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UNITED STATES OF AMERICA
AGENCY FOR INTERNATIONAL DEVELOPMENT

**STUDY OF RECURRENT COST PROBLEMS
IN IRRIGATION SYSTEMS**

FINAL REPORT

ENGINEERING CONSULTANTS LTD.
60, Dharmapala Mawatha,
Colombo 3. SRI LANKA

In association
with

DEVELOPMENT PLANNING CONSULTANTS LTD.
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INTRODUCTION

The scope of this Study is governed by the Terms of Reference given to us by the client and by the terms of the contract entered into between the client and ourselves. By Terms of Reference we refer specifically to Parts A and B of the document entitled "Scope of Work for Study of Recurrent Cost Problems in Irrigation Systems Development in Asia (hereinafter referred to as Scope of Work), the relevant parts of which are attached as Annexe 1 to this Study.

Having pursued this Study closely on the lines indicated in the "Scope of Work", we found that if we had set out to answer directly the questions as they were posed in this document, this Study would have appeared very mechanical and the discussion of some of the relevant issues could not have been developed in a rounded manner. We also found that the questions raised in Parts A and B of the "Scope of Work" tended to overlap and to be somewhat repetitive. We therefore decided that we should present this report in terms of eight Sections as indicated in the Table of Contents. Each Section, however, deals with one or more of the issues listed in Parts A and B of the "Scope of Work".

For convenience of reference we have indicated in the Table of Contents the questions in the "Scope of Work" that have been dealt with in each section. We have also provided on page 6 a schedule showing the correspondence between the "Scope of Work" and Sections of the Report.

It will be seen that we have not dealt with Questions (A) 9 and (B) 4.1 in the "Scope of Work". With regard to Question (A) 9, there is in fact very little to be said with regard to the general policy of the Government towards input and crop pricing for farmers. The position is that only fertilizer is subsidised at present and that subsidy is restricted to Rs. 1,000 Million in the current Budget. Irrigation water has, in fact, been provided free and operation and maintenance costs borne solely by the Government until the introduction of the present scheme of O & M recoveries.

There are no Government sponsored credit schemes for the irrigated food production sector. There is a floor price scheme of the Government where Rs. 62.50 is paid for a bushel of paddy. But substantial quantities of paddy are sold by farmers to private traders in the open market. There are also floor prices for a few other food crops such as potatoes, cow-pea, onions, green-gram and dry chillies. But the quantities purchased by the Government are negligible.

With regard to Question (B) 4.1, it has not been possible to obtain dependable data on incremental farm incomes from existing reports.

In Section Five where we deal with the four selected major irrigation systems and farmer interviews, we have provided a short preamble, (Part I), by way of an introduction to this Section. The reports on the four selected schemes (Part II - V) have been presented under the following headings:

- (A) General;
- (B) Delivery of Water
- (C) Age of the System & Rehabilitation

- (D) Seasonal Availability of Water
- (E) Crops Grown
- (F) Cropping Intensity
- (G) The Number of Farms Served
- (H) Rainfall Figures
- (I) Water Problems
- (J) Operation of the System
- (K) Maintenance of System
- (L) Farmer Organisations
- (M) The Role of Government
- (N) O & M Recoveries

In the concluding Part (VI), we have provided some general observations on the farmer interviews conducted in the four selected schemes, which is supplemented by the data incorporated in Annexe 11.

It will be noted that in this Study we have attempted not only to collect the relevant factual data, but also to discuss the policy perspectives relating to O & M rates and make suggestions and recommendations which we felt would be useful in overcoming some of the problems that may arise in the collection of O & M rates.

It should also be appreciated that this Study is a preliminary and an exploratory one. We are aware that the Government is making every effort to stabilise the policy on O & M recoveries and improve the efficiency of its implementation. In fact, while this Study was underway, the Ministry of Lands and Land Development, we understand, has taken important decisions in relation to O & M recoveries which we feel are in the right direction.

We have referred to these recent decisions in the final Section of this Report.

In this context we consider the views and opinions expressed by the senior officers of the Government whom we interviewed as being tentative rather than definitive. Fully aware of the practical problems of implementing O & M recoveries, they have adopted a flexible approach to the solution of the problems that are likely to arise.

Work on this Study commenced on 1st September, 1984, and the draft report was completed on 27th November, 1984. The observations of our client on the draft report were conveyed to us by letter dated 17th January 1985. The final report which has been edited and amended in the light of the client's observations has been completed on 28th February, 1985.

This Study was carried out by Engineering Consultants Ltd. in association with Development Planning Consultants Ltd. with the following members participating in the Study on the respective bases set out below:

- | | | |
|------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Mr. A.T.M. Silva | - | Project Director who was in overall charge on a stipulated time basis |
| Mr. W.B.C. Senerat-Nandadeva | - | Associate Project Director, who assisted the Project Director generally and with specific reference to legal issues - on an intermittent time basis |
| Mr. S.V.A. Buddhadasa | - | Irrigation Specialist, who assisted the Project Director in matters relating to irrigation - on an intermittent time basis |

Mr. A.S.Widanapathirana - Agricultural Economist, who was directly associated with the Project Director in the planning and presentation of the results, of the field surveys - on a fixed fee basis.

In the course of our work we have had the opportunity of discussing numerous matters relevant to this Study with nearly 100 farmers and several officials working at the centre, at district level and in the four major irrigation systems. The names and designations of these officers are given in Annexe 12.

Finally, we wish to record our thanks and appreciation to the farmers as well as all the officers concerned who gladly answered our numerous questions, provided us with valuable data and gave us a great deal of their time.

S C H E D U L E

CORRESPONDENCE BETWEEN SCOPE OF WORK AND
SECTIONS OF REPORT

(A) COUNTRY WIDE INFORMATION

- (A) 1 - Section 3
- (A) 2 - Section 4
- (A) 3 - Section 4
- (A) 4 - Section 4
- (A) 5 - Sections 1 & 2
- (A) 6 - Section 4
- (A) 7 - Sections 5 & 6
- (A) 8 - Section 7
- (A) 9 - Introduction
- (A) 10 - Section 4
- (A) 11 - Section 4
- (A) 12 - Section 3
- (A) 13 - Section 4

(B) INFORMATION ON DIFFERENT TYPES
OF IRRIGATION SCHEMES

(1) PAYING FOR O & M

- (B) 1.1 to 1.7 - Section 4
- 1.8 - Section 7

(2) SYSTEMS OPERATION

- (B) 2.1 and 2.2 - Section 5
- 2.3 - Section 3
- 2.4 - Section 5
- 2.5 and 2.6 - Section 5 and 6

(3) SYSTEMS CHARACTERISTICS

- (B) 3.1 to 3.3 - Section 5
- 3.4 - Section 7

(4) MISCELLANEOUS

- (B) 4.1 - Introduction
- 4.2 to 4.4 - Section 5

SECTION ONE

IRRIGATION AND LAND SETTLEMENT

1.0 AN HISTORICAL OVERVIEW

1.01 Sri Lanka has had a great hydrological civilisation going back to a period of over 2500 years of recorded history. The economic base of this civilisation was the cultivation of rice, while an intricate web of social and cultural relations, and indeed a way of life developed around this central economic activity. The major irrigation systems such as Minipe falling within the Kandy and Matale Districts, Parakrama Samudra Scheme in Polonnaruwa District, the City Tanks, Nuwarawewa and Tissawewa in Anuradhapura District, have been the work of ancient Sinhala Kings who utilised the great indigenous hydraulic and irrigation skills to construct these massive reservoirs.

1.02 The hydrological network consisted of what we now call major irrigation systems (or popularly major colonisation schemes) and minor irrigation schemes.* For the purpose of this study it would suffice to say that an irrigation scheme with a command area of more than 200 acres is considered a major system.

