having consulted with AID/W, the Mission agreed to move forward with developing a project related to this area of System B instead of all of System B.

The project proposed herein follows from the UNDP/FAO studies, a feasibility study of System B completed in 1980 by the Canadian firm of Acres International, a review of elements of the Acres study conducted by the U.S. firm of CH2M Hill at the request of AID, an AID financed environmental assessment of the AMP completed by TAMS in November 1980, numerous other topical studies, additional information generated to date by the AID-financed Berger/IECO design team, and frequent discussions with GSL officials over the past three years.

B. Detailed Description

1. The Accelerated Program

Since the Government's announcement of its intention to complete the total Mahaweli program in five years, the Government has narrowed the scope of the near term effort (1981-1986) to more manageable proportions, primarily due to the significantly increased cost of the total program brought about by inflation. Earlier plans to construct Moragahakande and Rotalawela reservoirs, Kandakadu Weir and to develop System A, D, and the right bank of System B (totalling about 72,000 hectares of new land) have been deferred. The Accelereated Mahaweli Program (AMP) now focuses on the construction of Kotmale, Victoria, Randenigala and Maduru Oya dams, the construction of downstream works including the Minipe Weir and Right Bank canal, Ulhitiya and Ratkinda reservoirs, the Right Bank Transbasin canal, and the development of land areas C and the left bank of B, which total 45,000 hectares of new land and 8,400 hectares of existing land to be brought under irrigated cultivation. Approximately 250,000 settlers will be voluntarily settled in the area on small farms. The estimated cost of the AMP is about $1.8 billion for which donor contributions totalling $1 billion are expected from the U.S., Canada, U.K., FRG, IBRD, ADB, EEC and others. The Government will finance the remaining program costs. The program is expected to be completed by 1987.

When completed this program will: (1) more than double the country's total electric generating capacity (now 423 MW, then 1008 MW), meeting power requirements into the 1990's, (2) increase food production by 224,000 tons annually, (3) provide sufficient storage to irrigate an additional 121,000 hectares at a later stage, and (4) create significant employment through construction work, farming activities on the new

and existing land, non-farm activities in the new areas, and secondary job crea on in related sectors of the economy.

The components of the AMP are described in detail in the Mahaweli Basin Development Phase I project paper, pages 44-48.

2. The Proposed Project

a. General Framework

The purpose of the proposed project is to develop a major portion of the area of System B (figure 2) of the AMP lying along the left bank of the Maduru Oya. The project area totals 75,000 hectares and currently has a population of about 20,000, most of whom produce one crop under small existing tank schemes. The area will be developed by providing an irrigation system and settling 20,300 voluntary farm families on one hectare paddy farm allocations and .3 hectare homesteads with appropriate social and production infrastructure. The project will contribute to attaining the sector goal which is to increase the opportunity for equitable economic development, employment and food production through irrigation of land and increase hydropower capacity.

Project components include the construction of main, branch, and tertiary irrigation systems; drainage; main, secondary, and farm roads; land clearing; farm demarcation; land leveling and bund marking; initial plowing; the construction of hamlets, block centers, and townships; the provision and operation of social infrastructure; the relocation of settler families including the provision of housing materials and farm tools; and the provision of credit, production, and marketing systems including extension. The AID loan will fund construction of the main canal and branch canals. The GSL will secure funding for the other project components.

The project is expected to be completed in 1986 with full farm production achieved by 1990.

The main engineering works in the project are described in Part IIIC.

Seventy-five percent of the net irrigable land under the proposed project can be irrigated when Maduru Oya dam is completed. The dam is being constructed by a consortium of Canadian firms supervised by a Canadian consultant on a schedule that will permit release of water by mid 1983. The remainder of the proposed project can be irrigated when the Minipe Weir, Transbasin Canal, Ulhitiya and Ratkinda reservoirs and Maduru Oya link tunnel are completed. The status of these other elements is as follows:

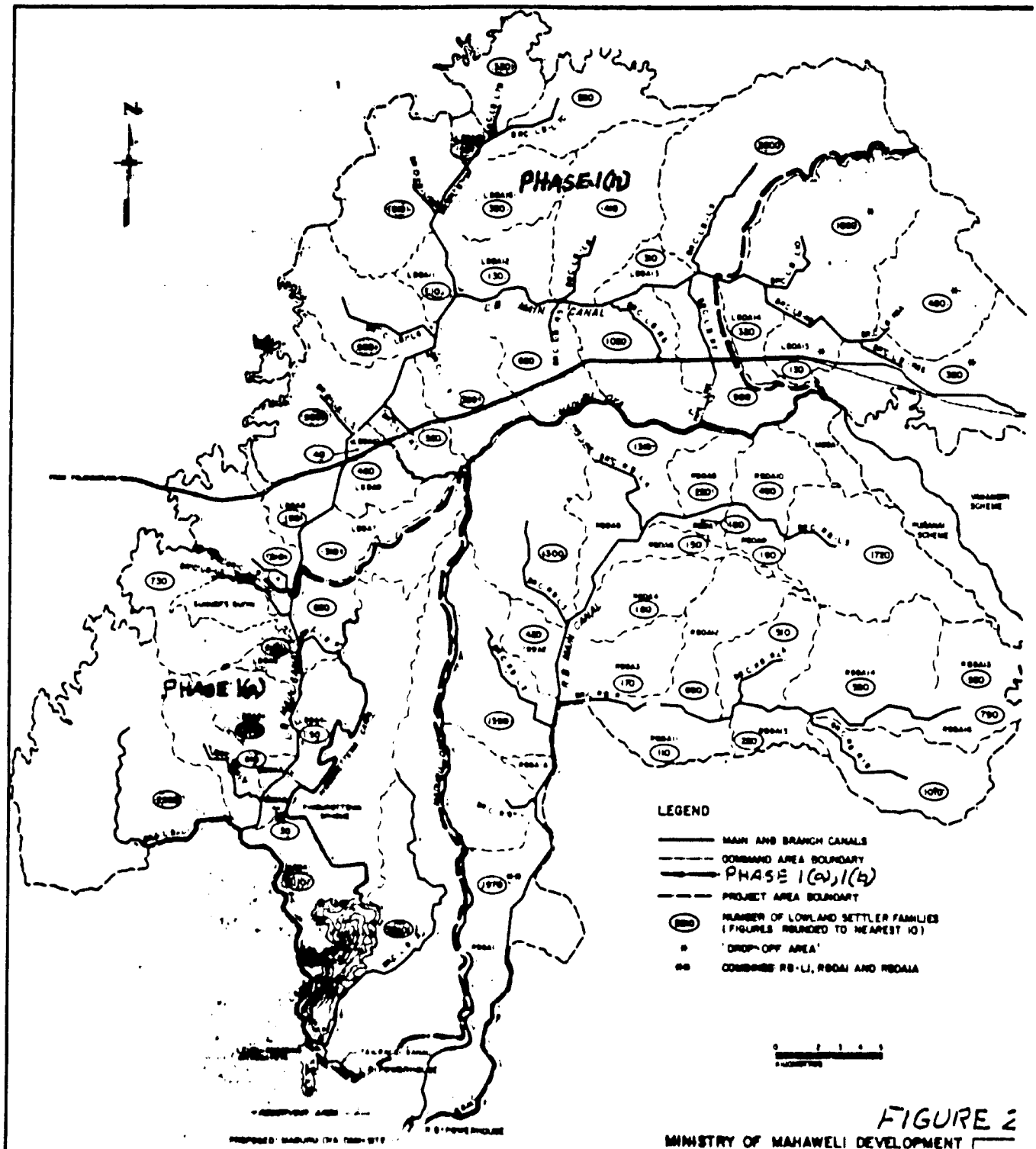


FIGURE 2

MINISTRY OF MAHAWELI DEVELOPMENT
MADURU OYA PROJECT FEASIBILITY STUDY

COMMAND AREAS AND DISTRIBUTION OF SETTLERS

Status of AMP Elements on Which System B in Part Depends

Element	Contractor	Supervision	Estimated Completion Date	Date Needed for System B
1. Maduru Oya Dam and Link Tunnel	Canadian Consortium	Canadian Consultant	12/82	1/
2. Ulhitiya Reservoir	State Corporation (RVDB)	MDB	12/81	4/84
3. Ratkinda Reservoir	Local Private Company-Ceylon Development Engineers	MDB	11/81	4/84
4. Minipe Anicut & 4 km of RB Transbasin Canal	State Corporation (State Development and construction corporation)	MDB	11/82	4/84
5. Transbasin Canal	Italian Firm	British Consultant	11/82	4/84
6. Victoria Reservoir	British firm	British Consultant	12/84	O/A 1986

1/ The dam must close by 12/82 so that the reservoir can fill enough to irrigate 7600 acres in 1983; however, if the dam does not close until 5/83, some irrigation from the run of the Mahaweli might be possible if elements 2, 3, and 4 were completed by then (as they are scheduled to be).

b, Development Plan

The total area to be developed has for implementation purposes been divided into a numbered series of five zones generally conforming to drainage basins. Development will proceed sequentially with initial work focused on zones one and five - the zones nearest the head works. To conserve resources and develop the total area as soon as possible, work in subsequent zones will begin before all work in the initial zones is completed (i.e., construction of the irrigation system will proceed by zone but this work in zones two and three will be occuring while other work in zones one and five is still being done).

Major construction work will be the responsibility of the Mahaweli Development Board. Under the Board's auspices, a U.S. firm will construct the main and branch canal system, local contractors will clear and level land, construct village tanks, roads, administrative and social infrastructure, part of the tertiary system, and do initial plowing; worker settlers (household heads of selected settler families) brought in before their families will be grouped to construct hamlet roads and the tertiary system, clear secondary growth, dig wells, prepare individual allotments, and do other labor intensive work in the project area. The major irrigation

system is being designed by and its construction will be supervised by a U.S. firm. MDB staff are designing and will supervise the other construction work.

The Mahaweli Economic Agency is responsible for settlement activities, the establishment of social infrastructure, and the establishment of a credit-production-marketing system.

Settler selection will be done by government officials in each electorate throughout the country under criteria established by the Mahaweli Authority of Sri Lanka.

c. Social Infrastructure

The Mahaweli Authority will provide the basic social infrastructure required at the time that the settler-families move in, and it is planned that other governmental agencies will develop the other facilities desirable in the new settler areas up to the same level as those available in the rest of the country within a reasonable period of time.

The pattern of infrastructure provided for the AMP will be in three tiers and is an improvement on the four tier pattern in System H which was found to be overly elaborate and duplicative. The difference is:

Item	System H	System C - Zones 3-6 System B
1. Hamlet	75-125 families	+/- 200 families
2. Village Center	800-1000 families	-
3. Area Center	1500 families	-
4. Block Center	-	+/- 2000 families
5. Township	3500 families	+/- 10,000 families

The main reason for the change is that the sizing of the administrative units at various levels in System H has been found to be too small and somewhat uneconomical. For instance, a hamlet of 75-125 families takes a long time to develop internal cohesion because it has to be merged with the adjoining hamlet to develop village level institutions, and the townships servicing 3500 families take long to become a market town with a viable commercial sector. After some modifications were tried out in Zone 2 of System C, it was decided to adopt the new heirarchy indicated above uniformly in Zones 3-6 of System C (funded by the World Bank) and in System B.

In System B, the hamlets will be provided with a primary school, a health volunteer, a post-box and the MEA service center from which the MEA Unit Manager responsible for each hamlet will operate. The hamlet will also have provision for retail traders and tradesmen to set up business.

The block centers will be provided with a junior secondary school, a visiting dispensary, a sub-post office, a public health midwife, stores for agricultural inputs and produce and the administrative center of the Block Manager, who will be supported by officers specialized in agriculture, water management, credit and marketing, community development, etc. The centers will also have space for a larger range of retail traders, tradesmen, tractor units, rice processing plants and other services, which the private sector will be encouraged to operate.

The townships will be provided with a senior secondary school, a peripheral health unit, (36-bed hospital), a post office, telecommunication services, a police station, a market and the administrative complex of the Project Manager. It will also make provision for wholesale and retail traders, tradesmen, banks, filling stations, cinemas, agro-industrial and other services, which the private sector will be encouraged to operate.

In addition, public transportation will be provided throughout the project area. In planning the development of the social infrastructure in System B, the Mahaweli Authority will draw on Sri Lanka's experience in establishing new settlements for irrigated farming in the Dry Zone of the country over a period of 40 years covering 80,000 families. Some of the earlier settlement projects, such as those which cover the greater part of Polonnaruwa District have developed the full range of social infrastructure available in the traditional settlements in the rest of the country, and they are in fact generally accepted as being in most respects above the national average in their level of development. However, the older settlements took two or three decades to reach this level, while the aim of Government is to bring the new settlements under the Accelerated Mahaweli Program to the same level within a decade. This will also enable the Government to achieve its objective of optimizing off-farm employment in the new settlements to reach a ratio of approximately 1:1 with on-farm employment.

d. Project Costs

The total cost of the proposed project is estimated to be $203.6 million of which the total cost of main and branch canal construction is $ 81.4 million The total cost of developing zones one and five of the project is estimated to be $81.7 million.The cost of the main and branch canals to feed zones one and five are $42.3 million. The proposed loan will finance the total cost of the main and branch canals and will finance the cost of miscellaneous equipment the project may require. The first tranche of the proposed loan will finance $25 million of the cost of the main canal to km 23.5 and the branch canals serving zone 1+5. The remaining costs of this segment of canals will be funded by the second tranche of the proposed loan or in the event AID does not approve a second tranche, will be funded by the GSL. Subsequent tranches will also be related to the development of specific geographic areas.

e. Project Beneficiaries [1/]

The beneficiaries from the proposed project will be:

Direct Beneficiaries:

(a) the 110,000 people who will be voluntarily settled on paddy farms. These people are landless or land poor with annual family incomes averaging Rs.3000 - Rs.6000 (about 1/4 - 1/2 the national average). The project will provide them with a sustained livelihood and raise the annual family income to Rs.10,000 - Rs.12,000

(b) the 22,000 people who will settle in the project area to service and support the farming population. The project will provide them with homestead allotments generating some income and some of their own food requirements, and will provide the opportunity for sustained employment. These people in many cases are landless laborers with very low incomes or are expected to be relatives of small scale entrepreneurs whose prospects in the project area will be greater than in their present area.

(c) the 18,000 people who will benefit from the near term jobs the project will create for skilled laborers. These people are in the upper lower to lower middle class and will be brought in from surplus labor areas for the construction period of the project. They will benefit primarily from higher wages than they would have earned. These people are not the same people as the worker-settlers though some worker settlers may becaome skilled workmen over time.

(d) the 4400 people who will benefit from the jobs created for people who will administer the project in the field. Many of the people who will be employed are white collar workers and junior technicians currently unemployed. They will benefit from training under the project and employment. About 2/3 of the people employed can expect permanent employment in the project area. These people have for the most part a lower middle class background.

Indirect Beneficiaries

The indirect benefits of this project are significant and include the following:

(a) The creation of 20,000 jobs benefitting 110,000 people which result from bringing new farms under cultivation on the basis of about one job created in secondary industries and services for each small farm;

1/ The beneficiary calculations assume a family size of 5.5 people. The proposed project beneficiaries are less than the numbers envisioned in the project paper for Phase I because the current project does not include development of all of System B.

(b) An enhanced standard of living in the areas sending people to the project area as population pressure decreases, pressure on social infrastructure is eased, some land is available for others to farm and additional employment opportunities exist because of jobs vacated by settlers. If we assume each family who permanently settled in the project area had two wage earners who were employed half time the project would result in the equivalent of say 12,500 full time jobs created in sending areas.

While different assumptions would yield different results it is obvious there are secondary benefits to sending areas because somehow the settlers existed in these areas and because of the benefits the project will provide, will no longer be a drain on the sending areas.

(c) Over time the people in the surrounding region as the formerly lightly population area develops; and

(d) The people in the country as a whole primarily because of the increased food production in the project area, and the consonant reduction in food imports that will be required. Thus direct beneficiaries total about 154,000 and indirect beneficiaries a significantly larger number.