* For a definition of minor irrigation and some of the conceptual issues pertaining to minor irrigation, see Socio-Economic Survey of Minor Irrigation in the Dry Zone of Sri Lanka by J. M. Gunadasa et al, University of Peradeniya, 1980, (mimeo)

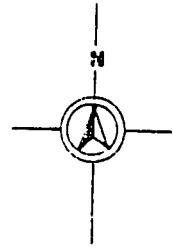
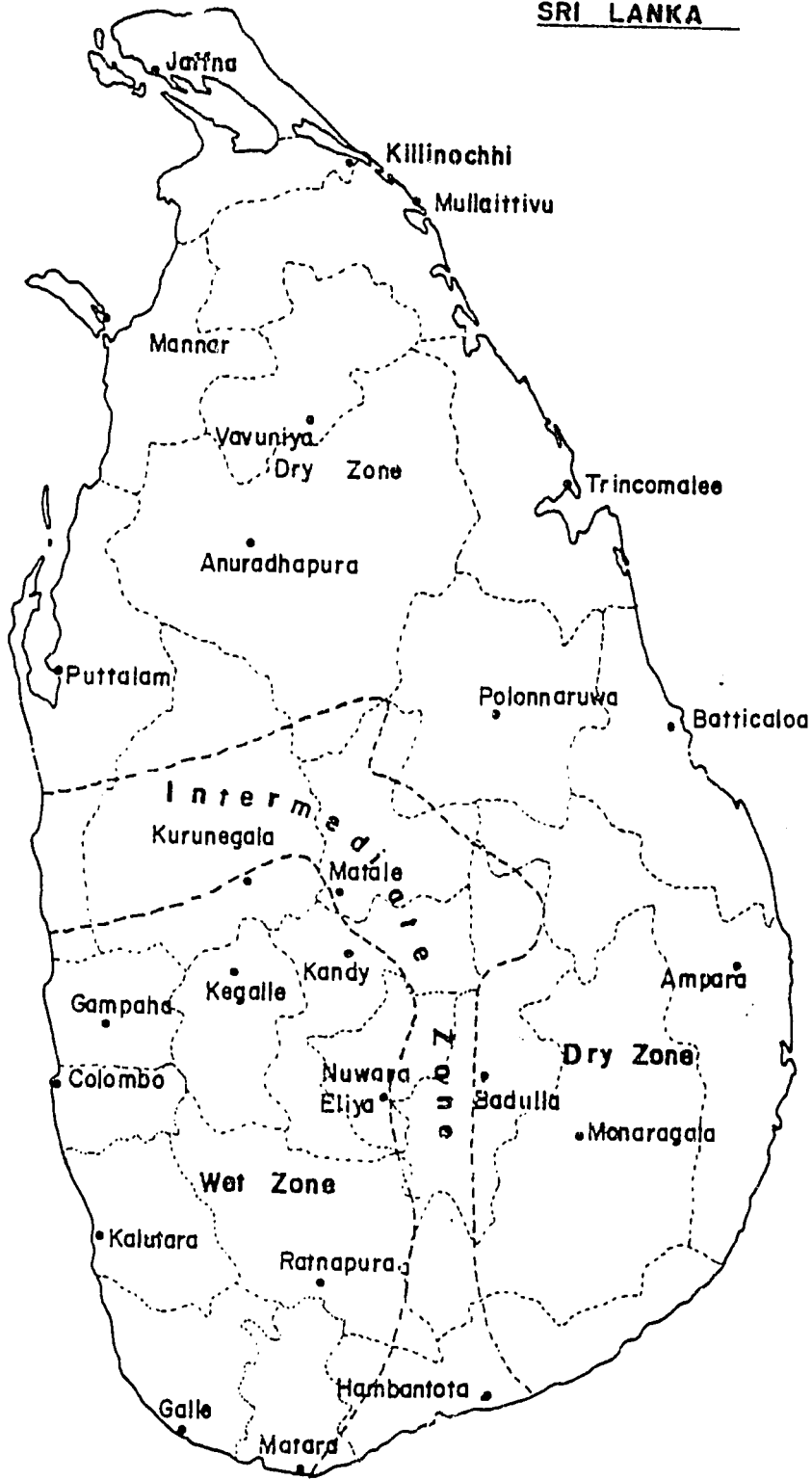
1.03 This study is not directly concerned with minor irrigation schemes or Government sponsored lift-irrigation schemes (a development which commenced only in the 1960s) because the Government has so far not taken a decision to recover O & M charges in respect of minor irrigation schemes or lift-irrigation schemes. In the latter schemes, since the escalation of fuel prices, the farmers have to supply the fuel to the Irrigation Department or make a payment for fuel if the pumps are to be worked. This is purely a fuel charge and not an irrigation rate or an O & M recovery. The costs of O & M and energy costs in lift-irrigation schemes are shown in Annexe 2.




Some attention has been paid to minor irrigation in this study because it occupies an important position in the irrigated agricultural sector in the country, provides a source of livelihood to a large section of the small scale paddy farming population and the absence of proper O & M is a major problem in minor irrigation as well.

1.04 Most of the major irrigation systems are located in the dry zone region of the country* (See map of Sri Lanka at page 9 which gives the principal agro-climatic zones, the 25 administrative districts and the principal towns). It is therefore not surprising that during long periods of ancient Sri Lanka history Polonnaruwa and Anuradhapura situated in the dry zone were the capitals of the Sinhala Kings.

* The dry zone occupies about 70 percent of the land area of Sri Lanka. It is a most distinctive agro-climatic region sharply differentiated from the wet zone in terms of rainfall (50-75 inches), soils, vegetation and overall agro-ecological conditions.

ADMINISTRATIVE DISTRICTS
AGROCLIMATIC ZONES AND
PRINCIPAL TOWNS IN
SRI LANKA



-  PRINCIPAL TOWNS
-  AGROCLIMATIC ZONES
-  ADMINISTRATIVE DISTRICTS

1.05 From about 13th century this dry zone civilisation began to collapse. The reasons for this decay, taking place at the time it did, is still a matter of some controversy among scholars. It is generally accepted, however, that the widespread incidence of malaria and repeated Indian invasions were important causes for the decline of this civilisation.

1.06 There are many accounts of the desolation that overtook the dry zone after the collapse of this hydrological civilisation. For instance the British Civil Servant Emerson Tenant writing in 1859 saw Anuradhapura the ancient capital in the following terms :

"Here the air is heavy and unwholesome, vegetation is rank, and malaria broods over the waters as they escape from the broken tanks, one of which Abeyawewa, is the oldest in Ceylon. The historic city has shrunk into a few scattered huts that scarcely merit the designation of a village."*

1.07 After several centuries of neglect, the restoration of ancient and abandoned irrigation schemes and the revival of irrigation based agriculture started receiving some attention during the period of the British occupation, specially in the 1850s, during the time of Governor Henry Ward. The objectives of irrigation development at the time were increasing rice production and reducing unemployment in the rural areas by restoring village irrigation works.

* Quoted in Pioneer Peasant Colonisation in Ceylon
by B. H. Farmer, 1957, p.11

1.08 The restoration of the major irrigation systems, accompanied by land development and human settlement, supported by the development of essential infrastructure facilities commenced in earnest in the 1930s. Political developments that took place in Sri Lanka in the 1930s contributed substantially towards the evolution of a policy of vigorous irrigation development. Sri Lanka was granted limited self-rule by the British in 1931 under the Donoughmore Constitution. Along with the introduction of this constitutional change, universal adult franchise for men and women, linked to geographically demarcated electorates, were introduced. This meant that the local politicians aspiring for seats in the legislature had to woo the mass of rural voters. The development of irrigation, the alienation of State land and the settlement of people had considerable popular appeal. Under the Donoughmore Constitution where national policy making was conducted through a system of Executive Committees, D. S. Senanayake became the first Chairman of the powerful Executive Committee of Agriculture and Lands. Senanayake was deeply committed to the restoration of the ancient glories of Sri Lanka and specially the dry zone of the country. In this policy, the restoration and development of the great hydraulic systems of the past became a matter of central concern. D.S.Senanayake who in 1947, with the attainment of independence, became the first Prime Minister of Sri Lanka, is generally recognised as the father of irrigation development since **the** 1930s. The thrust of land and irrigation policies which commenced in the 1930s have been sustained even to the present day-a period of well over half a century. The fact that his son Dudley Senanayake became the first Minister of Agriculture and Lands after independence and subsequently succeeded his father as Prime Minister of the country also contributed in no small measure towards maintaining the momentum in irrigation and land development. It should also be mentioned that even after the

defeat of the United National Party Government in 1956, C. P. de Silva, a member of the former Ceylon Civil Service and a long time Assistant Government Agent of Polonnaruwa, was a devoted admirer of D.S. Senanayake's irrigation and land development policies and pushed ahead within the framework of the Senanayake vision.

1.09 The story of colonisation and land settlement in Sri Lanka in modern times is now a well documented one which we do not need to recount in the context of this brief outline background. Suffice it to say that a large number of objectives were co-present in the policy of establishing large human settlements with irrigation for agriculture. There was a romantic Sinhala nationalist feeling that the country was going back towards the restoration of the ancient dry zone, sanctified in the popular imagination by the heroic deeds of the Sinhalese kings and the establishment of Buddhism in the country. There was a concern for transferring population in a meaningful way from the over-crowded wet zone to a sparsely populated dry zone. The tea and rubber estates which came down from British times had already utilised a substantial part of wet zone agricultural land for export oriented plantation crops. The colonisation of the dry zone was also thought of as an answer to domestic food production (principally rice production) for an increasing population. There was also a feeling among the political elite of the time that the future prosperity and stability of the country would rest on the creation of a community of sturdy, self-reliant peasant farmers, encouraged and supported by the Government and by gentlemen farmers. This was implicit in the new ethos that was being planned for dry zone development. In formulating these policy

perspectives, the political elites of the day were also apparently not unmindful of the fact that a sturdy peasantry would be a bulwark against the spread of Marxist ideologies which were at the time getting a foothold among urban intellectuals, the urban working classes and the plantation workers.

1.10 The irrigation and land development policies of the time can be seen through a study of the early settlements in Minneriya, Nachchaduwa and Kalawewa in the North Central Province. These systems were developed primarily for rice cultivation in the valley bottoms below the reservoir where the bulk of the soil was Low Humic Gley (LHG). From then on until the early 1960s, 15 to 20 percent of the Government's annual allocations for capital expenditure were devoted to the development of major irrigation schemes. Two new river basin development projects viz. Gal Oya (122,000 acres) and Uda Walawe (31,000 acres) were undertaken between 1948 and 1970 with a heavy irrigation component primarily for rice cultivation and also for crops such as sugar-cane and cotton. During the 1960s the investment in irrigation and land development had been about 36 percent of the capital budget allocated to the agricultural sector. By the late 1960s nearly all the major ancient irrigation works had been restored and three new projects viz. Gal Oya, Rajangana and Uda-Walawe had been virtually completed.

1.11 The present position is that there are nearly 140 major irrigation and settlement schemes (outside the Mahaweli Development Scheme) with an irrigated extent of about 580,000 acres of paddy land. Of this number about 105 are located in the dry zone. Originally, the number

of families settled in these schemes was approximately 100,000. Some families in these schemes have now their second and third generations, the majority of whom live within the settlement areas. The area covered by the dry zone produces 3/5th of the total production of paddy while major systems contribute more than 1/3rd of the total production.

1.12 The diversion of the Mahaweli Ganga (the largest river in the island) which had been under consideration for many years was taken up by the Government as a major multi-purpose river basin development project following a UNDP/FAC feasibility study conducted in 1968. According to the Master Plan, 240,000 acres of existing land and 660,000 acres of new land, making a total of 900,000 acres, were to be developed for irrigation over a 30 year period along with 660 MW. of hydro-power. During the period 1970 to 1977 major investment and attention was on the diversion of Mahaweli which was to initially improve irrigation facilities for double cropping in 124,000 acres of already irrigated land and providing irrigation facilities to 6,000 acres of new land. Very few new schemes were started during this period.

1.13 The irrigation and land development policies of the Government came under serious criticism from about the late 1950s. Surprisingly enough these early criticisms came in Government planning documents. For instance the Agriculture Plan issued by the Ministry of Agriculture and Food in 1958 contained the following criticism :-

"It has been shown that the cost of current policies of land development, irrigation and colonisation are extremely

high and that the annual production in the average dry zone colony represents only about 16 percent of the total capital outlay as contrasted with over 100% in the Punjab. Moreover, as these schemes are extended and marginal lands are brought into these schemes of development, costs will progressively increase. Colonisation has also led to the emergence of new and serious problems including the establishment of communities without social cohesion; the phenomenon of landlessness in colonisation schemes which results in an unprecedented number of squatters; the piece-meal restoration of irrigation schemes with probably permanent damage to the water resource of certain catchments; the indiscriminate clearing of forests and dangers of siltation of the existing reservoirs and channels.

The continuation of present policies will endanger not only the agriculture of Ceylon but will also seriously undermine all efforts to develop the country on economic lines." (Pages 5 and 6).

1.14 A few years later the Short-Term Implementation Programme issued by the Department of National Planning in 1962 drew attention to the fact that irrigation and land development continued to absorb a greater part of investment in the agricultural sector and proceeded to state:

" However, despite this considerable investment which has been made mainly in the non-export sector, the output of this sector has not been such as to make any significant impact on our food problem. It is time, therefore, to critically examine returns in relation to investment

made, and to adopt a more realistic approach to development. This is all the more necessary at a time of scarce capital and foreign exchange resource.

Continued investment in a traditional field quite unrelated to output can only be a . . . undertaken at the cost of funds to other more productive activities". (P.119).

1.15 These criticisms must be seen against the background of the socio-economic conditions which had arisen in the country in the early 1960s. The buoyancy and optimism of rapid economic growth envisaged in the immediate post-independent years was giving way to a realistic understanding of the difficult economic and social problems that the country was facing. The fluctuating prices in the world market for tea, rubber and coconut, coupled with dependence on a large volume of imports and specially food imports were creating serious foreign exchange difficulties. The population was expanding rapidly and the burdens of meeting the health, education, employment and food requirements of this growing population were beginning to cause strains in the economy. It is natural therefore that attention was directed towards the performance of the major irrigation and settlement schemes in matters relating to food production, creation of new employment etc. where large capital investments had been spent regularly for a long period of time and specially after independence.

1.16 Another interesting development was that along with the growing criticism on the performance of major irrigation systems, particularly from the point of view of costs and returns and priorities in investment, these schemes began to be studied intensively from the point of different disciplines (e.g. economics, sociology, social anthropology, agriculture, climatology, institutions, management sciences etc). These studies which now

add up to a very substantial body of literature were conducted by local and foreign scholars, research organisations, universities, Government agencies as well as bilateral and multi-lateral donor agencies. This was in fact a significant development because most of the problems which were bedevilling major irrigation and settlement schemes came to be highlighted, documented and widely discussed. As one foreign scholar has observed -

"The growth in social science attention to irrigation systems has not been a planned or orchestrated phenomenon. Individual researchers have initiated their research activities for diverse purposes with diverse sources of funding and using diverse research procedures. This diversity is not to be lamented; indeed, these plural approaches represent a functionally adoptive strategy for work in the incipient emerging area of the formal study of irrigation organisation".*

1.17 Another significant landmark was the visit of a FAO Mission under the FAO/IBRD Co-operative Programme in July, 1964. This Mission, popularly referred to as the Pepersak Mission, was required inter alia to -

(i) Undertake a careful review of the irrigation programme in Ceylon giving full consideration to existing irrigation projects that might require rehabilitation as well as to propose developments and their role and importance in the context of the national economy.

(ii) Review and recommend on institutional, organisational, managerial and technical measures required to ensure successful execution and operation of existing and future projects.

* Coward, 1978. Quoted from 'Water Management in Major Irrigation Schemes by J. Alwis in Land Settlement Experiences in Sri Lanka, Ed. by Kapila P. Wimaladharma, 1978, p. 11.

1.18 A short while later the report of the Gal Oya Project Evaluation Committee under the Chairmanship of B.H. Farmer was published.* The Gal Oya Project received considerable publicity at the time of its construction and was even referred to as a minor version of the Tennessee Valley Authority in the U.S.A. The report of the evaluation committee was indeed unfavourable to this prestigious project. A general conclusion of the Committee was that :-

"The policy of colonisation is at the core of the problem that this committee was called upon to report. Our detailed findings have revealed some striking features to which close attention must be paid by policy makers in the future. The first is the poor benefit/cost ratio of the colonisation element of the Gal Oya project. The existing expenditure on the infrastructure and the low productivity of the individual colonists have been clearly shown in our evaluation. This finding makes it necessary that policy makers take a long, hard look at the advisability of diverting resources to what is essentially a social welfare function in an economy where the greatest need is to maximise production". (p.140)

1.19 One of the significant developments following upon the recommendations of the Pepersak Mission was the establishment of Special Projects in 24 major irrigation and settlement schemes following on the success achieved in the Elahera Special Project. Basically the concept of Special Projects was to establish a committee of officials drawn from the related Government agencies at the project level with a project manager to develop productivity levels in the settlement scheme in close consultation with farmers and farmer organisations where they existed. The emphasis was on the co-ordination

* Sessional Paper No. 1 - 1970

of agricultural inputs (seed, fertiliser, farm power etc.) applied in a systematic way towards increasing paddy production. It was essentially an application of the technology of the 'green revolution' and undoubtedly helped in increasing paddy production to a substantial extent in nearly all the schemes in which Special Projects had been established. But by around 1979 Special Projects were collapsing because their initial momentum could not be maintained. As one writer has pointed out, an important reason for the slowing down of the momentum of Special Projects and their subsequent closure was that there was little or no appreciation by the officials that irrigation water was a critical input in the production chain:

"Irrigation water availability was virtually taken for granted and perhaps this would have been due to the pre-occupation of the authorities with input co-ordination and supply which was in fact what the Green Revolution emphasised".*

1.20 The very special concern of the Government and the country with the performance of major irrigation systems at the present time has arisen on account of several important considerations of immediate concern. The accelerated Mahaweli Programme is providing additional or new irrigation facilities at great cost to large geographical areas in the dry zone and a large number of farm families. Increasing paddy production for attaining self-sufficiency has been a time honoured objective of policy makers. From about the 1960s the cultivation of other field crops, popularly known as subsidiary food crops, as an import substitution strategy, has also received considerable emphasis. There has also been some concern not only with the need for crop diversification on the major irrigation schemes but also with the need for suitable livestock development programmes. While these objectives are being pursued

* Water Management in Major Irrigation Schemes by J. Alwis, Op. Cit, p. 91.

in the agricultural sector, unemployment and under-employment has become a serious problem among the second and third generation children of settlers who have not been able to move out into off-farm and non-farm employment. The original settlers have not been able to generate a net surplus through agricultural activities to enable the younger generations to be provided with meaningful avenues of livelihood. It has also to be realised that with the implementation of the Accelerated Mahaweli Programme, there will be very little room or resource for establishing new schemes except perhaps for the Kirindi Oya and Inginimitiya schemes where the Government has already made some commitments. The needed financial resources will simply not be available in the foreseeable future to establish new major irrigation systems. Even if financial resources were available, the areas that can be taken up for development will offer very limited returns in relation to investments. Many policy makers and water management specialists in Sri Lanka have also realised that in many parts of the world large extents of land which were once under irrigated agriculture have gone out of production each year because of the neglect of maintenance. This can well happen in Sri Lanka as well.

1.21 As a result of intensive studies that have been carried out during the last three decades and the experience gained in implementing numerous development schemes in major irrigation systems, it has been possible now to identify a large number of problem areas which require remedial action on a high priority basis. It is useful to refer even in passing to at least some of these problems because on their successful solution will depend the contribution that major irrigation systems will make to the national economy in terms of productivity, distributive justice, employment and better living standards in the rural areas. No less important in the context of the present study is the fact that the willingness/ability of farmers to pay operation and maintenance costs will depend on how these problems are resolved.

1.22 The first important consideration is that even the so called major irrigation systems including the Mahaweli project are dependent on rainfall in the catchment areas*. In this sense, Sri Lanka is not in the favoured position of some other countries like Japan which can depend on melting snows for year round irrigation. The Sri Lanka irrigation system has to function within the vagaries of monsoonal rainfall regimes. The success of the irrigation development effort will ultimately rest on the skill and efficiency with which the farmers and the supporting technical and managerial cadres can make the system function with optimum efficiency under the hard realities of monsoonal Asia.

1.23 The nature of water courses and the conveyance systems in major irrigation schemes have rightly received increasing attention. The following observations of two writers who have commented on this matter are illuminating.

"The existing settlement schemes are pre-ordained systems which are, for the most part inflexible because the water management perspective was not focused adequately during the early stages of design and construction. In Gal Oya, for instance field channels sometimes run for several miles in length thus creating severe problems of water distribution and water availability to the tail-enders. Some of them have been designed purely to provide continuous flow of water and not for supplementary irrigation as required in the application of water management practices. Perhaps the reason why the problem of the tail-enders looms large in most of these schemes manifesting themselves in social and political problems is largely because these practical aspects in the operation of the systems were not taken care of at the design stage." **

* The island receives its rainfall from two monsoons, viz. the South West and North East, which prevail from May to September and from November to March respectively. There are also convectional rains during the intermonsoonal period.

** Water Management in Major Irrigation Schemes by J. Alwis Op. Cit., p.95.

1.24 Moore, a visiting sociologist who has published several studies on irrigation problems in Sri Lanka, has also commented as follows :

"The physical design of the large schemes constructed in the 1930s, 1940s, 1950s and 1960s reflected a conception similar to that embodied in smaller schemes in early decades. The main emphasis was on impounding the maximum feasible quantity of water by placing a bund across a natural water course and spreading this water over a large area in order to maximise the number of settler families served. All this was to be achieved at the minimum cost per settler The demand that large areas be provided irrigation facilities at low cost led to the construction of a relatively sparse irrigation infrastructure. Irrigation channels were long. Channels nominally of the same category - i.e. field channels or distributory channels - were of grossly unequal length in total and in relation to the acreage they served. Physical structures for controlling water flow - gates, cross-regulators and cross structures - weirs and flumes - were almost unknown. The physical design of the large schemes was very like that of the village tanks writ large. It is barely an exaggeration to say that they were not designed to manage water, but simply to distribute it under continuous flow conditions once it left the tank sluice." *

1.25 Overloading of the irrigation system has been a common feature in nearly all major irrigation schemes in Sri Lanka. This overloading takes place due to a variety of reasons. When a system is designed to serve a given number of farmers, land is given in excess of the number originally envisaged on account of political and

* Institutional Adaptiveness and Succession - The Case of Irrigation in Sri Lanka by R.P. Moore, 1981, (mimeo)

employment pressures. Every major scheme also has to contend with the problems of encroachers who cultivate land and obtain water without official sanction. Sometimes additional settlers have been brought in to extend schemes at different stages of development without an adequate consideration of the capacity of the irrigation system to provide for these extensions.

1.26 There are serious problems in irrigation supply to top-enders, tail-enders and those occupying allotments in the middle along the channel system. Generally 'top-enders' obtain more water per unit of land than tail-enders and thus enjoy more success in their cultivation.

"The inequalities of water distribution leads to differentiation in levels of income between different groups of settlers and also to differentiation in access to social benefits and even political patronage." *

1.27 Since the emphasis had been on the design and construction of the major irrigation schemes and the settling of as large a number of farm families as possible, very little attention was paid to the position of the farmer himself as the principal agent of agricultural production. His participation was not sought for and his perceptions were not solicited and given due recognition in managing schemes. The role of the officials, particularly the officials of the Irrigation Department, were all important. Very often the relationship between the farmers and the official hierarchy in an irrigation scheme was one of confrontation rather than collaboration. The officials invariably blamed the farmers for excessive use of water, water piracy, failure to observe cultivation

* See for instance, Space and Generation of Socio-Economic Inequality on Sri Lanka's Irrigation Schemes by M.P. Moore 1982, (mimeo)

calendars and even wilful damage to irrigation structures during times of water scarcity. The farmers on the other hand blamed the officials for not supplying sufficient quantities of water on their farms at the times they most wanted it, for inefficiency, lack of interest etc.

1.28 There was hardly an emphasis on the management of the irrigation system as a whole and on the need for continuous effort at operating and maintaining the scheme at optimum levels of efficiency. After some years, when an irrigation system was beginning to malfunction, the remedy was to ask for further investments in rehabilitating the scheme or parts of the scheme as may seem necessary. Once such rehabilitation was done, the maintenance of the system continued to be well below the required standards. The farmers were not encouraged to participate in any of the these matters.

SECTION TWO

IRRIGATION AND LAND SETTLEMENT - STATE OF THE ART

2.0 In Section One we have provided an outline account of the concern of the central Government for irrigation development in the country. In this Section we propose to further examine the current policy framework and the implementational efforts that are being made in the irrigation sector.

2.01 The following table gives the investment in irrigation, including village works, major works and river basin development during the period 1950 to 1982. It will be seen that approximately Rs. 12,242.0 million has been spent on the irrigation sector during this period.

TABLE 1

INVESTMENT IN IRRIGATION 1950-1982

<u>Year</u>	<u>Village Works</u>	<u>Major Works</u>	<u>River Basin Development</u>	<u>Total</u>
1950-1954	16.4 Million	171.9 M	84.7 M	273.0 M
1955-1959	11.0 Million	133.8 M	35.3 M	180.1 M
1960-1964	6.4 Million	153.6 M	15.3 M	175.3 M
1965-1969	23.3 Million	245.3 M	20.4 M	289.0 M
1970-1974	70.4 Million	175.0 M	280.7 M	526.1 M
1975-1979	196.6 Million	362.0 M	1654.2 M	2212.8 M
1980-1982	285.4 Million	1200.3 M	7100.0 M	8535.7 M
TOTAL	609.5 Million	2441.9 M	9190.6 M	12242.0 M

SOURCE : Administration Reports of the Directors of Irrigation and Plans and Progress Reports of the former Ministry of Irrigation, Power and Highways.