C. Relationship of this Project to AID Objectives

This project is a top priority element in USAID's strategy to assist the GSL in increasing agricultural production and rural income levels. The project's concentration on opening new lands and providing irrigation for the poor farmer-settlers in the Mahaweli area will remove one of the key constraints on increased crop production. With reliable water sources and a financially viable unit of land farm yields and farm family income will increase dramatically. The result will be both increased incomes and better nutrition for people who are among the most economically deprived.

Part III Project Analysis

A. Economic Analysis

An economic analysis of System B was done as part of Acre's Feasibility Study and was reviewed by CH2M Hill on the basis of more recent data. CH2M Hill also prepared an economic analysis of the proposed project which covers a geographic portion of the total System B area. These analyses determined the projected internal rates of return for various assumptions. Acres also examined and described the significant unquantifiable benefits that would accrue from the project. Acres full economic analysis is in the feasibility study which is available in ASIA/PD. Their quantifiable and unquantifiable benefit analysis is included as Annex H to this project paper. CH2M Hill's analysis is presented in Annex E.

1. Acre's Analysis

Acre's analysis is based on two alternative scenarios for developing the land in System B. These scenarios are:

Area of new land harvested (total of 35,830 ha which includes paddy land and uplands) is as follows:

Year	Scenario A	Scenario B
1984	9,020	5,540
1985	11,293	5,315
1986	9,209	5,669
1987	6,308	5,764
1988	-	5,819
1989	-	5,763
1990	-	1,960

Acres results are shown in Table 2.

TABLE 2

Summary of Project IRR Estimates (Acres)
(percent)

	Scenario A	Scenario B
Base Case	10.1	9.8
Higher yield (+ 10%)	11.6	11.2
Lower yield (- 10%)	8.6	8.4
Eight years to maximum paddy benefits (with Base Case yield)(Base Case is Five years)	9.8	9.4
Capital costs up 5 percent	9.7	9.4

10 percent	9.4	9.1
20 percent	8.8	8.5
Project benefits down 5 percent	9.6	9.3
10 percent	9.1	8.6
15 percent	8.6	8.3
20 percent	8.0	7.7
50 percent share of Right Bank Transbasin Canal (instead of 25%)	9.4	9.0
Full development	10.6	-
Nelugala Corridor undeveloped	10.3	-
Unplanned delay in Implementation Schedule	9.1	

2. CH2M Hill's Analysis

CH2M Hill used revised cost data and slightly varied assumptions to estimate the internal rate of return for the proposed A.I.D. project based on the following development schedule:

1984	7,600 ha.
1985	13,800 ha.
1986	20,330 ha.

Table 3 shows the results of their analysis

TABLE 3

Sensitivity Analaysis for System B
Left Bank Project

Alternatives	IRR
Base Case	11.8
Higher Yields (+10%)	12.5
Lower Yields (-10%)	9.5
Two year Extension of Development	11.0
Include Social Infrastructure cost	11.0
Exclude Maduru Oya Dam and Link Tunnel as sunk costs	15.7
Headworks and Canals Size for full development with service limited to 20,300 ha	7.1

In addition CH2M Hill reevaluated the economic analysis of the total System B development project for which they estimate an IRR of 10.7 based on full development by 1990.

B. SOCIAL SOUNDNESS ANALYSIS:

The analysis presented here is an update of the Summary Social Soundness Analysis found in the Mahaweli Basin Development Phase I Project Paper. Elaboration and additional points are contained in Annex C of this Project Paper. There is also an analysis of the Human Environment in the TAMS Environmental Assessment.

1. Feasibility:

The project is socially and culturally feasible. A number of special design features in the project are directed towards reducing if not eliminating most of the physiological, sociological, and psychological stress which some settlers may experience. Chief among these special features is the worker-settler plan, whereby villagers first reside temporarily in the project area and work on land development and construction of the tertiary irrigation systems. Later, the villagers return home to bring their families and belongings to the project site for permanent settlement. This concept, which has worked successfully in earlier Sri Lanka settlement projects facilitates adjustment by giving the settlers an opportunity to become familiar with their new environment before actually settling there. Also, a number of training courses to prepare the settlers for their new lives are planned. These courses will commence in the sending areas before the settlers arrive in the project area and will continue throughout the initial two or three years after settlement. Additionally, major attention in the project design is given to the rapid establishment of an adequate infrastructure which can meet the needs of the settlers. Such things as health services, roads, drinking water, bathing facilities, sanitation, markets, and schools are critical to the success of the project. Work on the provision of this infrastructure is already underway and is scheduled for completion within the first year of settlement.

The GSL is paying particular attention to provision of domestic water and is exploring various alternatives related to this phase of settlement. For example, in the worker-settler phase, many work camps will be located adjacent to temporary tanks already under construction. During the initial settler-family phase, a number of options are available, including: (a) settling some households near permanent tanks, (b) settling some households temporarily near either permanent or temporary tanks, (c) allowing some households to draw domestic water from the irrigation canals, and (d) delivering water on a regular basis by bowser. A special task force has been established to study these water alternatives on a hamlet-by-hamlet basis. During the long-term settler-family phase, efforts to locate permanent wells within the hamlets will be explored. These will serve single households or groups of households, depending upon the dictates of health, technical, and economic factors. The MEA field staff, along with Ministry of Health personnel working in the area, will keep these and related considerations under continuing review in order to ensure that all settler families have easy access to a pure supply of drinking water.

The draft implementation plan in Annex D provides a further discussion of this question. Technical Assistance needed to address this aspect will be provided under the Phase I loan.

The provision of domestic water to worker settlers, project personnel, and settlers during the first few years of settlement is a complex problem because the water table will be low in the dry season and there will not be water in the irrigation system.

Within the settlements themselves, great care is being taken to insure that the planned villages replicate as much as possible the traditional villages from which the settlers emigrate. Temples, bathing places, meeting halls and other features characteristic of the traditional village are planned. The settlement pattern will also reflect the settlers' traditional values related to space, privacy, mobility, etc. In addition, efforts are being made to settle people from the same geographic and socio-economic background in the same villages, a design feature which will greatly facilitate the settlers' successful adjustment to their new lives. Finally, it should be emphasized that the GSL not only has for 40 years of settlement experience, but that System B project authorities are building upon the experiences and lessons learned from the on-going settlement in System H and System C. In fact, a very novel program of exchange visits between project authorities in the respective systems has already been initiated and has proven extremely useful in planning for settlers' needs and avoiding mistakes of the past.

2. Spread Effects

Primary emphasis in the AMP is given to regional development. Not only is crop agriculture to be integrated with livestock management, fisheries, and forestry, but there is to be an overall integration of the rural sector with regional, urban-based, industrial development through the establishment of agro-industry, commerce, crafts, and cottage industry within the immediate project area. As mentioned earlier, it is envisioned that the project will eventually generate employment in this regard such that there will be at least one non-settler family for each settler family in the project area. This one-to-one ratio is characteristic of successful development projects throughout the world (including Minneriya in Sri Lanka).

The largest spread effect, however, may well be outside the project area. The settlement of 20,300 farm families will alleviate the pressure on land in the areas from which these settlers originate. In addition, the generation of employment in both construction and post-construction phases of the project should contribute significantly to a reduction in unemployment throughout the island.

3. Equity

There are several equity issues which the project designers recognize and are attempting to address. The issue which has received the most attention is the Sinhalese-Tamil question. Last year the GSL proposed two guidelines for selecting settlers: (a) each ethnic group will be proportionately represented among the settlers, and (b) existing ethnic balances in the project area will be maintained. A recent re-examination of the ethnic settlement issue, however, reveals that the two guidelines are somewhat incompatible given the vast differences between national, district, and project area ethnic population ratios (See Annex C for details). Further, the difficulty in deciding upon ethnic selection guidelines has increased following the recent decision to complete the Left Bank of System B first. The GSL is committed to arriving at a just and equitable solution, and the head of MASL is personally studying this problem. 1/ A final decision on the ethnic mix of settlers for each of the project areas is to be made by mid-1981.

A second equity issue, the tail-ender problem that plagues so many irrigation schemes, 2/ is likely to be reduced if not eliminated given the project's attention to organizing farmers to operate and maintain their own irrigation systems. Farmers will be organized first at the turn-out level (8-12 farmers); these will select leaders to represent them at the distributary channel level; the distributary channel groups will in turn select leaders to represent them; and so on up the system. Participation of the farmers in this manner in the irrigation system should result in not only a more equitable distribution of irrigation water, but lower costs to the System in terms of operation and maintenance. In addition, farmers will be represented at the local level in the organization to be established for handling agricultural inputs and outputs.

The question of how to discourage unauthorized encroachment and handle previous encroachers has also been defused with the GSL's decision to settle automatically all those who have encroached in the area prior to September, 1977, and to allow those who encroached after that date to apply for settlement, in much the same way that those from outside a project area apply for settlement selection. These post-1977 encroachers will be given some priority but they must first pass certain selection criteria. 3/

1/ The re-examination of the problem and the postponement of a final decision in fact is evidence of the GSL's commitment to a just and equitable solution, which could not have been achieved following the initial guidelines.

2/ See detailed discussion of the problem in USAID Water Management Project (No. 383-0057) Paper.

3/ See Annex C of Mahaweli Basin Development Phase I Project Paper for discussion of the settler selection process and the criteria for selection.

In earlier projects there was some resentment on the part of indigenous villagers towards all the attention given the new settlers. This should not be a problem in this project since the indigenous villages, though few in number, will benefit greatly from the project. For example, inclusion of indigenous village irrigation systems within the larger Mahaweli system will allow these villagers to grow an additional crop of irrigated rice; and these indigenous villagers are likely also to be in the best position to take advantage of the numerous employment opportunities generated under the project.

A final equity issue relates to the natural tendency of wealthy, more ambitious individuals to take control of certain inputs of production (land, tractors, credit, etc.). The project design attempts to maintain equity within the project area by training settlers to be better agriculturists, by diversifying agriculture such that low yields or losses in one season can be absorbed without undue adverse consequences, and by attempting to improve the efficiency of the services (extension, credit, market, etc.) on which the farmers are so dependent for their livelihood.

The GSL has recently proposed two new schemes for use in the Mahaweli project area which should support the economic viability of new settlers. These are the supervised credit-cum-marketing scheme and the plan to give turn-out groups communal ownership of hand tillers and threshers. See Annex C, Section III, for details.

4. Women in Development

The project design assumes a significant role for women in the project. Indeed, project success will be greatly reduced without their contribution. While Sri Lankan women will continue to play a key role in agriculture (transplanting, weeding, harvesting and threshing of paddy; care of the homestead, gardens and tree crops), it is expected that they will also be heavily involved in the agricultural and non-agricultural diversification on which the project depends for regional development. To encourage and promote this, families in which women have special skills are being given priority in settler selection. In addition, training courses are planned to provide new skills which the women can utilize to supplement family incomes. Also, there is a special effort underway to recruit women to serve as agricultural extension agents, irrigators, health workers, police, administrators, and other public servants.

Finally, it should be noted that several features of the project have been designed specifically with women in mind. For example, in the settlements, the women's desires for privacy and for access to bathing facilities, markets, and shops have been considered. Significantly, the decision to increase the homestead size from less than 0.2 ha to nearly 0.3 ha was based upon complaints made by women settlers in System H that the smaller size homestead did not provide sufficient space for gardening, tree crop production, and livestock raising, activities in which women were actively involved.

C. Technical Analysis

Introduction:

This analysis reviews the overall System B project from the technical standpoint and describes the main features of the system and of the proposed project which relates to that portion of the total system lying along the bank of the Maduru Oya ending with the area served by the main left bank canal to km 55. The analysis shows the total System B project and the proposed project are technically feasible. Costs are reasonably firm and are based on the feasibility study and subsequent analysis of that study.

I. Summary Analysis and Description

1. The System B Irrigation and Drainage Works: System B will be served by 271 km of main and branch canals along a left and right bank. The project area will be served by 155 km of these canals on the left bank. Because much of the soil is porous, all of the major canals, except where they are in rock excavation, and some of the smaller canals will need to be lined.

   A number of structures will be required including turnouts, drop structures, level crossings, siphons, and road and rail crossings. Many kilometers of tertiary and farm canals will also be required along with their appurtenant structures. Extensive drainage works will be required as well. They will range in size from small ditches to carry excess water from individual fields to large interceptor drains. The natural drainage ways will be used as much as possible and where required will be deepened and widened.

   The canal systems will supply irrigation water to a total area of 52,000 ha in System B including 26,000 ha in the project area and in addition will provide supplemental water to the existing Pimburettawa (1,260 ha) tank.

   Other infrastructure requirements include roads, housing, schools, hospitals, and the other government and commercial institutions which are needed to support the new communities of settlers who will farm System B. These are planned as part of the System B project and the proposed project, and will be funded by the GSL.

2. Status

   a. Feasibility Report: A feasibility report was completed in August 1980 by a Canadian consulting firm (ACRES International Ltd.) engaged by the GSL. The ACRES report evaluated the Maduru Oya Reservoir and link tunnel and the downstream irrigation works (System B). The feasibility report was reviewed by the GSL, AID Colombo and the consulting and engineering firm CH2M Hill and found to be in form and substance satisfactory.

b. Design and Construction Supervision: The design, specifications, tender documents and review of bidding packages for the main and branch canals as well as the major drainage works design, and design of 4000 ha of tertiary, is being done by a U.S. consultant (Louis Berger International Inc. and International Engineering Inc., Berger/IECO) engaged by the GSL with AID financing.

Of the 271 km of main and branch canals, the GSL has contracted with the consultant to provide, on request, construction supervision for the left bank main canal to km 55 and for related branch canals totaling about 98 km.

c. Canal Construction: The construction of the left bank main and branch canals to km 55 will be done by a construction contractor hired by the GSL with AID financing under this project. The GSL is investigating other possible sources for financing the construction of the remaining left and right bank main and branch canals.

The Mahaweli Development Board (MDB) has already designed and construction is presently underway, under a volunteer labor program, for a 19 km section of a left bank branch canal which will improve the irrigation water supplies to the existing Pimburettawa tank scheme.

The canal construction is anticipated to progress by development zones which are comprised of canal command areas. See figure 2 for the layout of command areas and zones.

The tenders for the AID-financed construction of the 155 km of left bank main and branch canals and tailrace channel are projected to be issued in April 1981. Construction is expected to begin in 1982.

d. Major Drainage Works: The engineering consultant will provide to the GSL designs and specifications for the major drainage system. The system will be constructed by the GSL with technical advice provided by the consultant at the request of GSL.

e. Tertiary Irrigation and Drainage Works: The U.S. consultant will provide designs and specifications for two sample areas comprising 4000 ha of tertiary irrigation and drainage works including on-farm works. For 300 of the 4000 ha the consultant will be responsible for layout, including surveying and staking, and construction supervision of the irrigation and drainage tertiary systems within the left bank branch canal L-1 construction area.

The balance of the tertiary irrigation and drainage works including on-farm works will be designed and constructed by the GSL with technical advice provided on request by the consultant.

f. Other Infrastructure: The ADB is planning to finance construction of some of the new road network needed in System B and C. The ADB has allocated $10 million for this work and plans to begin construction in 1981.

Other infrastructure requirements will be provided by the GSL with possible assistance from other donors.

g. Scheduled Completion Dates: The following table recaps the currently planned canal completion dates of the interrelated elements of System B.

		Canal Completion		Date of Completion of Essential Upstream Elements
Proposed Project	Phase 1a - Zones 1 & 5	—4/83	—11/82	(Maduru Oya)
	Phase 1b - Zones 2,3 & part of 4	--4/84	-Mid '83	(Minipe Weir, RB Canal, Ulhitiya, Ratkinda and Link Tunnel)
Future Project 2/	Phase 2 - Zones 6 & 8	—10/86	—	Same as Phase 1b
	Phase 3 - Zones 7 & part of 4	—11/87	—	6/84 (Victoria Reservoir)

Thus, there do not appear to be any critical timing problems, with at least five or ten month's leeway between completion of the upstream elements and the first time water is needed for each phase. The following section discusses probabilities of the implementation schedule being met.