2.02 The following table gives the extents provided with irrigation facilities, including lands irrigated under Gal Oya, Uda Walawe and Mahaweli during the period 1954-1982. It will be seen that 457,111 acres of 'new extents' (i.e. land not under cultivation earlier) and 484,501 acres of 'existing land' (i.e. land which has been under some form of cultivation) - a total extent of 941,612 acres of land - had been provided with irrigation facilities during this period.

TABLE 2
EXTENTS PROVIDED WITH IRRIGATION FACILITIES
(Includes lands irrigated under Gal Oya, Uda Walawe and Mahaweli)

Year	Major & Medium Works (Acres)		Minor Works		Total	
	New Extents	Existing Land	New Extents	Existing Land	New Extents	Existing Land
1954-1964	96,000	-	77,000	-	173,000	-
1965-1969	71,061	15,049	8,611	18,096	79,692	33,145
1970-1974	62,763	15,356	12,571	48,095	75,334	63,451
1975-1979	37,809*	142,920	31,690	174,603*	69,499	317,523*
1980-1982	32,684	12,988	26,902	57,394	59,586	70,382
TOTAL INCREASE	300,337	186,313	163,774	298,188	467,111	484,501

* Some of the 'existing lands' provided with irrigation under the Mahaweli project were either rainfed or under minor schemes previously. These extents are now shown as 'existing lands' under major schemes. The total increase, under major schemes is therefore more than the extent shown in column 2 above. There will be a proportionate reduction in the total acreage under minor schemes. This table is reproduced from Irrigation and Water Management Policies in Sri Lanka, Nanda Abeywickrama, 1983, (mimeo).

2.03 Through a slow and hesitant path, policy perspectives have now arrived at the recognition that there are acute technical, managerial and socio-economic problems in nearly all the major irrigation systems in the island and that unless they are resolved or contained within certain limits, these schemes will not be able to contribute to national growth as originally envisaged.

2.04 Policy makers now appreciate that a substantial number of farm families officially or illegally occupying parcels of land in these schemes are leading lives of deprivation. They are often engaged in less than subsistence farming even though notionally, the official settlers at least, are "sitting pretty" on a holding which includes an irrigable extent of paddy land.

2.05 With the massive commitment of national resource to the Mahaweli Development Project it is doubtful whether in the foreseeable future there is a possibility of diverting a significant amount of capital and recurrent expenditure (as was done in the past) to constructing and maintaining large irrigation schemes.

2.06 In this context, it is only rational policy to have a long and hard look at schemes that have already been established and make a critical assessment of their positive and negative aspects. This is precisely what Government policy is now seeking to do.

2.07 The positive side should not be overlooked. Major irrigation schemes now contribute substantially to total paddy production each year. They are making some contribution to the production of other field crops as well. A large population has moved into residence in these

schemes. Some of them, such as the very old established Minneriya Scheme, have proved to be focal points for diversified economic growth in the region generating off-farm and non-farm employment including a vigorous service sector and sustaining satisfactory levels of rural livelihood. In fact, one cannot envisage what the contemporary economy and society of Sri Lanka would be like if the major irrigation and settlement schemes had not been established over the years.

2.08 On the other hand, there are serious technical (both in irrigation and crop production), socio-economic, cultural, managerial and human problems in these schemes which have been generally referred to in Section One. There is a saying "Give a peasant water and he will do the rest". Witfogel saw the hydraulic civilisations of the orient leading to the consolidation of powerful bureaucracies. Both views carry their exaggerations but they also contain germs of truth that are not altogether irrelevant to the irrigation problems in Sri Lanka.

2.09 It has not been sufficiently appreciated that the Mahaweli Development Project has in itself proved to be a catalyst in drawing attention to the current situation in irrigation systems outside Mahaweli. In planning the Mahaweli Project very close attention has been paid to avoiding some of the mistakes made in the past in matters of design, settlement planning, agro-ecological and environmental considerations, institutional, managerial and socio-economic conditions. While one cannot say that these matters have all been adequately looked after in the Mahaweli Project, the fact that they were intensively examined and available options carefully weighed by foreign and local expertise, is in itself a

development of considerable significance. It is only natural that the concern with such problems should spread outside the confines of the Mahaweli Project specially because some of the older schemes are either receiving water from Mahaweli or are located in close proximity to the areas falling within the Mahaweli Project.

2.10 A large number of bilateral and multi-lateral agencies are now financing the development and rehabilitation of major irrigation systems in the country. The fact that large scale assistance is being given to the accelerated Mahaweli Development Programme is well known. But it is not sufficiently known that considerable foreign assistance is now flowing in to major irrigation schemes outside Mahaweli and also in to minor irrigation. Table 3 on page 31 gives the aided projects falling outside Mahaweli, the donor agency, the extent of foreign aid in respect of each scheme and the contribution of the Government of Sri Lanka. Table 4 on page 32 shows the external assistance that is now being made available to minor irrigation works under the Integrated Rural Development Programmes in 11 districts. These external funding agencies and the expertise that is brought to Sri Lanka in the course of this programme have considerably influenced Government policy regarding the proper maintenance and development of the irrigation sector in the country.

2.11 The current policy thinking with regard to irrigation and land settlement in the major schemes can be seen in the following activities that have been

organised by the Ministry of Lands and Land
Development :

- (a) Organisational changes within, the Ministry of Lands and Land Development specially in the establishment of a Water Resources Division and an Irrigation Management Division.
- (b) Studies on Diagnostic Analysis on major irrigation systems
- (c) The Project for the Advancement of Settlement Expertise
- (d) The emphasis on water management as a key factor in the all-sided development of major irrigation systems
- (e) Farmer participation as a key factor in the overall development of major schemes and in particular the management of water resources.
- (f) Rehabilitation and Operation and Maintenance.

TABLE 3
AIDED PROJECTS

NAME OF PROJECT	DONAR AGENCY	FOREIGN AID / GRANT (MILLION)	GOSL CONTRIBUTION (RS. MIL.)	TOTAL ESTIMATED COST (RS.MIL.)
1. Tank Irrigation Modernization Project	IDA Loan	\$ 5.0	102	290
2. Kirindi Oya Irrigation and Settlement Project (KOIS)	UK Grant	£ 2.32		
	ADB Loan	\$ 30.0	220	1,600
3. Inginimitiya	IFAD Loan	\$ 18.0		
	KFW Loan	\$ 20.9		
	Total	\$ 68.9		
	OECF Loan	Y 1,800	155	360
4. Gal Oya L.B. Water Management	OECF Grant	Y 600		
	USAID Loan	\$ 6.8	185	352
	USAID Grant	\$ 3.0		
	Total	\$ 9.8		
5. VIRP (Village Irrigation Rehabilitation)	IDA	\$ 30.0	244	784
6. Muthukandiya Reservoir and Dry Farming Project	Australia	A\$ 7.0	81	210
7. Gin Ganga	China	Y 35.0	20	430
8. Mahadivulwewa	EEC	\$ 1.96	Nil	40
9. North West Land & Water Resources Development Project	UK (ODA)	\$ 0.95	6	44
	USAID Loan	\$ 3.40	220	310
10. Reforestation & Watershed Management	USAID Grant	\$ 0.95		
	Total	\$ 4.35		
	ADB	\$ 10.0	.78	292
11. Community Forestry	UNDP	\$ 0.5	4.0	14
12. Forest Inventory	USAID	\$ 3.9	22.0	96.6
	Switzerland	DF 0.36		
13. Agricultural Base Mapping Project (ABMP)	Switzerland	SF 0.5	0.4	4.4
14. Sattelite Imagery Project	UNDP	\$ 0.18	2.7	6.8
15. Training for Planning and Management of Settlements	UNDP	\$ 0.19	0.8	5.2
16. Establishment of a Land Use Policy Planning Division	USAID	\$ 0.8	-	-
17. On Farm Water Management Project				

Source : Resource Development 1978-1982, Ministry of Lands and Land Development, 1983

T A B L E 4

SOURCE, AMOUNT AND TYPE OF FUNDING FOR DEVELOPMENT OF MINOR IRRIGATION WORKS UNDER INTEGRATED RURAL DEVELOPMENT PROGRAMMES IN THE DISTRICTS

District	Source of Funding	Year of Commencement	Total investment on minor/anicut works (Rs. Million)	Local Component (Rs. Mil.)	Foreign Component (Rs. Million)
Kurunegala	IBRD	1979	40.00	36.70	3.30
Matale	IBRD	1980	11.74	10.00	1.74
Puttalam	IBRD	1980	42.20	6.35	35.85
Mannar	IBRD	1983	5.70 ^a	-	-
Vavuniya	IBRD	1983	Nil	Nil	Nil
Badulla	IFAD/SIDA	1983	8.40 ^b	7.42 ^c	0.98 ^c
Matara	SIDA	1979	0.96	-	-
Nuwara Eliya	Netherland	1980	2.09 ^d	.0	2.09
Hambantota	NORAD	1979	27.55	0	27.55
Moneragala	NORAD	1984	2.76	0	2.76
Ratnapura	Netherland	1984	Nil	Nil	Nil

a - Proposed allocation from 1984 through 1988

b - Proposed allocation from 1983 through 1987

c - Break down calculated on the basis that the local cost component is 88.48% of the total base cost

d - Includes a proposed expenditure of Rs. 1.2M for 1984

SOURCE : Ministry of Plan Implementation, Department of Regional Development, Colombo.