3. Conclusions as to the Adequacy of Implementation

There are no forseeable problems on the implementation of Victoria Dam with the UK firmly committed and the construction underway. The Minipe Weir, Right Bank Canal and Ulhitiya and Ratkinda Reservoirs are all actively underway and should be completed well in advance of when they are needed by System B. They are scheduled for completion

---

1/ Only the last third of this area depends on construction of these elements.

2/ Outside the proposed project, dates tentative

by mid 1982 - to mid 1983 and Phase 2 of System B will not be ready for water until some months later.

CIDA has agreed to finance the Link Tunnel and Maduru Oya Dam and the construction has started. Because of CIDA's early commitment it appears fairly certain that the two works will be completed on schedule.

Assuming USAID acts expeditiously on this project, there is no reason why the main distribution and drainage works of System B left bank cannot be completed on schedule. The System B tertiary and on-farm irrigation and drainage works and social infrastructure are the responsibility of the GSL and they are proceeding with design and construction. The GSL is giving the highest priority to the Accelerated Mahaweli Development Scheme and there is reason to believe that their portion of System B will progress satisfactorily. The possibility that financial resources may limit progress is discussed in Part I, H. The NEDECO report recommended concentration first on System B and C because the design work was well along and substantial construction is already done. Also the GSL construction capacity now working in System H will be available in the near future. The new main road construction in System B should pose no implementation problem with the ADB planning to begin construction by mid 1981. Other infrastructure elements besides roads, although critical to the success of the projects, are not required as soon as the structural elements of the project.

In summation, the upstream elements of System B appear to be in good position for being implemented on time. From the Maduru Oya dam downstream there is more opportunity for slippage and unless everything goes on schedule, there may well be a delay in the start up of irrigation. At this point, however, there is no apparent reason to feel pessimistic about things going as scheduled.

If there are delays on the project they might be anticipated in the following two areas:

a. All engineering works are completed on schedule but land development and settlement are delayed. The effect would be front loading construction costs and deferred benefit. The impact of this possibility is shown in the sensitivity tests of the economic analysis.

   There is little prospect for deterioration of AID-financed canals while land preparation and settlement are completed since almost all canals will be lined.

b. Headworks and settlement are completed but Zone 1 and 5 canals or Zones 2, 3 and part of 4 canals are delayed. This would necessitate added resources to complete canals or interim support payments to settlers. Increased cost impact is also shown in the economic analysis.

4. Feasibility Study

An important part of the Acres feasibility study for System B, was to define the necessary distribution and drainage system required for irrigating System B and their costs. The final report calls overall for 271 km of main and branch canals which will be totally lined except for lengths that are in rock cuts. The right bank main canal will command an area of 17,700 ha and will be 41 km long with a capacity at the head end of 32 cms. There will be 56 km of branch canals extending from the right bank main canals. The minimum capacity of the branch canal is one cms. The Left Bank Tailrace Canal will be about 2 km long with a capacity of about 56 cms. The left bank main canal will command 34,600 ha or irrigable land and will be 57 km long with a capacity at the upper end of 51 cms. There will be 115 km of branch canals on the left side. Preliminary layouts of the major drainage scheme were also analysed by Acres for their cost studies. The tertiary and on-farm canals having capacities of less than one cms will be designed by the GSL. However, Acres has analysed the tertiary and on-farm canal requirements as well as the drainage system required in order to determine their costs. Figure 2 shows the preliminary canal layout.

5. Consultant's Scope of Work and Schedules

a. Consultant Input

The basic responsibilities of the AID financed consultant are:

i. to design and prepare the tender documents of the main and branch canals including all structures for these canals in System B.

ii. to provide construction supervision for the left bank tailrace canal and the left bank main and branch canals to km 55.

iii. at MASL's option, the consultant may provide construction supervision for all or part of the remaining Main and Branch Canals.

6. Construction Contractor Scope of Work and Schedule

The proposed project entails the construction of about 2 km of Tailrace canal, 55 km of main canal, 98 km of branch canals and appurtenant structures. The construction of the remaining 116 km of main and branch canal are not a part of this project.

The contractor's work will be divided into two construction stages to complement the development of the tertiary and on-farm irrigation and drainage system. The first construction stage will be from the tailrace canal to main canal km 23 for a total of about 25 km which provides irrigation water to Development Zones 1 and 5. The second construction stage will be from km 23 to km 55 which provides irrigation service to Zones 2, 3 and part of 4.

The anticipated schedule for completion from tender to canal and structures completion is:

Tender - April , 1981

Stage 1 completed - April , 1983

Stage 2 completed - November , 1984

In order to meet this schedule it will be essential that the contractor prequalification, contractor selection, contract award and contractor mobilization all take place expeditiously. Figure shows the essential steps and the critical dates needed to achieve this timing. If delays occur and the contractor mobilization is delayed until late 1982 this could mean that water from Maduru Oya would be availble before the canal construction was completed with a consequent loss of potential crop production.

II. Land Resources

a. Introduction: A more complete description of the land resources (soils and land classification) of the System B area is presented in the Project Paper for Mahaweli Basin Development Phase I. The land resource discussion in the Phase I project paper covered only 66% of the area as the basic data such as topographic mapping, the LUD soils survey and the Acres land classification was completed for only that present of the total area. Since then the entire area has been completed.

b. Present Work: The LUD completed a low intensity detailed soil survey which identified and mapped 25 soil series and numerous soil phases on base maps of either 1:3168 or 1:5000 scale in May 1980. Acres International Limited combined the soil survey and topographic mapping to develop a USBR Land Classification which was completed in May 198[illegible].

Concurrently with the design of the canal and tertiary system for the project, LUD is conducting a more detailed soil survey to better delineate the soils boundaries to help optimize development of water requirements.

c. Soils: The results of computation of hectareages for the various classes and subclasses shows that the area is predominantly classified as suitable for lowland paddy (rice only). About 39% or about 52,000 ha has been identified as irrigable with gravity command under double cropping paddy cultivation. Approximately 10% or about 13,700 ha have been classified as suitable for diversified upland crop production.

d. Net Irrigable Area: The total System B and project net irrigable lands was determined to be:

- Under full development there is 37,190 ha of net irrigable paddy land available to the farmers and an additional 2,580 ha of net irrigable uplands in blocks greater than 35 ha.

- Under proposed allocation, not including the deferred area, there is 34,300 ha of net irrigable paddy land and an additional 1,800 ha of net irrigable uplands.

- Under the total AID project presently considered there is 20,300 ha of paddy lands and 1510 ha of upland available for allocation to the farmers.

- Under the first stage of canal construction to km 23.5 the lands served in Zones 1 and 5 there is a total of 6880 ha paddy and 584 ha uplands.

  The exact ha served will be determined during the final design of the system as more detailed soil mapping might modify the above project figures.

III. Other Design Considerations

Descriptions of crops and yields and irrigation system design considerations are found in the Project Paper Mahaweli Basin Development Phase I and are not repeated herein. ACRES final feasibility study estimated yields would be slightly higher than the figures in the earlier project paper. Current yield projections are:

	Maha (t/ha)		Yala (t/ha)	
Land Class	1R	2R	1R	2R
Paddy Yields	4.6	4.1	4.6	4.1

Cropping intensity Maha 0.98

IV. Water Availability

1. As presented in the final feasibility report, the computed water demands for the net irrigable project area are higher than the available water from the watershed and transbasin diversion. The report recommends:

   a. Reduce left bank canal area by about 3000 ha (delayed development).

   b. Size main canal to deliver water to the delayed development area.

   c. As improved water management is implemented, develop delayed area as water becomes available from other parts of the System.

   The design consultants are reviewing the above data and recommendations to include more current and detailed data and information.

   For the AID project proposed, there is no water shortage for the area to be developed and the water availability will affect only the lands to be developed subsequently.

2. Water Management was also discussed in the earlier PP and more information is presented in this project paper in Chapter VI of Annex D and in Annex C, the Social Soundness Analysis.

   a. Present Work :

   The USAID assisted "Water Management Project," which is being implemented by the Irrigation Department, should also have relevance to the System B project. This especially applies to the water management technical assistance training program being conducted at the Galgamuwa Irrigation Training Institute and the establishment of irrigation associations (JSPS) in Gal Oya beginning in 1981. The GSL and USAID are actively involved with this work and plan to apply the experience gained from implementation of Water Management Project to the AMP and System B.

   Recent work carried out under the USAID assisted On-Farm Water Management project being carried out by Irrigation Department/MDB in System H is also beginning to develop important lessons for other areas of Mahaweli and Sri Lanka. This particularly applies to land levelling and preparation techniques and finding alternative crops (vegetables and soyabeans) o rice during the Summer season. During a recent evaluation of this project it was decided that all future work would be tied more directly to farmers fields to more closely link research to the problems being encountered by farmers.

b. Operation and Maintenance:

Other aspects of operation, maintenance and conservation-use of water resources in the Left Bank Project Area will be achieved through a multi-part strategy coupling farmer education, user-group discipline and control techniques. Reponsibility for management of the irrigation system, hence for ensuring that elements of this strategy within their purview are given full effect, will be shared by MASL, MDB and MEA in the following manner. Headworks control, i.e. determination of the total water to be made available at any given time to the left bank project area as a whole, will rest with MASL. MDB will be responsible for all aspects of delivery from the headworks storage points to D-canals, i.e. the main and branch canal system. In its turn, MEA, will have responsibility for managing the tertiary system and ensuring efficient on-farm use of irrigation water by individual farmers.At the turnout level, 8-12 farmers will be organized into turn-out groups and then federated at the D-channel into "Lateral Committees." Through these groups farmers will be encouraged and assisted to gear their cropping practices efficiently to the rotational area. Participation by farmer groups will include both the allocation of available water within and among turn-out areas and the maintenance/clearing of D-canals, field channels and drains. As a matter of basic policy, farmer-users will be mainly responsible for ensuring efficient utilization and maintenance of the entire tertiary irrigation system.

Conclusion

Based on ACRES feasibility study, the review of the study done by CH2M Hill and Mission staff, the TAMS Environmental Assessment, and the draft implementation plan we conclude the project is technically feasible and that cost estimates are reasonably firm.

D. Administrative Analysis

1. Introduction

The capability of the organizations which will implement the proposed project are discussed in the issues section of Part I of this project paper. The discussion below amplifies the information provided in Part I.

The proposed project enjoys an unusual administrative advantage compared to many AID projects because an entire Ministry was organized to implement the program of which it is a major part. The creation of this Ministry, the Ministry for Mahaweli Development, was due both to the high priority placed on the program in Sri Lanka's development plan, and the complexity of the projects that together form the Accelerated Mahaweli Program. By creating a separate Ministry to administer the AMP the GSL insured the program and its component projects would receive priority attention at the highest levels of the Government and thereby would attract the best talent available to implement the program. The successful results of this organizational plan are evident in the commitment, character, and abilities of those who serve as leaders and key figures in the various implementing organizations; in the tremendous progress made in the past three years in moving the program from a reconnaissance level idea to full implementation; in the mobilization by the GSL of one billion dollars in donor assistance; and in the roughly 25% share of the GSL's capital expenditure budget allotted to the program.

Implementation of the overall program is shared between officials of the Ministry itself and the Mahaweli Authority of Sri Lanka (MASL) which with various organizations under its control actually administers the program. Ministry officials participate by exercising public responsibility for major administrative facets of the program such as budgeting, procurement, personnel actions, and policy consideration, and by participating in the MASL as Directors or in special project related positions effectively as part of MASL. Key Ministry officials including the Secretary and Additional Secretaries have many years of experience in similar irrigation and settlement programs.

The key organizations which will be involved in the implementation of the proposed project are the MASL, which under the Ministry is responsible for the overall AMP, the Mahaweli Development Board which under MASL is responsible for construction of the irrigation system and the area's infrastructure, and the Mahaweli Economic Agency (MEA) which as a Branch of the MASL is responsible for the essential settlement, social infrastructure, credit production, and

marketing aspects of the project. MASL is led by a person who is the Secretary of the governing party and as such has direct access to the President, and who is one of the most experienced and capable managers in the country; MEA is headed by an individual who was formerly the head of a large (and successful) Government enterprise and who has many years of experience in rural areas, and the Chairman of MDB is a person whose whole career has been spent on irrigation and settlement projects and who because of his long field experience is immensely respected by his staff at headquarters and in the field. Those serving in key positions under these individuals enjoy comparable experience.

These three organizations and their authority are described in greater detail in this project paper in Annex F and in the Mahaweli Basin Development Phase I paper.

2. The Mahaweli Development Board

The ten year old MDB was formerly the sole organization responsible for implementing all aspects of the Mahaweli projects and in this role it had many successes as noted in Part IH, and Part IIA. It was conceived and achieved these successes as an organization which would integrate engineering, settlement, and production under one roof to ensure all aspects of an integrated rural development program were coordinated and implemented. Consonant with the GSL's decision to accelerate the development of the Mahaweli River's resources and to elevate their importance in the development of the country the GSL in effect decided to raise this coordination to a higher level within the government and therefore to focus MDB's responsibility on downstream construction, and to create a new organization, MEA, to deal with settlement, social welfare, credit, production and marketing. MDB therefore is being reorganized and the currently planned organization is shown in Figure 1, Annex I.

Due to the GSL salary structure MDB continues to experience some difficulty in retaining and attracting middle level engineers. However decisions to focus the organization on construction, use expatriate firms for major design and supervision tasks, amalgamate small contractors into larger groupings, and reduce the near term downstream development effort to that now planned have resulted in the program being within the capabilities of MDB to implement.

3. The Mahaweli Economic Agency

Until the Mahaweli Economic Agency is formally set up as a subsidiary of the Mahaweli Authority, the staff required for it has been constituted into a separate Branch of the Mahaweli Authority under the supervision of Mr. M.L.J. Wickremeratne, who is an Executive Director of the Mahaweli Authority. The Branch Office is responsible for the direction and implementation of:

a. the Area H-5 Pilot Project covering the development of 12,500 acres of irrigable land together with homesteads accommodating 5250 settlers;

b. the rest of System H (about 52,500 acres of irrigable land together with homesteads accommodating 18,000 settler families), which is being brought under its control with effect from 1.1.81. This will enable the Mahaweli Development Board which was earlier responsible for it, to concentrate its attention on the physical planning and development of downstream areas under the Accelerated Mahaweli Programme;

c. System C, in which 1400 worker-settlers were brought into position in 1980 and a further 2200 worker-settlers are due to be brought into position in 1981; and System B.

The Branch Office is housed in 6000 sq.ft. of office space in Colombo and the key Members of the Office Staff are already in position. They include the following:-

Designation	Name	Former Position
Manager Finance & Admin.	Mr. P.M. Wijekoon	Addl. General Manager Operations, Mahaweli Development Board.
Manager Production Marketing and Credit	Mr. D.W. Kannangara	General Manager, Development Finance Corporation of Ceylon.
Manager Community Services	Mr. T.S. Jayawardene	Director Sports, Ministry of Sports.
Manager Business Development and Investment	Mr. D.P.D.M. de Silva	Director M/s John Keels Ltd

The Production Marketing and Credit Division has been strengthened with the recruitment of the following:

Chief Agricultural Officer	Mr. J. Kotalawela	Deputy General Manager (Agriculture) - M.D.B.
Senior Agricultural Officer	Mr. D. Buddhadasa	Deputy Director of Agricultural Development Ministry of Agricultural Development & Research

Designation	Name	Former Position
Chief Equipment Engineer	Mr. W.W. Udupihilla	Sales Manager Ford Tractor Agency for Sri Lanka
Chief Marketing Officer	Mr. G.L.W. Amerasekera	Manager, Non-Traditional Exports, Ceylon Tobacco Co.Ltd.

In addition, arrangements have been made for the part or full time services of other Senior Management Personnel, such as -

Consultant	Mr. W. Jayasuriya	Chairman, State Trading (Consol-Expo) Corporation
Consultant	Mr. C.F.H. de Saram	Chairman, National Livestock Development Board
Consultant	Mr. Hope Todd	Dty. Director Gen. (Dev) Ceylon Tourist Board
Chief Community Development Officer	Mrs. P. Ranatunge	Technical Adviser, Ministry of Plan Implementation
Chief Irrigation Engineer	Mr.Athula Weerasuriya	Deputy Resident Project Manager (Water Mgt.) Galnewa - System H, M.D.B.

In addition to the staff in the functional divisions of this Office, its organization includes Project Co-ordinators each of whom is responsible for the Staff Work required to support a single System. Mr. T.H. Karunatilleka formerly Resident Project Manager Galnewa System H, Mahaweli Development Board, has been brought in as Project Co-ordinator for System B. The Project Manager Designate for System B - Mr. K. Varnasuriya, formerly Management Consultant, National Institute of Business Management, is also working full time at the Branch Office, planning the work to be done before the scheme becomes operational. The Branch Office Organization is shown in figure 2, Annex I.

The first of the Block Managers in System B, Mr. P. Seneviratne, has assumed duties at Welikande and will be responsible for field liaison with the Mahaweli DevelopmentBoard until the Project Manager assumes duties. Figure 3(I) shows the Organization of the Project Manager's Office, System C at Giranduru Kotte at its inception in 1980. Figure 4(I) shows the more detailed Organization that will be set up in each of the Systems under the Accelerated Mahaweli

Programme at the stage at which irrigated cultivation commences. The staff required for the initial stage in System B will be recruited and moved into position by September 1981 in anticipation of worker-settlers being brought into their camps from 1982 onwards. It is not anticipated that there will be any difficulty in recruiting the staff required to fill these posts. It is premature to recruit this staff till mid-1981. Intensive training programmes are being developed for the newly recruited staff by expansion and modification of the Training Programmes originally developed for the staff recruited for the Pilot Project in Area H-5 in 1979 and for System C early in 1980.

MEA will have had almost three years of significant and related experience in other project areas before its major field work in System B commences. The organizational structure, key staff already in place, planned recruitment and training of additional staff, and an agreed on implementation plan indicate that MEA will be able to carry out its functions. If it becomes apparent that assistance is needed by MEA which cannot be secured locally this assistance will be provided from AID funding provided under the Phase I project. Such assistance in the near future will be in:

Land Use and Settlement Planning;

Implementation Management;

Groundwater Hydrology, and

Business Development

E. Environment

1. Impact Assessment and Reaction

AID and the GSL recognized that the AMP would result in land use and social changes which would have a significant impact on the environment and that this aspect of the program could better be determined by examining all facets of the program rather than individual sub-projects. Therefore at the request of the GSL, AID financed an environmental assessment of the program with grant funding available under the Development Services and Training project.

The study was carried out by the U.S. firm of Tippetts-Abbett-McCarthy-Stratton from September 1979 - September 1980. A draft of the final report was thoroughly reviewed by the MASL in August 1980 and final copies of the report were provided to the GSL in December 1980.

The report analyzes the effect of the AMP on the terrestrial, aquatic, and human environment, and purposes activities to mitigate or partially mitigate possible negative impacts on the environment. The Mahaweli Authority is in general agreement with the thrust of the recommendations in the report. Many of the recommendations relate to activities of other Ministries and therefore it will be some time before the full reaction

and intention of all who would be involved in implementing the recommendations is known.

In most if not all cases the GSL is already taking actions along the lines proposed by TAMS; programs are underway to protect the AMP catchment areas and to provide fuelwood lots and plantations within the project areas; design criteria and designs take into account the need to maximize existing wetlands, control weeds, and minimize health risks; other health programs are planned and malaria control programs are underway; fisheries development is planned; water quality and pesticide monitoring programs are being planned in some detail including a program in System B being developed by the staff of Berger-IECO; domestic water considerations are being given high priority; maximum attention is being paid to limiting and solving social problems; detailed land use plans are being prepared; and MASL is working closely with the Department of Wildlife to limit negative impacts on its population.

Overall the TAMS report does not recommend major changes in projects or the overall AMP but it does recommend a series of activities to safeguard investments in the program and minimize negative impacts. The GSL is likely to implement most of the recommendations and has already taken action to implement a majority of them.

2. Wildlife

The program's potential effects on wildlife have been of particular importance to the GSL and to AID. In light of TAMS'findings, MASL is taking a major role in coordinating action in this area with the Department of Wildlife. MASL has developed an overall proposal related to safeguarding wildlife which is being considered by the Department. It broadly follows TAMS recommendations and in many cases expands the area supposed to remain for wildlife use. Substantial effort by the Department will be necessary to fully implement the various proposals. MASL's proposal is included in Annex G.

3. AID's Plans

As part of its involvement in the Mahaweli Program AID/W suggested and USAID has agreed to propose a multi-year grant for a Mahaweli Environmental Protection project. Constraints to Mission staffing and the recent arrival of TAMS final report have limited development of this project to date. However through the use of consultants and local capability the Mission expects to submit a PID for this project in FY 81 and a project paper in FY '82. The project is expected to focus on a few elements of the environmental situation, such as wildlife, domestic water, and a monitoring program. USAID will also encourage the GSL to involve other donors in developing and implementing the recommendations in the TAMS report.

Part IV Financial Analysis and Plan

The financial analysis reviews (a) the effect of the project on the implementing agencies, (b) its effect on project participants and (c) sets out schedules for fund use by funding source.

(a) The impact of project requirements and on funding agencies is discussed in the Mahaweli Sector Support program paper, in Part I H of this paper, and in Chapter X of Annex E. These analyses show project costs are a small part of overall Mahaweli program costs but that an adjustment in the GSL budget or in the overall program is necessary and likely.

(b) The financial effect of the project on participants is described in Chapter X of Annex E. The analysis estimates current annual average income in the project area is Rs.9400,[1/] that the average income now of families to be brought to the area is Rs.6000, and that at full development with the project annual family income from agriculture will be Rs.10,000 - 12,000 which is slightly less than the national family average from all income of Rs.13,780. The analysis also shows that in the less productive initial years of the project annual family income will be sufficient to sustain the family and maintain a nutritionally balanced diet.

(c) The financial plan for the project is shown in the following two tables. Additional tables in Annex I provide a further breakdown of project costs including a breakdown by zone.

1/ More recent data from field research funded by AID as part of the baseline date collection effort shows the average annual income per household within the project area to be Rs.5,757 from agriculture and Rs.2,520 from other sources for a total of Rs.8,277.

TABLE 4

SUMMARY COST ESTIMATE AND FINANCIAL PLAN[1/]

(US$ Million)

SOURCE / USE	AID		HOST COUNTRY		DONORS[2/]		TOTAL
	FX	LC	FX	LC	FX	LC	
Main Canal	22.4	13.7	-	-	-	-	36.1
Branch Canals	12.7	7.3	-	-	-	-	20.0
Sub-Total	35.1	21.0	-	-	-	-	56.1
Inflation[3/]	9.3	8.6	-	-	-	-	17.9
Contingency[4/]	4.4	3.0	-	-	-	-	7.4
Sub-Total	48.8	32.6	-	-	-	-	81.4
Tertiary System	-	-	11.2	6.4	-	-	17.6
Main Drains	-	-	1.8	0.8	-	-	2.6
On-Farm Development	-	-	6.3	3.9	-	-	10.2
Settlement	-	-	-	10.5	-	-	10.5
Roads	-	-	-	10.9	5.0	-	15.9
Social Infrastructure	-	-	-	9.0	-	-	9.0
Overheads	-	-	-	4.3	-	-	4.3
Sub-Total	-	-	19.3	45.8	5.0	-	70.1
Inflation[3/]	-	-	10.9	29.5	-	-	40.4
Contingency[4/]	-	-	3.4	8.3	-	-	11.7
Contingency[5/]	3.6	-	(3.6)	-	-	-	-
Sub-Total	3.6	-	30.0	83.6	5.0	-	122.2
Total	52.4	32.6	30.0	83.6	5.0	-	203.6

1/ Excludes $10 million for design and supervision of main and branch canals and technical assistance funded under project 383-0056

2/ The Asian Development Bank is financing $10 million for main roads in the project area and adjacent project areas. About $5 million of this relates to the project area. The World Food Program will fund some settler support. FAO plans to fund about $800,000 for a research and demonstration farm in the project area. Other donors are financing various headworks elements on which the project depends, under other the projects.

3/ Inflation of 10% FX and 15% LC.

4/ Contingency at 10%

5/ Contingency for miscellaneous equipment procurement.

TABLE 5

PROJECTION OF EXPENDITURES BY FISCAL YEAR

(US$ Million)

Fiscal Year	AID	Host Country	ADB	Total
1981	1/	(10.0)		
1982	44.2	9.7	2.5	56.1
1983	30.8	34.7	2.5	67.5
1984	6.4	35.2		41.2
1985	-	37.5		37.1
Unattributed	3.6	(3.6)		-
TOTAL 2/	85.0	113.5	5.0	203.5

1/ AID expenditures in FY81 relate to design of the main irrigation system and technical assistance funded under Project 383-0056.

2/ Inflation and contingency are included in the above figures. More detailed tables in Annex I contain information with inflation and contingency shown separately.

Part V Implementation Plan

This section outlines in broad terms the general plan for implementing the project. The detailed implementation plan is presented in draft in Annex D of the project paper. The plan was developed under technical assistance from the Phase I loan in conjunction with MASL, MDB, and MEA officials as well as USAID project personnel. The plan is under intensive review by the project authorities prior to finalization. As written it represents the basic current view of the authorities and of USAID. A final agreed implementation plan is a condition precedent to disbursements under the loan. Project monitoring is detailed under Part VI of this project paper.

For implementation discussion purposes the project can be thought of as having five components: major canal construction, other construction, settlement and settler support, equipment procurement, and technical assistance. The procedures for implementing each of these activities is:

(1) Major Canal Construction

The main and branch canals in the project area will be constructed by a firm from an eligible code 941 country under a host-country lump sum cum unit price contract. Construction will be supervised by the MDB through their U.S. consultant Berger-IECO.

The U.S. consultant is funded under the Phase I loan and is preparing the designs and bid documents. Table 6 shows the schedule for procuring this contractor. AID will not provide logistic support to the contractor. It is intended that the bid documents contain all information necessary to bid on the main and branch canals up to km 23.5 of the main canal and sufficient information for bidders to understand the amount and type of work that will be required to construct the main and branch canals from km 23.5 to km 55 of the main canal. A contract will be awarded for construction up to km 23.5 and this contract will subsequently be negotiated to provide for construction from km 23.5 to km 55 including attendant branch canals.

(2) Other Construction

Most of the remaining construction on the project will be done by local medium and large scale contractors under contract to MDB which will supervise the works. Contracts will be fixed price or negotiated on a unit rate basis. MDB has considerable experience with such contracts. When work involves contractors mobilizing worker-settlers to carry out labor intensive jobs MDB will coordinate with MEA.

(3) Settlement and Settler Support

This major aspect of the project will be funded by the GSL and involves a range of activities including initial settler selection, relocation in the project area, involvement in project work, development of farms, planning and staffing of socilal infrastructure, provision of production inputs, extension, water user organizations, marketing of produce, and

overall well being of the populace. Seven major criteria will govern this aspect of the project. These are : (a) for the project to be successful, settlers must be successful; (b) settlers must be involved in project decision making and in the project's development; (c) settler's must be able to turn towards an individual rather than many people for their requirements and to solve their problems; (d) as quickly as possible the private sector must service the area; (e) on-going project activities should be self-financing; (f) settlers should be suited to farming; (g) the project must be beneficial to all areas of the country; (h) a cohesive developing community cannot be solely composed of farmers.

In brief,project authorities are meeting these criteria by:
(a) creating an organization specifically focused on the settlement aspects of the project, providing social infrastructure required to serve the population and designing the project based on forty years of local experience to meet the demands and needs of a resettled community; (b) maximizing the involvement of settlers in the project by selecting them early in project life, meeting them in the sending areas,bringing them to the area as worker-settlers to help build the project, training them to assume responsibilities for various aspects of the project, organizing them into water user associations, including their representatives in local decision making bodies; (c) organizing project administration so settlers can turn to a local resident unit manager to meet their various needs instead of a series of visiting specialists ; (d) promoting private sector involvement to supply services through investment incentives including land allotments and through technical assistance; (e) financing administration and credit through careful monitoring of crop production and levying a marketing charge; (f) selecting settlers based on criteria which emphasize farming experience; (g) selecting settlers from electorates throughout the country; and (h) encouraging the voluntary settlement of skilled workers and craftmen by providing land for shops and homesteads.

(4) Equipment Procurement

MDB will procure GSL financed equipment under their own competitive procedures, and AID-financed equipment under A.I.D. procedures. MDB has experience with AID's procedures under the loan for Mahaweli Irrigation.

(5) Technical Assistance

Technical assistance for the project will be provided under the Phase I loan. The contract between the GSL and Berger-IECO provides a mechanism and funding for such technical assistance. Uncommitted funds are available under the Phase I loan to provide such assistance from other than Berger-IECO should this be necessary.

Figure 3 and Table 7 show the overall project target dates and the key steps in reaching these target dates.

TABLE 6

SYSTEM B CONSTRUCTION

IFB IMPLEMENTATION SCHEDULE [1/]

December 30	-	MDB submit to USAID request to publish announcement asking interested firms to request prequalification questionnaire.
January 10	-	Berger-IECO submit to MDB and USAID copies for review of the package of information to be sent to firms requesting prequalification info.
January 30	-	MDB can begin to send prequalification info to firms requesting same.
January 30	-	Berger-IECO submit to MDB and USAID the following parts of the proposed invitation for bid: (a) Cover letter inviting bids; (b) Instruction to bidders; (c) Form of Tender; (d) Forms of bid, bonds, guaranties; (e) Form of Agreement; (f) Conditions of contract Part I and II; (g) Any other non-technical material proposed to be included in the IFB.
March 15	-	Prequalification responses due from interested firms. (Berger-IECO must review this data and recommend a list of firms to be prequalified. GSL and AID will review and approve a final list. This date provides 6 weeks for review and approvals before the IFB is to be sent to firms on the list. It also gives firms 6 weeks from the date the prequalification package is available to send out, to the date responses are due.)
April 30	-	IFB sent to shortlisted firms. (To attain this date the GSL and AID must have approved everything in the IFB. If the material required on January 30 is submitted, the non-technical parts can be reviewed and ready to be approved by this date. The technical parts will be reviewed as they are developed so the total package can be approved by this date.)