2.12 In 1978/79 a new Water Resources Development Division was created within the Ministry of Lands and Land Development. The principal function of this Division is to develop new thinking and policy orientations in the field of water management. This will be referred to again in Section Three of this Study. This Division has been concerned with surface and ground water development. During the past five years it has been engaged in identifying priorities and formulating strategies for implementation in the irrigation sector.

2.13 The other important institutional change within the Ministry was the creation of an Irrigation Management Division which carries out its work through Project Committees established in some of the major irrigation systems. This Division is a multi-disciplinary unit dealing with the improvement of irrigation facilities in irrigation systems which are already established.

2.14 These two institutional changes alone indicate the new thinking of the Government in regard to irrigation and land settlement. These new Divisions jointly and severally display the thrust of policy towards recognising that irrigation water is a scarce resource and that its proper management is a matter of crucial importance. The work of the Irrigation Management Division and the programme it has launched for Integrated Management of Major Irrigation Schemes (INMAS) will be discussed in Section Three.

2.15 The Project for the Advancement of Settlement Expertise was started about two years ago by the Ministry of Lands and Land Development principally for the purpose of providing intensive training for officials who will be required to work in major irrigation schemes. The recognition of the fact that these officials required special training for this work is itself a significant development of policy. The project is supported by the UNDP.

2.16 The theoretical and practical training and related field studies now referred to as "Diagnostic Analysis" of selected major irrigation systems has introduced an entirely new dimension to the study of major irrigation systems and specially to the inter-disciplinary study of problems that are proving to be constraints in bringing these schemes to full maturity and productivity.

2.17 Experience in the United States and other countries has shown that an inter-disciplinary Diagnostic Analysis of irrigated farming systems is an effective way of evaluating the operation and performance of a given irrigation project. The techniques of Diagnostic Analysis developed by the Colorado State University seek to understand the behaviour of an irrigation system by the collection and analysis of engineering agronomic, social, biological and economic data pertaining to each system. To train its own staff to do such analysis, the Government of Sri Lanka requested the Water Management Synthesis Project at Colorado State University to conduct professional development workshops on the Diagnostic Analysis of farm irrigation systems. Three such workshops were conducted commencing in 1981. The Diagnostic Analysis approach to the study of major irrigation systems in Sri Lanka has already provided training to officials working in this sector and also helped to bring out some important publications such as :

- (a) Rajangana Irrigation Scheme, Sri Lanka, 1982, Diagnostic Analysis, WMS Report 19
- (b) System 'H' of the Mahaweli Development Project, Sri Lanka, 1982, Diagnostic Analysis, WMS Report 16
- (c) System 'H' of the Mahaweli Development Project, Sri Lanka, 1983, Diagnostic Analysis, WMS Report 20

2.18 The policy thinking of the Government has also posed the question of rehabilitation vs. operation and maintenance. There is one school of thought which emphasises rehabilitation of an irrigation system from time to time in order to maintain its efficiency. The other view emphasises the importance of regular maintenance in order to sustain the efficiency of an irrigation system over a long period of time. In the context of Sri Lanka, overdependence on rehabilitation does not appear to be a desirable objective. While some amount of major rehabilitation work is being undertaken now in different major irrigation schemes and will have to be undertaken even in the future, the policy option of rehabilitation is too expensive for a country like Sri Lanka. The cost of rehabilitation is also constantly increasing. In such a context, the policy perspectives of the Government have turned towards emphasising regular operation and maintenance as the viable answer to maintaining the efficiency of irrigation systems. It is for this reason that the Government has introduced a programme for O & M recoveries.

SECTION THREE

3.0 GOVERNMENT AGENCIES AND THE IRRIGATION SECTOR

3.01 There are no private irrigation systems in Sri Lanka. The only exceptions are the following :

- (a) Irrigation through privately owned open dug wells. This is common in the districts of Jaffna, Vavuniya and Mannar where ground water resources are available. In the wet zone areas also private wells are used in home gardening and vegetable cultivation.
- (b) Privately owned tube-well operators found largely in the Mannar district.
- (c) Small scale lift-irrigation schemes where individuals cultivate small extents of land using pump sets and tapping water from a river, a stream or an irrigation channel.

3.02 This kind of private irrigation does not constitute a significant proportion of irrigated agriculture in the country.

3.03 The Government has clearly taken the responsibility for major and minor irrigation. From about 1965 the Government also established on an experimental scale, tube-well irrigation, principally in the Vanathavillu area of the Puttalam district and lift-irrigation schemes in some of the major irrigation and settlement schemes in the Anuradhapura, Kurunegala, Jaffna, Vavuniya and Mannar districts. Many of these lift-irrigation schemes

have been abandoned but a few such as the one on the Left Bank of the Rajangana Scheme falling within the Kurunegala district are functioning.

3.04 There are three principal agencies of the Government connected with operation and maintenance of irrigation. They are:

- (a) The Irrigation Department under the Ministry of Lands and Land Development.
- (b) The Mahaweli Economic Agency (MEA), established in 1982 under Section 14 (i) of the Mahaweli Authority of Sri Lanka Act No. 23 of 1979, functioning under the Ministry of Mahaweli Development. MEA is also in charge of the management of the Uda Walawe Scheme.
- (c) The Department of Agrarian Services under the Ministry of Agricultural Development and Research.

In addition to these three agencies there are two divisions in the Ministry of Lands and Land Development namely, the Water Resources Development Division and the Irrigation Management Division. These two divisions of the Ministry are also closely associated with operation and maintenance of irrigation schemes.

Some account is given in the succeeding sections of each of these three agencies as well as of the two Ministry divisions and, in the case of MEA, of its predecessors in concept: (Sections 3.20- 3.27).

3.05 The principal objectives of the Department of Irrigation are the following:

- (i) Development of land and water resources for irrigated agriculture, hydro-power and flood control;
- (ii) Provision of irrigation and drainage facilities for cultivable lands in irrigation and drainage projects; and
- (iii) Maintenance and Operation of Systems for Irrigation, Drainage and Flood Protection.*

3.06 The responsibilities of the Irrigation Department arising from the above objectives are the following:

- (i) Preparation of Master Plans for development for the different river basins for the optimum utilisation of land and water resources;
- (ii) Project formulation and detailed designs of irrigation, hydro-power, flood control and reclamation projects;
- (iii) Construction of Irrigation and Settlement Projects for the conservation, diversion and distribution, to new and existing lands for cultivation by farmers for food crop production;

* Source : The Administration Report, Director of Irrigation, 1982, p.1

- (iv) Incorporation of hydro-power as far as possible in the construction of Irrigation and Settlement Projects to enhance the electrical energy resources;
- (v) Construction of Drainage, Flood Protection and Salt Water Exclusion Projects for the protection of cultivable lands to enable cultivation of such lands with rainfall for food crop production with minimised risk;
- (vi) Operation, maintenance, improvement, rehabilitation and water management for medium and major gravity, drainage and lift-irrigation projects;
- (vii) Research in hydraulics, hydrology, soil mechanics, engineering geology, engineering materials and land use as applied to water resources development projects;
- (viii) Providing consultancy services in the fields of water resources development; foundation engineering; quality control of earth works and concrete; hydraulic model testing and land use planning to Government Departments, Statutory Boards/Corporations, Public and Private Institutions and Individuals.*

* Source: Irrigation Department Manual, 2nd revision
July 1983 pp.1 and 2

3.07 In addition to the above responsibilities the Irrigation Department has also undertaken the following functions :

- (a) Construction of Village Works of the irrigation component of the Integrated Rural Development Projects (IRDP) under the Ministry of Plan Implementation;
- (b) Construction of Village Tanks of the irrigation component of the Anuradhapura Dry Zone Project (ADZP) under the Ministry of Agricultural Development and Reserach;
- (c) Construction of infrastructure and irrigation works for the Development of System 'G' of the Accelerated Mahaweli Programme;
- (d) Construction of minor works in the Districts funded from the Decentralised Budget of the Ministry of Plan Implementation.