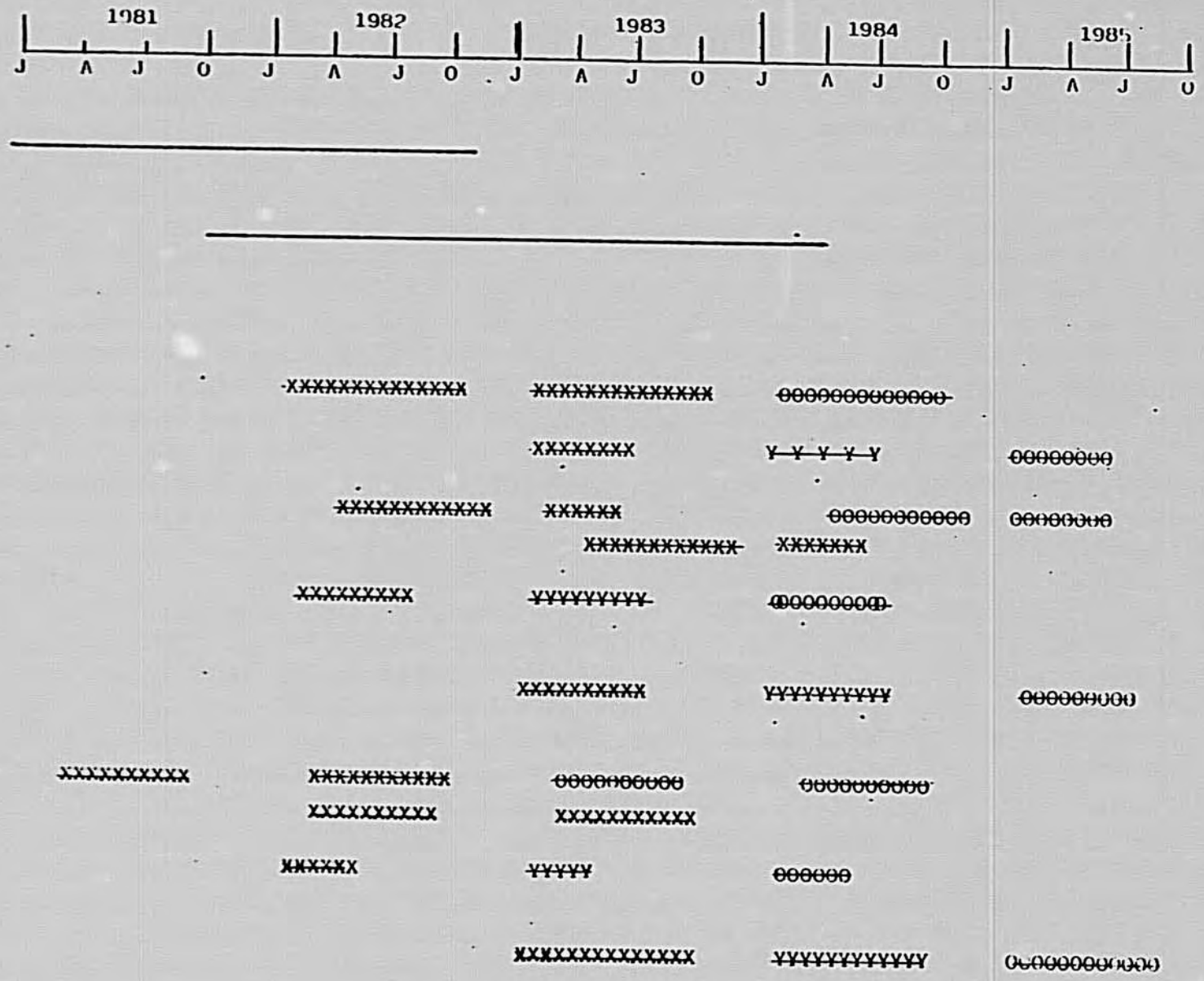
May 30	-	Pre-bid meeting in Sri Lanka for one week.
July 31	-	Bids due
August 31	-	Berger-IECO analyse bids and recommend to MDB which firm to select.
September 30	-	GSL proposes and USAID approves proposed award. Notice sent to selected firm.
November 30	-	Contract approved by GSL and AID and signed.
End February 1982	-	Contractor and construction equipment mobilized and in country.

Implications of this Schedule:

If these dates are met and the tight mobilization schedule adhered to construction can begin concurrent with good weather in System B in 1982. Any slippage eats into the first construction season.

1/ Exact dates will be adjusted for holidays, weekends etc.

[illegible] -1 -- Implementation Schedule For Construction, Land Development and Settlement Works
Left Bank Project Area, 1980-85



[illegible] ent 1 (Zones 1 & 4)
[illegible]

FIGURE 3

TABLE 7

TABLE II-1 CRITICAL DATES IN PRELIMINARY IMPLEMENTATION SCHEDULE FOR DEVELOPING / SETTLING ZONES 1 AND 5 OF LEFT BANK PROJECT AREA

Date	Chapter Ref.	Activity	Importance of timing
December 1980	Gen.	MASL/MDB/MEA finalize implementation plan for completing development and settlement of Left Bank Project Area by September 15, 1985.	Needed for USAID Project Paper and for insuring consistency of all implementation activities.
December 1980	Var.	MASL/MEA/MDB finalize near term technical assistance program.	Decisions affect feasibility of preliminary strategy; Berger/IECO need lead time for recruitment;
December 1980	IX	MEA define numbers and types of buildings required at each level of settlement for (a) settler-working period and (b) family settlement phase.	Contract tenders must be issued by February 1981 for building construction required for settler-worker phase. With longer run requirements specified some cost-savings might result from composite scheduling.
February 1981	III	MDB complete socio-economic survey	Data are essential to determining number of settlers to be recruited from outside the Project Area.
January 1981	III	MDB finalize Land Use Plan and tank sites.	Essential for determining what settler-worker camp facilities are to be constructed hence to issuing tenders for that construction.
February 1981	IX	MDB issue contract tenders for settler-worker housing and MEA field offices and staff housing.	Construction must be completed by September 1981 to prepare for settler-workers' arrival in February 1982.
March 1981	III	MEA determine number/location of present residents eligible for land allotments and number/location of ineligible encroachers. Settle policy and procedures re temporary work on project development or/and their removal from Project Area.	Essential to firm planning of number of settlers to be recruited from outside the Project Area and determining the the prospective size of the settler-worker labor force.
May-August 1981	XII	MEA develop detailed plans for Project staff pre-service training to be conducted in period between field-posting and arrival of first settler-workers.	First-year MEA staff to be posted in September 1981.
June 1981	VII	MEA arrange for field surveys basic to establishing policy and procedures vis a vis intake of non-farm settlers.	Lead time for orderly planning and arrangements prior to beginning settlement in February 1983.
June 1981	XI	MEA establish paddy seed supply arrangements with Department of Agriculture for (a) procuring 350 tons of certified,registered seed by August, 1983 to meet new settlers' first-crop requirements and (b) for Project participation in Department's nationwide seed paddy multiplication scheme.	Insure timely availability of high quality seed.

Date	Chapter Ref.	Activity	Importance of timing
June 1981	II	MEA initiate procurement of all vehicles required for Project management and servicing settler-worker camps. Cost ± US$ 1.5 million.	Leadtime for import procurement
July 1981	X	MEA send study team to Korea and Philippines to explore farm draft power alternatives.	Lend time for preparing this component of MEA staff training and 1982 procurement for 1983 cultivation/harvesting
August 1981	V	MDB initiate procurement of imported items required for radio-dispatched mobile van repair system and for equipping 3rd echelon equipment repair centres at Welikanda and Aralaganwila.	Entire maintenance system must be operational by February 1982.
August 1981	V	MDB issue tenders for 10 land clearing equipment units. ± fx costs ± US $ 5.5 million.	System must be operational by February 1982 to meet overall Project completion schedule.
August 1981	VIII	MEA complete first-year Project staffing.	All MEA Project staff scheduled to be posted in field for training beginning September 1981.
August 1981	IX	MDB complete construction of MEA staff housing/office buildings, settler-worker camps and tanks	Field. Camps must be finished before onset of monsoon.
August-October 1981	VII	MEA develop definitive management plans for servicing settler-worker camps and for meeting settler-family subsistence assistance needs.	Camps begin operating in February 1982. Need lead time to assure all prerequisites are met for servicing settler-families efficiently beginning February 1983.
October 1981	V	MDB complete trace clearing for D-canals and access roads.	Excavation of D-canals must begin with arrival of first settler-workers in February 1982 in order to meet overall Project completion schedule.
November 1981	IX	MDB complete construction of repair facilities buildgs at Welikanda and Aralaganwila and procurement of equipment availale from local sources.	System must be operational by time land clearing work begins in February 1982.
November 1981	VII	MEA finalize operational and logistical plan for traporting 2,000 settler-workers per month for 2½ months.	All 7600 settler-workers must be at work on D-canal excavation work by July 15 to meet overall Project completion schedule.
November 1981	XII	MEA complete definitive plans for settler-worker andettler-farmer orientation and skill training programs.	Insuring that headstart made during settler-worker period complements effectively the more definitive orientation/ training effort beginning with arrival of settler families in 1983.

Date	Chapter Ref.	Activity	Importance of timing
May 1981	III	MGB-MEA multi-disciplinary team survey to determine for each hamlet how household-use water requirements can best be met.	Lead time essential for MEA arranging whatever means prove necessary to assuring an adequate supply.
December 1981	VII	MEA/Government Agents complete selection of settler-workers — including designation of their camp assignments and call-up schedule.	Inductions at the rate of 2,000 per month must begin February 1, 1982 to meet manual labor requirements of 4-year Project completion schedule.
December 1981	XI	MEA complete arrangements with People's Bank for initiating H-5 type of credit system in Left Bank Project Area.	Credit system must be operational by September 1983 with adequate funding assured for meeting rapidly expanding farmer demands over next several years.
January 1982	VII	MEA complete all logistical arrangements for transporting, housing and feeding settler-workers beginning February 1, 1982	Settler-worker labor force will be hard press to meet all manual labor requirements under best of conditions.
January 1982	VII V	MGB complete Construction Unit staffing including land clearing Equipment Unit Supervisors and machine operators.	All aspects of construction phase must proceed full forcefrom February 1982 to meet 4-year completion schedule for entire Left Bank Project Area.
February 1982	IX	MGB issue tenders for local large/medium scale contracts for organization and supervision of construction of all remaining social infrastructure buildings and irrigation/road structures.	Works must be completed before arrival of settler families beginning in February 1983.
February-August 1982	V	MGB complete farmstead land clearing	Essential to overall schedule and making efficient use of equipment
March-September 1982	IX	MGB/contractors complete all remaining project management and social infrastructure buildings	Essential to meeting overall Project completion schedule.
March 1982	X	MEA issue invitation to bid for franchises for establishment and operation of Town-level machinery repair and maintenance facilities at Weikkanda and Aralaganwila.	Must be operational by September 1983.

Date	Chapter Ref.	Reality	Importance of timing
May 1982	xiii	[illegible] complete procurement of settler housing-assistance materials	Enable settler-workers use spare time to construct temporary housing before returning with families.
June 1982	v xii	[illegible] progressive settlers their homestead plots.	Worker morale plus opportunity for some homestead clearing and house construction in periods not needed for project development works.
July 1982	ix	[illegible] for their stabling and [illegible] health services, police, [illegible] in consultation with Project Manager on [illegible] settlers.	Facilities must be operational by time settler families arrive in 1983.
August 1982	x	[illegible] procurement of farm tractors for 1st year Maha [illegible]	Farmers will need first tractors in September 1983.
August-November 1982	iv	MUB complete all earthwork on field channels and drains	Crucial to meeting overall project completion time schedule
August-November 1982	iv	[illegible] complete all [illegible] required for [illegible], field [illegible]	Ibid.
September 1982	xii	[illegible] procurement of [illegible] additional houses, barns etc., required [illegible] "[illegible]" needs.	Settlement of non-tank hamlets will begin by April 1983.
October 1982	xii	MUB finalize operational plan for balanced development off-farm sector.	1 year lead time necessary for preservice training of Business Development staff, effecting incentive financing arrangements etc.
November 1982	xii	MUB determine settler-workers eligible for land allotment and number of "[illegible]", as [illegible] their homestead plots.	Settlement starts in February 1983.
March 1983	xi	[illegible] procurement, [illegible] distribution arrangements for [illegible] 1983/84 Maha season.	Insure availability when and where needed.
	x	[illegible] procurement of [illegible] tractors, irrigated Maha [illegible] 1983. [illegible] will have to be imported	Farmers will need first threshers in February 1984

BEST AVAILABLE DOCUMENT

Date	Chapter ref.	Activity	Importance of [illegible]
January 1983	X	MEA commission comprehensive analysis of feasibility of shifting over time from a chassis to animal power for land preparation and threshing.	[illegible]
January 1983	VII	MEA finalize legal arrangements — including firm [illegible] contract-based transport of [illegible] settler families per month.	[illegible]
February 1983	XI	MEA issue invitations to bid for village-level franchises [illegible] supplying settler-farmers needs for fertilizers, pesticides, weedicides, rental sprayer clusters and small tools.	adequate private sector [illegible] discouraged by [illegible].
February [illegible]	VII	MEA begin induction of settler families at rate of [illegible] per [illegible] including operation of settler-assistance program.	[illegible]
February–September 1983	XIII	MEA conduct orientation and skill training courses for newly arrived settlers.	settler/family [illegible]
March 1983	VI	MWB complete operational plan for main and branch canal maintenance and recruitment/training of ditch riders.	[illegible]
July [illegible]	X	MEA issue invitations to bid on franchises for village-level machinery repair and maintenance facilities.	[illegible] private [illegible] per [illegible].
August 1983	XI	MEA complete procurement, stocking and distribution arrangements for fertilizers, pesticides and weedicides required for first season.	[illegible]

PART VI

Monitoring and Evaluation Arrangements:

This section provides a summary of the full Monitoring and Evaluation Plan which is presented in Annex B. The plan discusses the collection of baseline data, the development of indicators for evaluation, the monitoring of the project, and the evaluation means and timing.

A. Baseline Data Collection

1. Baseline data on the current physical situation and the planned physical activities in the project area are contained in the Acres Feasibility Study, the TAMS Environmental Assessment and other documents available in Colombo. Some aspects of the physical data need refinement such as that related to water quality, domestic water, and wildlife. Programs to refine data on the former two aspects will begin in 1981, that on the latter is expected to be treated as part of a grant for FY 82 which will deal more fully with the environment. In addition the final implementation plan and the engineers designs will show refinement of the existing baseline data in some areas.

2. Baseline data on the status of settlers within the project area is available in studies carried out by the Mahaweli Development Board and in a more detailed study financed by A.I.D and carried out by a group from the University of Colombo. Field work for the AID-financed study has been completed and the report will be submitted to AID in the next few weeks.

3. Baseline data on settlers who will come from outside System B will be collected prior to their settlement under a contract USAID will negotiate with a local group.

B. Indicators for Evaluation

Specific indicators for subsequent evaluation will be agreed to between AID and the Mahaweli Authority during 1981. The indicators will relate to physical works, the environment, production, and to the status of settlers-health, income, education etc.

C. Monitoring

Project monitoring is essentially a process of daily evaluation of all elements of the project leading to appropriate decisions concerning implementation of the project, which at the same time results in the collection of data to serve as a resource for periodic in-depth evaluations. The monitoring of various elements of the project will be done as follows:

1. MDB's consultant for the project, the association of the U.S. firms of Berger-IECO with the Sri Lankan firm of Resources Development Consultants will monitor in their role as supervisors the construction of the main and branch canal irrigation system. Monthly reports will be submitted.

2. MDB, through their field staff will monitor progress on other physical activities. Monthly reports will be submitted.

3. Similarly MEA will monitor production progress, and the settler situation through their field staff who will also submit monthly reports.

   A.I.D. will augment MEA's capability to monitor the post construction part of the project by financing an on-going study of settlers within the project area. This study will be done by a local group. We envision the study will include stationing people within the project area who will do two things: Monitor and report on the general post construction situation-particularly settler problems, and also begin to track selected settler families as case studies throughout the period of the project.

4. The Mahaweli Authority will monitor the total project through their progress control and project monitoring office which is already in operation. This unit receives the various field reports directly, sends their own staff to the field to check progress and prepares a management report for senior officials in the Authority to review monthly. Thus the unit is independent of the implementing agencies.

5. USAID will monitor the project through field trips, GSL and Consultant reports, and personal contact with settlers and those involved in project implementation.

D. Evaluation

Two types of evaluations will take place - annual and special. Both types of evaluations will be carried out under the auspices of the project's coordinating committee which has already been established. This Committee has as members senior officials of MASL and the implementing agencies as well as representatives of CIDA and AID. AID is represented by the Mission's Mahaweli Development Division.

The annual evaluations will be of two types : A general review of the settlement side by Dr. Thayer Scudder of the California Institute of Technology and a review of important elements of the project by the project coordinating committee augmented as necessary by home office representatives of AID and CIDA, as well as outside consultants.

Special evaluations will be made as necessary if particular topics or subjects arise which so require.

E. Funding the Evaluation Program

	1981 US$	1982 - 1986 US$
1. Baseline Data Collection	10,000	30,000
2. Monitoring Settlers 15,000 X 5 Years	-	75,000
3. Evaluation		
A. Consultant Scudder	20,000	100,000
B. Annual Evaluation	-	
Outside Consultant	-	
One per year X 1 Month 16000 X 5		80,000
Special Evaluation	-	180,000
12 person months		
TOTAL	30,000	465,000

This Mission will fund 1981 costs from other funds including DST and PDS. The source of future year funding will be discussed in relation to the proposed FY 82 loan funding for the project.

Part VII Conditions, Covenants and Negotiating Status

The following are the conditions and covenants that the Mission proposes to negotiate as part of the loan agreement.

A. Initial Conditions Precedent to Disbursement

Prior to the first disbursement or to the issance of the first Letter of Commitment under the loan the Borrower shall, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to A.I.D.

1. An opinion of the Attorney General of Sri Lanka or other counsel acceptable to AID that the loan agreement has been duly authorized or ratified by and accepted on behalf of the Government of Sri Lanka and that the agreement constitutes a valid and legally binding obligation of the Government;

2. Designation of the person(s) in the External Resources Department of the Ministry of Finance and Planning, and in the Implementing Agency who will act as representatives of the Government of Sri Lanka, along with a specimen signature of each such person.

3. An implementation plan covering the life of the project.

B. Conditions Precedent to Disbursement of Funds for Construction

1. A signed contract with a contractor to construct the main and branch canals in the project area.

2. A plan for implementing actions to mitigate any negative impacts the AMP may have on the environment which takes into account the environmental assessment financed by A.I.D.

C. Covenants

1. The Government agrees that prior to initiation of work on the project in 1982 or any subsequent year it will provide AID with a workplan detailing the work to be accomplished in the year and the costs of such work.

2. The Government agrees it will establish a separate accounting of funds budgeted and expended on the project.

3. The Government agrees that it will provide A.I.D. with detailed quarterly reports of progress on the project and detailed quarterly reports of progress of other works on which the project depends including Victoria Dam, Minipe Anicut the RR transbasin canal, Ulhitiya and Rathkinda Reservoirs, the Maduru Oya link tunnel, and the Maduru Oya dam.

4. The Government recognizes that the project depends on the successful completion of the above works and agrees that AID may from time to time inspect such works and propose reasonable actions to further implementation of such works.

5. The Government agrees that it will establish the area south of Maduru Oya dam as a national park and will take such actions as may be necessary to preserve and develop it as such.

6. The Government covenants to consult with A.I.D. prior to finalizing any agreement with any other donor or non-Sri Lankan commercial interest directly related to financing activities within the project area.

The Mission has discussed these conditions and covenants with the Government and believes they are acceptable.

ANNEX A

1. Borrower's Request
2. PID Approval Message
3. Logical Framework
4. 611(e) Certification
5. Draft Authorization
6. Statutory Criteria Checklist

UNCLASSIFIED

cable sent 6/13/80

= TELEGRAM =

AMERICAN EMBASSY COLOMBO

P 110635Z APR 80
FM SECSTATE WASHDC
TO AMEMBASSY COLOMBO PRIORITY 358
5
UNCLAS STATE 294767

11 APR 80

AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: MAHAWELI BASIN DEELOPMENT - PHASE II (1983-2056)
REFS: (A) COLOMBO 1442; (B) STATE 070216; (C) STATE 49797; (D) STATE 028316; (E) 333867 (79)

1. FOLLOWING RECEIPT OF REF. (A), QUESTION OF NEED FOR PID FOR PHASE II PROJECT WAS REVIEWED IN LIGHT OF INFORMATION AVAILABLE IN AID/W.

2. PRIMARY PURPOSE OF PID IS FOR MISSION AND AID/W TO ESTABLISH PARAMETERS OF PROPOSED PROJECT AND TO IDENTIFY AND REVIEW PRINCIPAL ISSUES BEFORE PROCEEDING WITH INTENSIVE ANALYSIS REQUIRED FOR PP. IN PRESENT CASE, AID/W AGREES WITH MISSION THAT PARAMETERS OF PHASE II PROJECT HAVE BEEN SATISFACTORILY DESCRIBED AND REVIEWED IN CONTEXT OF PHASE I DESIGN/SUPERVISION PROJECT. THEREFORE, MISION NEED NOT RPT NOT SUBMIT PID FOR PHASE II PROJECT. MISSION SHOULD, HOWEVER, PROVIDE DATA FOR PID FACE SHEET.

3. WISH TO EMPHASIZE, HOWEVER, THAT PP FOR PHASE II PROJECT SHOULD ADDRESS ISSUES IDENTIFIED DURING REVIEW OF PHASE I PROJECT PARTICULARLY THOSE WITH RESPECT TO WHICH AVAILABLE INFORMATION WAS INCOMPLETE DURING REVIEW OF THAT PROJECT. SUCH ISSUES INCLUDE, FOR EXAMPLE, THE CAPACITY OF THE PROPOSED MAHAWELI ECONOMIC AGENCY TO UNDERTAKE IMPLEMENTATION OF PROJECT OF THE MAGNITUDE AND COMPLEXITY OF THE PROPOSED PHASE II PROJECT (PAR. 2B, REF C); THE MEANS AND FUNDING REQUIRED TO ADDRESS ANY NEW ENVIRONMENTAL IMPLICATIONS THAT MAY BE IDENTIFIED IN THE FINAL TAMS REPORT (PAR. 2A, REF C); A MORE DEFINITIVE AND PHASED PLAN FOR THE IMPLEMENTATION OF RELATED SOCIAL INFRASTRUCTURE IN SYSTEM B AND AID'S PROPOSED ROLE THEREIN (PAR. 2C, REF C AND PAR. 2E, REF D); AN UPDATE ON PROPOSED INTER-DONOR COORDINATION AND PROPOSAL THAT GSL RETAIN A GENERAL CONSULTANT TO ENSURE BASIN-WIDE PLANNING (PAR. F, REF C); PROGRESS MADE IN COLLECTION OF BASELINE DATA ON SETTLERS ENTERING THE AREA PRIOR TO LAUNCHING OF PHASE II (PAR. G, REF C); A DEFINITION OF TRANCHES OF PROJECT AND CONDITIONAL RELEASES FOR CONSTRUCTION LOAN ALONG THE LINES PROPOSED PAR. H, REF C; AND SUFFICIENT DATA TO MEET THE CII (A) COST ESTIMATE REQUIREMENTS OF THE FOLLOW-ON PROJECT. IN GENERAL, MISSION SHOULD REVIEW BOTH PROJECT COMMITTEE AND APAC REPORTING CABLES (REFS. C AND D) TO ENSURE THAT ALL PERTINENT ISSUES ARE COVERED IN THE PP FOR PHASE II. WITH RESPECT TO ISSUES ALREADY FULLY COVERED IN PP FOR D/S PROJECT, REFERENCE TO APPROPRIATE SECTIONS OF THAT PP WILL HELP TO AVOID UNNECESSARY DUPLICATION. CHRISTOPHER
BT

UNCLASSIFIED

MAHAWELI BASIN DEVELOPMENT PHASE II

PROJECT NO: 383-0073

PROJECT BASIC SUMMARY

LOGICAL FRAMEWORK

BEST AVAILABLE DOCUMENT

Life of Project:
From FY [illegible] to FY [illegible]
Total U.S. funding [illegible]
Date Prepared: [illegible]

Project Title & Number: MAHAWELI BASIN DEVELOPMENT PHASE II (383-0073)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: Increase the opportunity for equitable economic development, employment, and food production via the irrigation of land under the Accelerated Mahaweli Program and the voluntary settlement of people in the program area and increase hydropower capacity.	Measures of Goal Achievement: 53,500 hectares of net irrigable land cultivated. 69,000 people settled. Annual farm earnings average Rs.11,000 per farm family hydropower is 1000 MW. (Goal by 1987 which will later be increased)	GSL reports Consultant Reports Mission observations Annual evaluations Sociological surveys	Assumptions for achieving goal targets: People will apply for land and financing for the total program will be available. Rainfall follows recent historical average.
Project Purpose: Development of Systems B of the MIP lying also the left bank of the Mahaweli	Conditions that will indicate purpose has been achieved: End of project status: 30,[illegible] hectares of net irrigable paddy land cultivated 30,000 families cultivating the land 5,292 Non-farm families settled in the area. Average annual income of farm families is Rs.11,000 Functioning irrigation system Annual paddy production is 106,350 tons per/yr.	As above and as detailed in the project paper's monitoring and evaluation plan.	Assumptions for achieving purpose: CID. funds for [illegible] and Lift Island continue to be available.
Outputs: Main, branch, tertiary irrigation system, roads, cleared and leveled land, social and production services and infrastructure	Main Canals 57.0 km Branch Canals 98.0 km Field Canals 650.0 km Roads 729 km Operating: Banks Secondary Schools Primary Schools Health Centers Hospital. Post Offices Police Stations	See above	Assumptions for achieving outputs: Technical Ministries start facilities provided under the project.
Inputs: [illegible] construction equipment provided.	Implementation target (Type and quantity) $51.0 million $3.0 million	See above	Beginning of Project Status: [illegible] irrigation [illegible] overall project [illegible] infrastructure [illegible] resident population [illegible] average [illegible] agriculture [illegible] of annual paddy [illegible] production

ANNEX A

UNITED STATES OF AMERICA
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
c/o American Embassy, Colombo, Sri Lanka.

January 3, 1981

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

I, Sarah Jane Littlefield, the Director of the Agency for International Development Mission to Sri Lanka, having taken into account, among other things, the maintenance and utilization of projects in Sri Lanka previously financed or assisted by the United States, do hereby certify that in my judgement Sri Lanka has both the financial and human resource capabilities to effectively maintain and utilize the Mahaweli Basin Development Phase II Project Number 383-0073.

S.J. Littlefield
Director

UNITED STATES OF AMERICA
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
c/o American Embassy, Colombo, Sri Lanka.

PROJECT AUTHORIZATION

SRI LANKA

Mahaweli Basin Development Phase II
Project No. 383-0073

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended (the "FAA"), I hereby authorize the Mahaweli Basin Development Phase II Project (the "Project") for Sri Lanka (the "Cooperating Country") involving planned loan obligations of not to exceed Eighty-five Million United States Dollars ($85,000,000) over a four year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/ allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. The project is designed to assist the Cooperating Country to increase the opportunity for equitable economic development, employment and food production by developing and settling the left bank area of System B of the Accelerated Mahaweli Program for irrigated agriculture.

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

4. Interest Rate and Terms of Repayment

The Cooperating Country shall repay the Loan to A. .D. in United States Dollars within forty (40) years from the date of first disbursement under the Loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in United States Dollars interest from the date of first disbursement under the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per ann thereafter, on the outstanding disbursed balance of the Loan nd on any due and unpaid interest accrued thereon.

5. Source and Origin of Goods and Services

Except as A.I.D. may otherwise agree and except for ocean shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in countries included in A.I.D. Geographic Code 941 and the Cooperating Country. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the Cooperating Country and the United States.

6. Terms and Conditions

a. Conditions Precedent to Initial Disbursement

Prior to the disbursement or to the issuance of documentation pursuant to which funds will be disbursed under the Project Agreement, the Cooperating Country shall submit, in form and substance satisfactory to A.I.D., an implementation plan covering the life of the project.

b. Conditions Precedent to Disbursement for Construction

Prior to the disbursement or to the issuance of documentation pursuant to which funds will be disbursed under the Project Agreement for construction the Cooperating Country will furnish, in form and substance satisfactory to A.I.D. a signed contract with a contractor to construct the main and branch canals in the project area.

SC(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights?	Yes it can be so demonstrated.
2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the United States unlawfully?	No
3. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the International Communist movement?	Yes
4. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	Not to the best of Mission knowledge
5. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	No

6. FAA Sec. 620(a), 620(f); FY 79 App. Act, Sec. 108, 114 and 606. Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos, Cuba, Uganda, Mozambique, or Angola? — No

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

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

9. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason? — N/A

10. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters: — N/A

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

b. has complete denial of assistance been considered by AID Administrator?

11. FAA Sec. 620; FY 79 App. Act, Sec. 603. (a) Is the government of the recipient country in default for more than 6 months on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds? — No

12. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the — Yes

amount spent for the purchase of sophisticated weapons systems? (An affirmative answer may refer to the record of the annual "Taking Into Consideration" memo: "Yes, as reported in annual report on implementation of Sec. 620(s)." This report is prepared at time of approval by the Administrator of the Operational Year Budget and can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)

13. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? — No

14. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? — The GSL is current

15. FAA Sec. 620A, FY 79 App. Act, Sec. 607. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism? — No

16. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA? — No

17. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977, although not a "nuclear-weapon State" under the nonproliferation treaty? — No

B. FUNDING CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria

a. FAA Sec. 102(b)(4). Have criteria been established and taken into account to assess commitment progress of country in effectively involving the poor in development, on such indexes as: (1) increase in agricultural productivity through small-farm labor intensive agriculture, (2) reduced infant mortality, (3) control of population growth, (4) equality of income distribution, (5) reduction of unemployment, and (6) increased literacy? — Yes, CDSS

8.1.

b. FAA Sec. 104(d)(1). If appropriate, is this development (including Sahel) activity designed to build motivation for smaller families through modification of economic and social conditions supportive of the desire for large families in programs such as education in and out of school, nutrition, disease control, maternal and child health services, agricultural production, rural development, and assistance to urban poor? N/A

2. Economic Support Fund Country Criteria

a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? N/A

b. FAA Sec. 533(b). Will assistance under the Southern Africa program be provided to Mozambique, Angola, Tanzania, or Zambia? If so, has President determined (and reported to the Congress) that such assistance will further U.S. foreign policy interests? N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? N/A

d. FY 79 App. Act,Sec. 113. Will assistance be provided for the purpose of aiding directly the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights? N/A

e. FAA Sec. 620B. Will security supporting assistance be furnished to Argentina after September 30, 1978? N/A

5C(2) - PROJECT CHECKLIST

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

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 79 App. Act Unnumbered; FAA Sec. 653 (b); Sec. 634A. (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure)?	(a) FY 81 Congressional Presentation (b) Yes
2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	(a) Yes (b) Yes
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No legislative action is required
4. FAA Sec. 611(b); FY 79 App. Act Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?	Yes
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes
6. FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	No, however other donors are financing activities related to the project.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	(a) N/A (b) Yes (c) Yes (d) N/A (e) Yes (f) N/A
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	U.S. firms will compete for construction contracts and to supply materials, and equipment to be financed by project funds.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	58% of the costs of the project will be financed by the GSL's contribution. No available U.S. accrued foreign currencies.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	No
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes
12. FY 79 App. Act Sec. 608. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar, or competing commodity?	N/A

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b); 111; 113; 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained	(a) The work is very labor intensive and involves directly the poor. It uses technology appropriate for construction needs. The project is to develop a poor, rural area and resettle landless poor on land made productive by the project.

B.1.a.

basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

(b) N/A
(c) Support the GSL's national goal of food self-sufficiency.
(d) Women will greatly benefit as described in social analysis.
(e) N/A

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

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(1) Project is to increase food production and income of rural poor.

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

(2) N/A

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(3) N/A

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(4) N/A

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

B.1.b.(4).

(v) for special development problem, and to enable prop utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] Is appropriate effort placed on use of appropriate technology?	Yes
d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?	Yes
e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to the Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?	N/A
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental and political processes essential to self-government.	Project contributes to twin needs of food production, jobs and increased income.
g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	Yes. See economic analysis

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.	GSL has the capacity to repay the loan and the prospects of repayment are good
b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	N/A

B.

3. Project Criteria Solely for Economic Support Fund

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

b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities? N/A

SC(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Procurement will be from U.S. Code 941 countries.
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the United States on commodities financed?	N/A
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	N/A
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes
6. FAA Sec. 603. (a) Compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Yes
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the	N/A

A.7.

facilities of other Federal agencies will be utilized, are they paritcularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available? — N/A

9. FY 79 App. Act Sec. 105. Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States? — Yes

B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest? — Yes

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable? — Yes

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the United States not exceed $100 million? — N/A

C. Other Restrictions

1. FAA Sec. 122 (e). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? — Yes

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights? — N/A

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foriegn aid projects or activities of Communist-bloc countries, contrary to the best interests of the United States? — Yes

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or guaranty of such transaction? — Yes

C.