3.08 The organisation structure of the Irrigation Department for its all-island responsibilities is briefly as follows :

- (a) Head Office with a Director, Additional Director, 5 Senior Deputy Directors in charge of Research and Training, Planning, Designs, Major Construction, and Operations Improvements respectively;

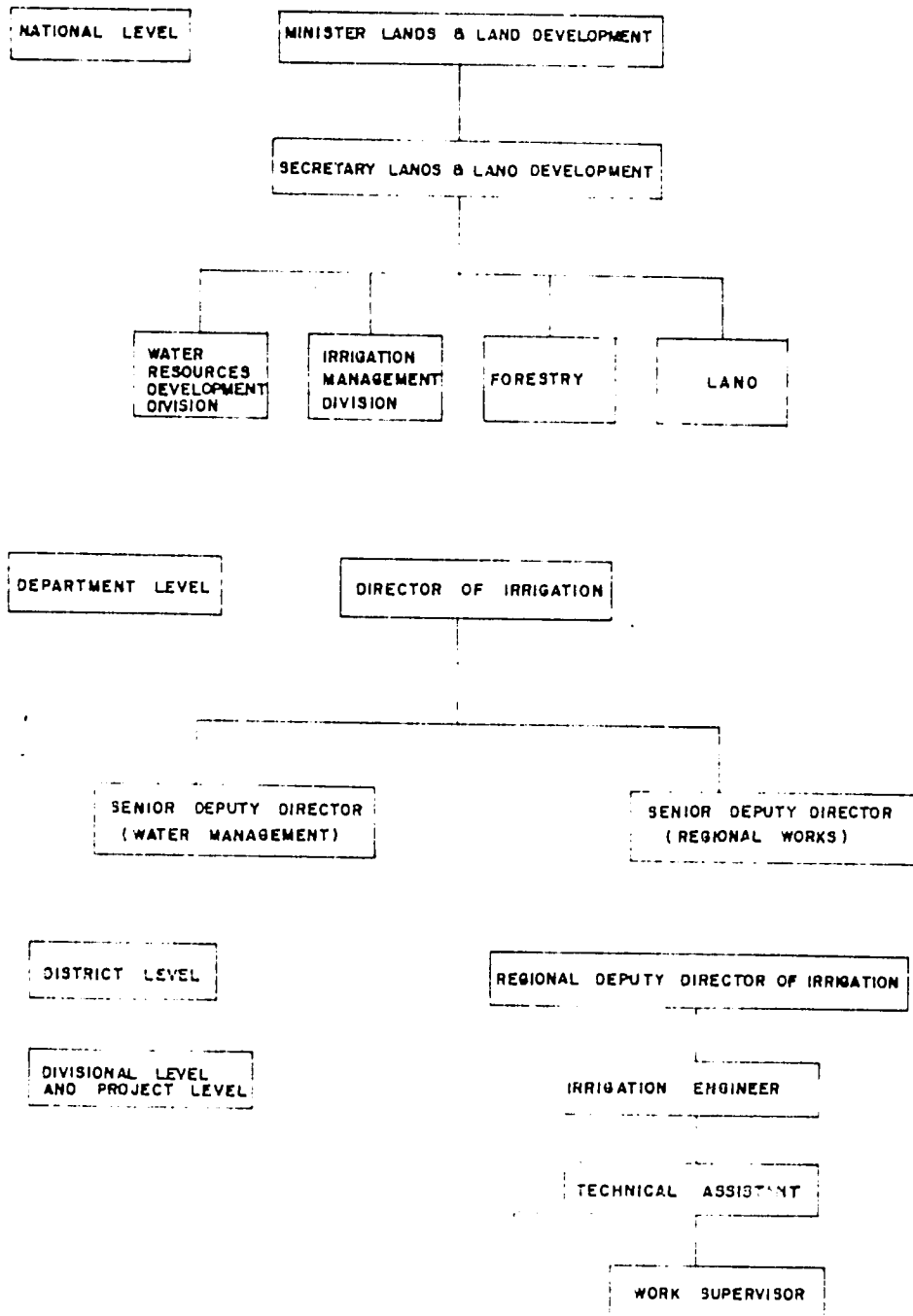
* Source : Administration Report, Director of Irrigation, 1982

- (b) 2 Deputy Directors in charge of Administration and Finance respectively.
5 Deputy Directors in charge of Divisions,
4 Administrative Officers, 5 Accountants
and other supporting staff;
- (c) 3 Specialised Services Divisions in the
Head Office with Deputy Directors in charge;
- (d) 1 Specialised Service Division in Head
Office with a Scientific Officer in charge;
- (e) 16 Range Offices in the Districts with
Deputy Directors in charge;
- (f) 53 Divisional Offices in the Districts
with Irrigation Engineers in charge;
- (g) 2 major project offices with Chief
Resident engineers in charge;
- (h) 2 Sub-project offices for Major
Projects with Resident Engineers in
charge;
- (i) 3 Workshops with Mechanical Engineers
in charge

The organisation structure in relation to the management of major irrigation systems is shown in the diagram on page 42.

3.09 The functions and responsibilities of the Irrigation Department in relation to the management of major irrigation systems are coordinated through several standing committees, steering committees and working groups established for coordinating and monitoring work

THE ORGANISATION STRUCTURE IN
RELATION TO THE MANAGEMENT
OF MAJOR IRRIGATION SYSTEMS



at the National/Ministry level to which the respective Heads of Department and even Government Agents* are invited.

For instance, there is a Coordinating Committee at the national level chaired by the Secretary to the Ministry of Lands and Land Development. Representatives of relevant line Ministries and Departments are invited to attend meetings of this committee. The District or Project Level Committees are usually chaired by the Government Agent of the respective district. Here too local heads of the relevant line agencies are invited to the meetings.

The type and composition of these groups at the national, district and project levels differ according to the requirements and nature of the project dealt with by each committee. For instance, in the case of the O & M programme, a standing committee meets quarterly or even more frequently in the Ministry of Lands and Land Development under the chairmanship of the Secretary to the Ministry. The Director of Irrigation, Director, Water Resources Development Division, Director, Irrigation Management Division together with other relevant officials are regularly invited to these meetings.

Similarly, there is a Standing Committee on the Gal Oya rehabilitation project which is now underway and a Standing Committee on settlement planning in the major irrigation systems.

3.11 The principal responsibilities of the Mahaweli Economic Agency are to carry out an integrated package of programmes for the all-round development of settlements under the Mahaweli Scheme.

* A Government Agent is a person in overall charge of the administration in each district. He is generally a senior officer of the Sri Lanka Administrative Service. It is an office coming down from the British period.

3.12 The Chief Executive Authority of the MEA is the Executive Director of the Mahaweli Authority with his Head Office in Colombo.

3.13 Prior to the setting up of MEA, settlement work was handled by a Division in the Mahaweli Authority to which functions connected with settlement work were transferred from the Mahaweli Development Board.

3.14 MEA consists of seven Divisions namely :

- (1) Projects,
- (2) Production, Marketing and Credit:
including Water Management, Operation
and Maintenance
- (3) Community and Business Development,
- (4) Lands,
- (5) Draught animal programme,
- (6) Administration and
- (7) Finance

3.15 The Mahaweli Economic Agency is characterised by its unified management approach the evolution of which is outlined in sections 3.20 following. A significant feature of this approach is the take over by MEA staff of line functions such as agricultural extension, operation and maintenance, marketing credit etc. which were previously performed by the respective specialised line agencies and departments as their contribution to the programmes developed and implemented by the Special Boards set up for the purpose. Thus the MEA field organisation has specialised officials to deal with each functional area relevant to the implementation of programmes and these officials are directly accountable to the Resident Project Manager of each Project Area.

3.16 The Resident Project Manager is responsible for an area consisting of about 10,000 settler families.

He is assisted by deputies in corresponding specialised areas such as agriculture, water management, lands, community development and marketing.

3.17 Each of the project areas is divided into several administrative Blocks. The Block Manager is responsible for a geographical area covering about 2000-2500 settler families. The officials assisting the Block Manager are also specialist functionaries such as Agriculture Officer, Lands Officer, Community Development Officer and Marketing Officer.