5. Will arrangements preclude use of financing:

a. FAA Sec. 104(f). To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to undergo sterilization? Yes

b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property? Yes

c. FAA Sec. 660. To finance police training or other law enforcement assistance, except for narcotics programs? Yes

d. FAA Sec. 662. For CIA activities? Yes

e. FY 79 App. Act Sec. 104. To pay pensions, etc., for military personnel? Yes

f. FY 79 App. Act Sec. 106. To pay U.N. assessments? Yes

g. FY 79 App. Act Sec. 107. To carry out provisions of FAA sections 209(d) and 251(h)? (Transfer of FAA funds to multilateral organizations for lending.) Yes

h. FY 79 App. Act Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nations in nuclear fields? Yes

i. FY 79 App. Act Sec. 601. To be used for publicity or propaganda purposes within United States not authorized by the Congress? Yes

ANNEX B

Monitoring and Evaluation

ANNEX B

MONITORING AND EVALUATION SYSTEM B

1. Purpose

2. Scope and Levels of Evaluation

   - all components
   - input-output, effects, impact
   - assumptions

3. What is to be measured
   How information will be collected
   Resources for Evaluation guidance

   - Baseline
   - Reporting and Monitoring
   - Indicators
   - Case Studies
   - Lessons Learned
   - On-going efforts
   - Planned efforts
   - Resources available

4. Types and Purposes of specific evaluations

   - Monitoring
   - Annual Evaluation
   - Special Evaluation
   - Ex-post Evaluation

5. Participation

1. **PURPOSE:** The purpose of the monitoring and evaluation to be undertaken in System B is to enable the project policy makers, implementors and donor agencies to identify and understand the effectiveness of project activities. The process will be executed on three levels: input-outputs, effects and impacts. Each starts sequentially, beginning with input-output, but continue as parallel efforts to provide cumulative information about the interrelationships among project activities at each level. The monitoring and evaluation process will provide timely and actionable information by which decision - makers can

- adjust implementation activities
- alter resource flows
- reformulate strategies and policies and,
- devise supportive programming as necessary.

The evaluation plan and the process set out to implement it does not assume continuity of personnel either in the donor missions or in the GSL Mahaweli administrative structure. The plan and process, therefore, will stand alone and be capable of guiding a consistent effort over time with a self-contained rationale and with a comprehensive and flexible set of procedures.

SCOPE: The monitoring and evaluation process will encompass the five major project components: water supply (dam construction), water distribution (canals), land development (farm plots and homesteads), settlement (planning, execution and social infrastructure), and agricultural services (extension, training and inputs). For each component, the outputs, effects and impact upon intended beneficiaries and upon the environment will be assessed.

INPUT-OUTPUT Input-Output monitoring will assess the extent to which specific outputs related to each project component are achieved. This process will also identify problems and constraints which may arise between investing in a project input and achieving its intended output. Basic guidance for input-output monitoring is contained in the time phased project implementation plan.

EFFECTS Effect level evaluation will provide information by which success in achieving project objectives can be assessed. Measuring achievement of objectives will almost always involve relationships among the expected outputs. For example, the dam must be constructed and must provide adequate water supply and the canals must deliver the water reliably to farm

plots if production potential, which is the primary desired effect of these two outputs, is to be provided.

IMPACTS Finally, project impacts which are the longer term and macro-level effects will be evaluated in the context of the goals of the Accelerated Mahaweli Program (AMP) as implemented in System B. These impacts will focus on the intended beneficiaries and their use of project outputs to achieve improved well-being. In addition, other project impacts relating to food production, power generation, environmental integrity and the sustainability of settlement goals will contribute to an evaluation of the project's impact.

ASSUMPTIONS Although not stated explicitly in the logical framework, several assumptions, things necessary to the success of the project but over which USAID has no direct control, will be continually assessed:

- GSL financial capability to meet project requirements particularly in light of rapid inflation
- GSL human resource capability to effectively direct project activities particularly as government personnel opt for the higher salaries of the private sector
- GSL organizational capability, specifically the formal creation of the Mahaweli Economic Authority (MEA) and its ability to attract and sustain a strong and effective staff.

The evaluation efforts will measure the extent to which each and all project components contribute to project objectives, when, how and to what extent this occurs at certain points in time, specific changes which have resulted and the extent to which project goals are being realized. For a meaningful assessment of change, the current situation must be accurately presented. This will be accomplished through a series of baseline and benchmark surveys.

Baseline

The scope of the baseline will include:

- Changes in the physical environment
- Changes in production potential and production
- Changes in the well-being of settlers

Baseline surveys will have been or be undertaken for each of these three areas of interest. Within these broad rubrics, priorities for sub-sets of this information will be developed for the survey instruments. These will be taken down several levels and constructed not only to measure change through certain chosen indicators, but also to identify causes of those changes. It is in this way that change can be attributed to project efforts or to other external factors.

Much of the baseline information for the conditions of the physical environment and current production will be extracted from the project feasibility studies (ACRES and TAMS) which have been completed. A settler benchmark survey was initiated in June 1980. When completed, the quality of this survey will be assessed, and additional work to provide a comprehensive settler profile will be undertaken as necessary.

Reporting and Monitoring

This will be done through the existing GSL system of monthly and quarterly reports supplemented by an executive summary which highlights the important trends, issues, problems, changes and successes which need attention and/or action. The current format for these quarterly reports will be discussed and modified where necessary for use in System B. They will be consistent with the implementation plan so that feedback to project implementors is consistent and actionable. Two additional monitoring efforts, one for settlement and one for environment, will parallel input-output monitoring and will be fed into the monthly/quarterly reporting process.

Indicators

Discussion on indicators will take place along with or immediately following an agreed upon conceptual and operational frameworks. The selection of indicators will have staff and funding implications and these should be acknowledged at the outset. For example, production information can be obtained from farmer interviews, crop cutting data, marketing data and consumption data or from a combination of these. Each will have different funding and staffing requirements. Selection of indicators and the means of collecting information will be discussed by the GSL and USAID prior to implementation of the evaluation plan.

Case Studies

Case studies will provide a different perspective on the project and can give a more organic view of the project's effects and long term impact. These will not be of primary use for implementation but can become a valuable part of the history of Mahaweli development. Because they can be of sociological and historical interest, case studies might be undertaken by the academic community.

Lessons Learned

A substantial body of knowledge about the effectiveness of the Mahaweli development effort is being provided from similar experiences in System H. These have been and continue to be identified, discussed and analyzed for application in System B. The issues include size of homestead plots, optimum implementation scheduling, issues of farm power requirements and appropriate technological response, operation and maintenance of equipment and water management alternatives.

These issues have been reflected in the time-phased implementation plan for System B, which incorporates specific experience regarding time phasing of activities, shortcomings of specific activities as they were implemented in System H, persistent problems (spare parts, machinery maintenance and operation) and successful changes that were made in that project. Issues of transferability of experience from System H to System B are being discussed, including for example, the implications of a labor surplus as opposed to a labor deficit area. This communication with project implementors is a valuable part of an evaluation learning process and will continue both formally and informally as activities in System B proceed.

The following activities are either planned or currently underway in System B. These are baseline studies and a process to select specific indicators for future evaluation of the effectiveness of project efforts and for measurement of the changes which result in the project areas.

(1) On-going

- Profile of current settlers in System B
- Monitoring of implementation experiences in System H.

(2) Planned

- Pre settlement survey of selected settlers to be undertaken as settler selection process is implemented.

- Profile of current environmental conditions in System B, selection of indicators to be used for future measurement of change. Selected indicators will include

  - physical environment indicators which are appropriate to measure changes in production potential including current current patterns, cropping intensity and water availability.

  - social environment indicators of services currently available including transportation, health services, water supply, market centers, housing and education. (settler profile now underway will be part of this effort)

  - physical environment indicators of the current eco-system including wildlife habitat and forest areas.

(3) Resources: There is an abundance of existing resources which will provide the selected indicators for specific evaluation activities. These include:

- ACRES Feasibility Report for System B, completed September 1980.

- TAMS Environment Assessment, completed October 1980.

- Guidelines for Developing a time - phased Implementation Plan for System B, undertaken by the GSL in September 1980 through a AID technical assistance consultant.

- A Bench mark survey undertaken in June 1980 by USAID through Dr. Percy Silva to gather household and production data from an existing settlers in System B.

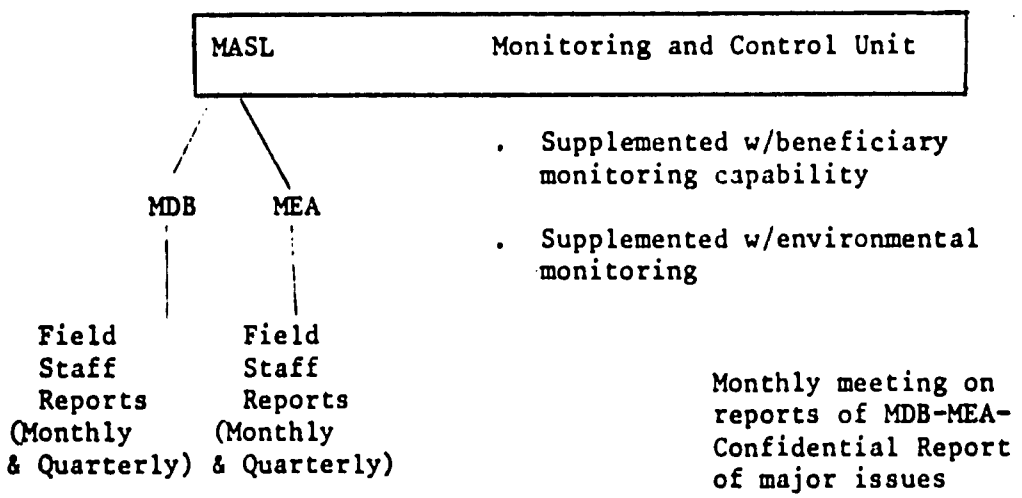
- Experience in System H both written and unwritten, which contain many relevant lessons learned which can improve the development process in System B including completed and scheduled evaluations undertaken by ARTI.

- Analyses done by Dr. Ted Scudder on settlement aspects and field work by the Mahaweli Board on farmer organization.

- Settlement studies underway in MDB under the direction of Mrs. de Silva.

MONITORING

The monitoring capability of the MASL and the two major implementing agencies MDB and MEA, will have primary responsibility for this effort. The monitoring and reporting process will build on that used in System H and be supplemented where necessary for System B.



All data collection processes including baseline and benchmark surveys will be included in the project monitoring process. Monitoring will build on the information foundation of the baseline surveys and track change and project progress using the framework of the implementation plan. To this end the monitoring process will utilize the:
1) pre-settlement surveys of selected settlers, 2) profile of settlers as they are settled in the project area, 3) survey of the physical and social environment as it exists prior to implementation of the project.

Critical issues which arise from this monitoring process will be compiled in an annual executive summary. This summary will provide part of the background material for the annual, formal evaluation to be carried out by GSL and donor agencies.

ANNUAL EVALUATION

Annual evaluation will include:

A) physical progress, B) effectiveness of project implementation (coordination and resources issues), C) intended and unintended effects of the project on beneficiaries and on the environment.

Participation in annual evaluations will include representation from GSL and donors.

Selection of annual evaluation team should provide for some continuity of participation, specific technical expertise as required, and representation from both staff concerned with project implementation and individuals not involved in project implementation.

EX POST EVALUATION

Ex post evaluation of the project will be carried out at an appropriate time after completion of the project. Cumulative information in the form of summaries of the major monitoring issues (what they were, causes and areas of success and how problems were resolved) will be available for ex post evaluators. In addition, summaries of the major findings and of the methodologies used in annual evaluations will be available to provide a history of the effects of the project as they were detailed during implementation. This will include impact issues as they surfaced, and trends that were identified during the life of the project.

SPECIAL EVALUATIONS

Monitoring of the implementation plan will enable USAID to determine critical points during project implementation when an additional or specially focused evaluation may be warranted. These evaluations will be undertaken when and if the need arises, and specific problem areas will help define the scope for such an evaluation.

The GSL and System B donors USAID and CIDA will participate in the evaluation and in developing a detailed evaluation plans. The GSL and the donors will collaborate in defining their respective requirements and interests for evaluation as well as indicating funding levels and sources, and other resources as required.

ANNEX C

Social Soundness Analysis

ANNEX C

Social Soundness Analysis

The Social Soundness Analysis presented in the Mahaweli Basin Development Phase I Project Paper provided the main description of beneficiaries, spread effects, and social impact of the project. Most of the major issues were addressed therein. The discussion presented here, elaborates upon the earlier analysis and gives some additional information, especially in regard to the GSL's settlement plans. Included are topics related to socio-cultural feasibility, spread effects, equity, and project monitoring of socio-economic implications of settlement.

I. SOCIO-CULTURAL FEASIBILITY

The major feasibility issue continues to be the timely and adequate provision of services and infrastructure for the settlers. All household heads of settler families will come to the project area first as worker-settlers, and only the following year will their families join them. Services and infrastructure in both stages, however, are critical.

Worker-settlers will be engaged primarily in land development (farm clearing, levelling, and bunding) and in construction of the tertiary irrigation system. Overall project scheduling is such that land development is to be completed between March and August and the tertiary system is to be completed between August and November in each of the three settlement years beginning in 1982. Failure to achieve this rate of construction will result in keeping settlers in worker-settler status longer than planned; in addition, it would preclude settler-farmers from planting a crop on unprepared land during their first year of settlement. Moreover, slippages in any given year will almost certainly have a cumulative effect during the following years of Left Bank development.

The worker-settlers will live in some 96 work camps of about 200 persons each scattered throughout the Left Bank. Because of the phased development plan not all the work camps will be in operation at one time. The workers will receive daily wages and a Food ration from the World Food Program during this period, and housing, water, health services, and recreational facilities are also planned. If these facilities and services are not suitable, slippages in the above-mentioned work schedule are likely to occur as the worker-settlers become less satisfied with their situation. Furthermore, dissatisfaction in this period might affect the willingness of the worker-settlers to bring their families to the project area the following Spring. Such a refusal could similarly occur if the worker-settlers felt than adequate facilities and services would not be available for their wives and children when they arrived.

Every effort is now being made to insure that housing, sanitation, drinking and bathing water, and health facilities are ready for the first worker-

settlers in February 1982, and that these facilities are expanded and added to (e.g., schools) by April 1983 when the first settler families begin arriving. Realizing how important the provision of these services, facilities, and infrastructure is to the success of the project, the GSL has decided that in the event of any delays the rate of settlement will be diminished to correspond to the pace of infrastructure development.

There has been a slight reduction in the infrastructure and services that were earlier planned, but this is a result of a re-examination of the initially-proposed infrastructure and services which showed that such things as bank branches, cooperative stores, and post offices were not necessary at the village level. All indications are that the presently-planned infrastructure and services on a per capita basis for the settlers in the Mahaweli Project Areas are comparable or superior to the rural per capita figures.

II. SPREAD EFFECTS

As noted in the Mahaweli Phase I Project Paper, a good deal of emphasis in the overall planning and design of the Accelerated Mahaweli Basin Development Project is being given to regional planning. Attention is directed to the developmental relationships not only between each of the systems within the project area, but between the project area and the larger region which stretches from Kandy to Trincomalee to Badulla and includes Polonnaruwa, Batticaloa, and Amparai. The objective is to plan the socio-economic development of the project area with the development of the larger region. This will facilitate taking advantage of existing infrastructure, resources, and economies of scale, while avoiding costly duplications of effort.

The regional development perspective is a movement away from earlier settlement strategies, which first developed the agricultural resources by providing the necessary infrastructure and then merely supplied the needs of the farming population over a period of time. The regional perspective sees agricultural and urban growth as complementary and inter-related, not separate and competitive. It is a more dynamic approach to development which views existing urban centers and towns as tools for modernization and poles for economic growth capable of transmitting impulses for growth and change throughout their spheres of influence. By maximizing the growth potential of the region, it is also possible to eliminate some of the familiar but pressing problems in newly settled areas, such as the need to (a) provide employment opportunities to the second generation, (b) attract professional people such as doctors and lawyers, (c) maintain the quality of the economic and social services that have been provided, and (d) motivate those in charge of the development programs to get themselves involved in the entire development process.

Although regional development was not initially a component of the design and planning of the Accelerated Mahaweli Basin Development Scheme, the need for this perspective is now recognized within the highest levels of the government. An ad hoc committee composed of some of the most knowledgeable and experienced Sri Lankans in regional development has recently been formed with the responsibility of drafting a proposal for a major regional development planning effort. The regional plan would be executed by the ad hoc committee members, assisted by other local experts and one or two foreign consultants. Funding is likely to come from a source which is not currently involved in any of the systems within the Accelerated Scheme. It is expected that the proposal will be completed by mid-1981 and work on the regional plan itself will begin before the end of the year.[1]

III. EQUITY:

Several of the equity issues raised in the Mahaweli Basin Development Phase I social analysis have been re-examined by the GSL, and a number of steps have been taken to ensure greater equity within the project. Those issues which have received the most attention include the ethnic mix of settlers, the status of encroachers, the role of the farmer in water management, and the economic viability of the small-holder. Each of these is discussed below.

A. Ethnic Mix of Settlers: The earlier guidelines regarding the ethnic mix of settlers stated that (1) each ethnic group would be proportionately represented among the settlers according to the national ethnic mix, and (2) ethnic balances within the project areas would not be disturbed by the settlement. It appears now upon closer examination that the ethnic composition of the settlers is exceedingly complex, that the initial guidelines would not have resulted in an equitable solution to the problem, and that further study of the issue is necessary.

The two major stumbling blocks relate to the GSL's committment to have all ethnic groups represented in the settlement and the great differences between national, district, and project area ethnic distributions. The following statistics give an idea of the complexity of the problem. The national ethnic breakdown is 72% Sinhalese, 20% Tamil, and 8% Muslim.[2]

1/ For more detail see the discussion in Thayer Scudder's (September 1980) report. The Accelerated Mahaweli Program and Dry Zone Development: Some Aspects of Settlement, pp 17-19.

2/ Actually, the Tamils are divided into two groups: Ceylon Tamils, descendents of settlers who arrived from South India a thousand or more year ago, and Indian Tamils, migrants or descendents of migrants who have been coming from South India since the mid-19th century, principally for employment as laborers on the tea and rubber estates. While the Tamil politicans view the Tamils as one group, and would like to include them when calculating the proportion of Tamils, the Indian Tamils are not citizens of Sri Lanka and thus are not eligible for settlement in the Mahaweli Project.

The distribution of indigenous people within the project area is 52%, 34% and 12%, respectively. But the project area spans three districts (Amparai, Batticaloa, and Polonnaruwa), and each of these districts has its own ethnic mix, which does not correspond to ethnic distribution of either the project area or the nation. For example, the indigenous population living in the Amparai section of the project area is all Sinhalese, yet Amparai District as a whole has only 30% Sinhalese, with 46% Muslim and 24% Tamils. In the Batticaloa part of the project area, Sinhalese are only 2% of the population, the Tamils comprise about 78%, and the Muslims about 20%. District-wide, however, the Sinhalese are about 5%, the Tamils are 71%, and the Muslims are 24%. In the Polonnaruwa section of the project area, the indigenous ethnic distribution follows the national pattern, i.e., 72% Sinhalese, 20% Tamil, and 8% Muslim. Polonnaruwa itself, however, is comprised of 90% Sinhalese, 9% Muslims, and less than 1% Tamils.

Obviously no facile guidelines can yield an equitable and just solution to this question of the ethnic distribution of settlers. The GSL, indeed to their credit, recognized this and decided to give further study to the problem. New policy guidance will be forthcoming by mid-1981.

B. Encroachers: There are presently more than 3,500 encroacher families in System B, and the number is increasing monthly. The GSL has decided that only those encroachers who were in residence prior to September 1, 1977 (the announcement date of the Accelerated Mahaweli Program) will be entitled automatically to settlement in the project area. About 20% of the present encroachers meet this criterion. Those who settled in the project area after the 9/1/77 cut-off date will be treated like non-project area people, i.e., if they desire to be settled in the project area, they must apply formally for such, meet certain preliminary selection criteria, be interviewed and screened, and finally be selected. These post -9/1/77 encroachers are very likely to be given some preference in the selection process, however, due to their presence in the project area, their demonstration of initiative and enterprise, and their general agricultural background. The intent of the cut-off date was to discourage further encroaching, to prevent some recent encroachers from acting as the agents of land speculators, and to give all villagers throughout the country the opportunity of settling in the project area.

C. Water Management: Farmer involvement in the operation and maintenance of the irrigation system is deemed critical for efficient water management and for high agricultural production. To achieve this it is planned to give farmers basic operational control of the tertiary system. This will be affected by MEA Unit Managers and Field

Officers organizing the 8-12 farmers serviced by a single field channel into a 'turn out group' responsible for distributing equitably among its members that group's share of the water delivered from a D-canal to that field. Each such group will elect its own leader; define its own rotational delivery system with the assistance of the MEA Block Engineering Assistant for their area; and maintain that schedule with such assistance from the MEA Field Officer for their Sub-Unit area as circumstances may require. In short, MEA will provide the motive force and technical guidance for organizing farmers into operationally viable turn-out groups; the engineering skills needed for establishing an efficient rotational water delivery schedule; and the advisory assistance required for acceptance of that schedule by all group members and their adherence to its design in day-to-day operations. Beyond those chiefly outset-Project aids, the turn-out groups will operate the system themselves.

This same set of principles will be applied to achieving equitable distribution of available water among the several field-channel turn-outs served by a given D-canal. For this purpose, each turn-out group will designate one of its members to serve on the 'lateral committee' representing all of the turn-out groups drawing water from the D-canal. The lateral committees will establish overall rotational delivery schedules for the entire D-canal service area and will resolve any disputes over the amount of water taken during a given period. Once the lateral committees are established and the rotational pattern of delivery agreed to, it seldom should be necessary for MEA to intercede with individual groups or group members toward ensuring acceptably equitable use of irrigation water.

Such a self-disciplining system of water use control is so essential to optimal use of the irrigation resources being created in the Left Bank Project Area that willingness to participate in the turn-out group program will be made an explicit condition of a settler's receiving an allotment of Project land. During their settler-worker period, prospective settler-farmers will be briefed in depth on turn-out group operations and rationale. This indoctrination will be carried much farther in the course of organizing specific turn-out groups after settler-farmers return to the Project Area with their families to take up their farmstead allotments.

D. Economic Viability of the Smallholder: A number of Sri Lankan settlement projects in the past have been less than successful because the settlers' precarious economic status did not permit them to bear low income levels during the initial 2-3 years. Consequently, these settlers quickly fell into debt and were eventually forced to lease out or sell their land.[1/] This has been a problem even in System H of the Mahaweli.

1/ For an excellent description of the processes involved here, see R.D. Wanigaratne's (1979). The Minipe Colonization Scheme -- An Appraisal Agrarian Research and Training Institute, Research Study No.29. Many of the findings of this study, incidently, were influential in persuading the project authorities of the Accelerated Mahaweli Project to give additional attention to the problem of small farmer viability.

An innovative solution, however, may have been found. In Block 5 of the Mahaweli System H, the GSL has experimented quite successfully with a supervised credit-cum-marketing system. Under this scheme utilization and repayment of crop-season loans are closely supervised by the MEA Project staff functioning in effect as agents of the lending institution. The Project staff also plays a dominant role in the marketing of paddy, to assure that farmers get the best available price for their product and the Bank receives its loan repayments when they are due. In all respects, the H-5 system minimizes risks to the borrower, lender and input suppliers alike. The borrower gains experience in managing borrowed funds under supervision of the Project staff; the lending institution's risks are minimized by the Project's supervision of the borrower's use of the funds, advice on proper use of the production inputs procured with the loan proceeds, and virtual control over the marketing of paddy. Inputs suppliers' risks of non-payment are eliminated by payment being made directly by the Bank from the borrower's loan proceeds.

Operationally, the H-5 system has the following key features :

a) Crop-season loans are made to individual settler-farmers only on the recommendation of the MEA Project Manager or his designee -- normally the Unit Manager or/and Field Officer for a given geographic area. Little physical security is required.

b) Loan requirements -- based on standard quantities per acre and current unit prices -- are developed jointly by the individual farmer and the Unit Manager/Field Officers. The full proceeds of the loan recommended by the Project Manager or his designee is deposited to the Savings Account of the borrower. Disbursements charged against that account are made by the Bank directly to suppliers of purchased inputs on the certification of the Project Manager or his representative. Direct payments are made to the borrower only for labor performed on pre-authorized crop operations e.g. paddy transplanting. These too require certification by an authorized Project staff member. In addition to these individual receipt certification, funds at each stage of the borrower/Unit Manager-prepared Credit disbursement Calendar will be released only upon the receipt of a report of satisfactory progress on the previous stages by the Unit Manager and/or Bank Field Officers. Those 'previous stages' include all aspect of crop production from land preparation through harvesting.

c) Before the harvest, the Project Manager contacts reputable traders -- in the Project Area, in Colombo and other centres -- and arranges for a number of them to purchase the crops. Settlers are advised they should sell their crops only in accordance with arrangements made by the Project Manager.

d) Unit Managers arrange for the settlers to deliver their produce at one of the stores belonging to the Project. The traders normally must purchase directly from the settlers at the stores. In any event, designated Project staff ensure that the selected traders purchase the entire crop and deposit the proceeds with the Bank.

e) The Mahaweli Authority does not guarantee a price to the settler, but the settler is informed of the price that will generally be offered by the traders. Arrangements for purchase by State organizations (e.g. Paddy Marketing Board) are made if private organizations are not prepared to buy at a higher price.

f) Settlers are prohibited from selling their crops to traders other than those with whom arrangements have been made by the Project Manager. This also applies to settlers who have not borrowed money from the Bank.

This tightly controlled credit-cum-marketing system appears to be working well in the limited test area. It remains to be seen, however, if the supervisory role played by Project Staff so saps their time that they are unable to cope effectively with their other responsibilities. There is also the question of how the controller role Unit Manager and Field Officers play in the credit operation affects their effectiveness in advising settler-farmers on improved farming and/or water use practices.

An additional significant aspect of the GSL's Mahaweli loan program is that not only can the settler borrow virtually the entire cost of paddy production, but the loan also includes the imputed value of the farm family's labor and other non-cash inputs. This enables the settler-family to meet living expenses during the critical period between planting and harvest. In addition, serious consideration is being given to multi-year loans. In this way a farmer can experience one or two low-production years and still be eligible for future loans.

Two other aspects of the economic viability issue are the provision of draft power and the availability of labor. Studies show that draft power is not only a critical cost of production but poor access to this resource can reduce yields and water management efficiency. The GSL is planning to provide each turn-out group of 8-12 farmers one 2-wheel tractor and one thresher. Each turn-out group will elect on a yearly basis a leader to supervise scheduling and operations and another individual to supervise maintenance. The turn-out group will develop its own operation and maintenance plan, just as it does for its water distribution. Each farmer will pay his or her share of the operating and maintenance cost of the tractor. In addition, the turn-out group will

pay a yearly standard use-charge to the GSL project authorities. This will be a flat rate charge calculated to amortize the GSL purchase price within the normal half-life of the machine (usually 3 years for tractors and 5 years for threshers). This half-life amortization schedule is designed to transfer ownership of the equipment to a user-group while enough serviceable years remain to enable the group to accumulate a reasonable down-payment for replacements when they become necessary. The additional required capital can be obtained from commercial banks.

The Mahaweli Authority recognizes the expense associated with mechanical draft power and in 1981 will begin a major program to increase the number of draft animals thereby minimizing the initial need for tractors and eventually replacing a large portion of the tractors.

In regard to availability of labor, some reports have suggested that there may be a labor shortage in the area, particularly during the critical planting and harvesting period.[1/] While tillers and threshers (discussed above) will alleviate some of the labor constraints during this period, there will still be a demand for seasonal agricultural laborers. Some of these will come from the indigenous population in and around the project area, and some from among the families who will be attracted to the area as development progresses. Most of the laborers, however, will likely be from among relatives of "B" households which seasonally migrate to the dry zone in search of casual employment. This is currently still the pattern in irrigation-cum-settlement schemes that have been settled more than 20 years ago. In Gal Oya, for example, the original settlers came from the wet zone. During times of peak labor demand, relatives of these settlers come from the wet zone to Gal Oya, reside temporarily with their relatives, and work on both the latter's and others' land. This was also the procedure in parts of Mahaweli System H during the past year. It is likely that this will be the situation throughout much of the Accelerated Mahaweli Project Area, too.

IV. MONITORING OF SOCIO-ECONOMIC IMPLICATIONS OF SETTLEMENT:

A settlement-cum-production project of the magnitude envisioned for the Accelerated Mahaweli Basin Development Project obviously has tremendous social, cultural and socio-economic implications for the people involved. The GSL fortunately not only recognizes this fact but has attempted from the start to utilize the expertise of both local and foreign social scientists in the planning, design, and implementation of the project. The Mahaweli Development Board, for example has had a socio-economic research unit attached to it from its very inception to assist in conducting base-line studies, to plan the settlement, and to monitor the results. This role has been expanded recently with the cabinet approval for establishing a Settlement Studies Center which will be responsible for studying all

---

1/ For example, see Anna Quandt's report in the TAMS Environmental Assessment of the Accelerated Mahaweli Development Program (1980), Volume IV.

aspects of settlement throughout the country.[1/]

USAID of course is acutely aware of the sociological implications of settlement and not only supports the GSL's efforts but has promoted additional, complementary, activities. For example, the mission is supporting a Settlement Studies Symposium to be held in April to review the vast amount of social science research that has been conducted to date in regard to settlement in Sri Lanka, with particular emphasis on System H of the Mahaweli. In addition, the mission continues to support the regular consultancy of Professor Thayer Scudder, one of the foremost experts on settlement. Scudder's opinions and recommendations have consistently received both the broadest and highest levels of attention in the GSL.[2/] Furthermore, the Mission has contracted its own baseline-cum-evaluation activity with Professor Percy Silva, Chairman, Department of Geography, University of Colombo. Professor Silva has recently completed a baseline survey of the indigenous population in System B. He will continue to evaluate the socio-economic impact of the project on this population as well as conduct a baseline survey of the incoming settlers. Of special note, Dr. Silva will station three researchers within the project area to monitor settlement from the very first day. These researchers will live with the worker-settlers and later with the settler-families in an attempt to understand first-hand the nature of the problems faced by these people. The researchers' findings will be relayed directly to the MEA field staff, unit managers, and project-level staff, keeping them apprised of the situation and allowing them to take immediate remedial action in the event of problems. Such monitoring will be particularly important in regard to the need for timely provision of infrastructure and services; dissatisfaction on the part of settlers regarding this matter can be quickly assessed, reported, and hopefully corrected, keeping the settlers happy and the project on schedule.

Finally, it should be mentioned that USAID along with the World Bank is continuing to support the on-going monitoring and evaluation activities in System H of the Mahaweli. Researchers from the Agrarian Research and Training Institute (ARTI) are conducting these studies. Their initial report on baseline conditions in Zones 4 and 5 was widely-circulated in GSL offices and was well-received.[3/] A follow-up study to assess the impact of the Mahaweli project on these settlers is planned for mid-1981. The findings and conclusions of this study will be utilized in planning and implementing activities in the Accelerated Project Areas.

1/ For more detail regarding this proposed center, see Appendix 1 of Scudder's (1980) Mahaweli Report (Accelerated Mahaweli Program and Dry Zone Development: Some Aspects of Settlement).

2/ During Scudder's consultancy in Sri Lanka last August he met with both the Minister of Mahaweli and the President of Sri Lanka to discuss certain recommendations he was making.

3/ The Report, An Analysis of the Pre-Mahaweli Situation in H-4 and H-5 Areas in Kala Oya Basin, is considered by many to be one of the best studies produced by ARTI.