3.18 Blocks are sub-divided into units each under a Unit Manager. About 200-250 settler families live in a geographical area covered by a unit. The Unit Manager is assisted by two field assistants, one for agriculture and the other for irrigation.

MEA is planning to reduce the number of settler families covered by a unit from 200-250 to 100 families and already in the Neechchayagama Project Area this has been done.

3.19 The unified management system operated by MEA is intended to remedy certain inadequacies and shortcomings observed in the District Administration where much of the performance is claimed to be "more due to inter-personal relations rather than on organisations bondage".**

* See page 5, System H of the Mahaweli Development Project, Sri Lanka: 1983 Diagnostic Analysis, Water Management Synthesis Project, WMS Report 20 published BY Water Management Synthesis Project, University Services Centre, Colorado State University, Fort Collins, Colorado, October 1983.

** Page 55, Mahaweli Projects & Programme, 1984, Survey of the progress of work on the accelerated programme of Mahaweli Development in 1983 and the development proposed in 1984: published by the Information Service of the Ministry of Lands and Land Development and the Ministry of Mahaweli Development, Colombo, December, 1983.

Therefore the present management structure in MEA is deemed to be "an improvement on the original District Administration, since all the personnel involved in these territorial and functional activities are direct employees of the MASL and are all under the supervision of the RPM".*

"In keeping with this unified management system, the MASL reforms also include a unified farmer organisation at the Unit Level, as against a multitude of farmer organisations that existed earlier, such as the Rural Development Society, the Community Development Society and the Water Management Society in each village. Farmer participation in relation to planning and implementation of Water Management starts at a turn-out basis, and the elected turn-out leader becomes a member of the Executive Committee of this unit-based Settler Development Association. In order to bring about greater equity and uniform participation, the Settler Development Association in its initial stages is organised under the chairmanship of the Unit Manager".**

3.20 The framework of the MEA organisation has thus been designed to move away from the traditional system of civil administration under the Government Agent who was largely responsible for co-ordinating the work of Ministries and Departments with their own officers in the districts with a line of command going down from Colombo. This system which was in operation from the early thirties was modified to some extent during the early fifties to meet the demand for intensive management supervision in special areas selected for land and water resource development.

* Op. cit. Mahaweli Projects & Programme 1984, p.55

** ibid., p.56

3.21 The first of such modifications was seen in the establishment of the Gal Oya Development Board to be in charge of a Special Development Area coming directly under the purview of the Board. The organisations framework of this special agency was said to have been modelled on the Tennessee Valley Authority in the U.S.A.

3.22 The Gal Oya Development Board was based on an Act of Parliament known as the Gal Oya Development Board Act No. 51 of 1949.

The principal functions of the Board as specified in Section 8 of this Act were the following :

- (a) To develop the undeveloped area;
- (b) To promote and operate schemes of -
 - (i) Irrigation;
 - (ii) Water Supply;
 - (iii) Drainage;
 - (iv) Generation, Transmission and supply of Electrical energy; and
 - (v) Flood Control
- (c) To promote and control irrigation and fisheries;
- (d) To promote afforestation;
- (e) To control soil erosion;
- (f) To promote better health;
- (g) To prevent and control plant and animal diseases; and
- (h) Generally to promote agricultural and industrial development and economic and cultural progress in the area of Authority.

3.23 When the Government wanted to develop Uda Walawe area also as a Special Area, the Gal Oya Development Board (GODB) was superseded by the River Valleys Development Board (RVDB) in terms of the RVDB Act No. 6 of 1965 which provided for different river valley areas to be taken up for development as Special Areas, as and when it became necessary.

The principal functions of the RVDB as specified in Section 8 of the RVDB Act are identical with those specified under Section 8 of the G.O.D.B. Act referred to earlier.

3.24 The Mahaweli Development Board (M.D.B.) which was set up in 1970 in terms of the Mahaweli Development Board Act No. 14 of 1970 was a further development of this organisational approach in that it sought to develop a very large area of the country through a multi-disciplinary team under one authority.

The M.D.B. has ceased to function on the enactment of the Mahaweli Development Board (Repeal) Act No. 38 of 1983, which also provides for

- (a) the absorption of M.D.B. officers and employees into the service of the Mahaweli Authority of Sri Lanka (M.A.S.L.)
- (b) the transfer of all the assets, liabilities, property, rights and obligations of the Mahaweli Development Board to the M.A.S.L.

3.25 The Mahaweli Authority of Sri Lanka was established under an Act of Parliament (No. 23 of 1979). The principal functions of the Authority which are specified in Section 12 of the Act, are briefly as follows:

- (a) To plan and implement the Mahaweli Ganga Development Scheme including the construction and operation of reservoirs, irrigation distribution system and installations for the generation and supply of electrical energy:

- (b) To foster and secure the full and integrated development of any Special Area;
- (c) To optimise agricultural productivity and employment potential and to generate and secure economic and agricultural development within any Special Area;
- (d) To conserve and maintain the physical environment within any Special Area;
- (e) To further the general welfare and cultural progress of the community within any Special Area;
- (f) To promote and secure the participation of private capital both internal and external in the economic and agricultural development of any Special Area;
- (g) To promote and secure the co-operation of Government Departments, State Institutions, Local Authorities, Public Corporations and other persons whether private or public in the planning and implementation of the Mahaweli Ganga Development Scheme and in the development of any Special Area.

3.26 The Mahaweli Authority is empowered, in terms of section 22 (1) of the Act in relation to every Special Area and in respect of the written laws specified in Schedule B thereto, (which includes the Irrigation Ordinance and the Agrarian Services Act No. 58 of 1979, included therein by Gazette Notification made under Section 22 (4) thereof),

"To exercise and discharge in such area any of the powers or functions vested by any such written law in any authority, officer or person in like manner as though the reference in any such written law to the authority, officer or person empowered to exercise or discharge such powers or functions included a reference to the Authority": (i.e. the Mahaweli Authority).

Further in terms of sub-section (2) thereof:

"No authority, officer or person in which or whom any power or function is vested by any written law for the time being specified in Schedule B hereto shall, in relation to a Special Area, exercise or discharge any such power or function except for the purpose of executing or carrying out any arrangement or contract made by the Authority under Section 14"

While provision has been made in sub-section (3) to the effect that :

"Any power or function which the Authority is authorised by sub-section (1) to exercise or discharge, may be exercised or discharged on behalf of the Authority by any director of the Authority or by any employee of the Authority as is authorised in that behalf by the Authority".

This means, in other words, that while the Mahaweli Authority can exercise and discharge in any Special Area any of the powers or functions vested by law in any authority, office or person, (e.g. the Director of Irrigation), either directly or through an agent such as a director of the Authority or an employee so specifically authorised, such authority office or person, (e.g. the Director of Irrigation), cannot exercise or discharge any such power or function, (other than by arrangements or contract under section 14), in relation to a Special Area.

3.27 These are the only Special Area Authorities functioning in the country. As will be seen, they have all been established through Special Acts of Parliament. Recently, the management of the Uda Walawe Scheme has been entrusted to the Mahaweli Authority and the River Valleys Development Board continues to function mainly as a construction agency of the Government. The design of the unified management system in the MEA is a further stage of development in this management approach.

3.28 The Department of Agrarian Services was established in 1958 principally for the purpose of implementing the Paddy Lands Act of 1958. Minor irrigation has been the responsibility of this Department for a long time except during the period 1970-72 when the responsibility for minor irrigation was taken away from the Department of Agrarian Services and included as a function of the Territorial Civil Engineering Organisation (TCPO) which was created under the then Ministry of Irrigation Power and Highways. The responsibility for minor irrigation has now been returned to the Department of Agrarian Services.

This Department, which now comes under the Ministry of Agricultural Development & Research, has a Commissioner with his Head Office in Colombo. He has one or more Assistant Commissioners in each of the Administrative Districts, supported by a field staff of Divisional Officers and Sub-Division Officers. Some of the functions of the Department of Agrarian Services in regard to minor irrigation are carried out through Agrarian Services Committees appointed under Agrarian Services Act No. 59 of 1979. The Department of Agrarian Services obtains its funds for minor irrigation directly from the annual budget of the Government.

3.29 The principal function of the Water Resources Development Division in the Ministry of Lands and Land Development is to develop policy thinking and orientation towards the management of water resources principally in the major irrigation systems. Since its establishment this Division has been directly engaged in all the seminars on water management that have been held in the country and the domestic field studies of irrigation systems which have been carried out in collaboration with foreign expertise.

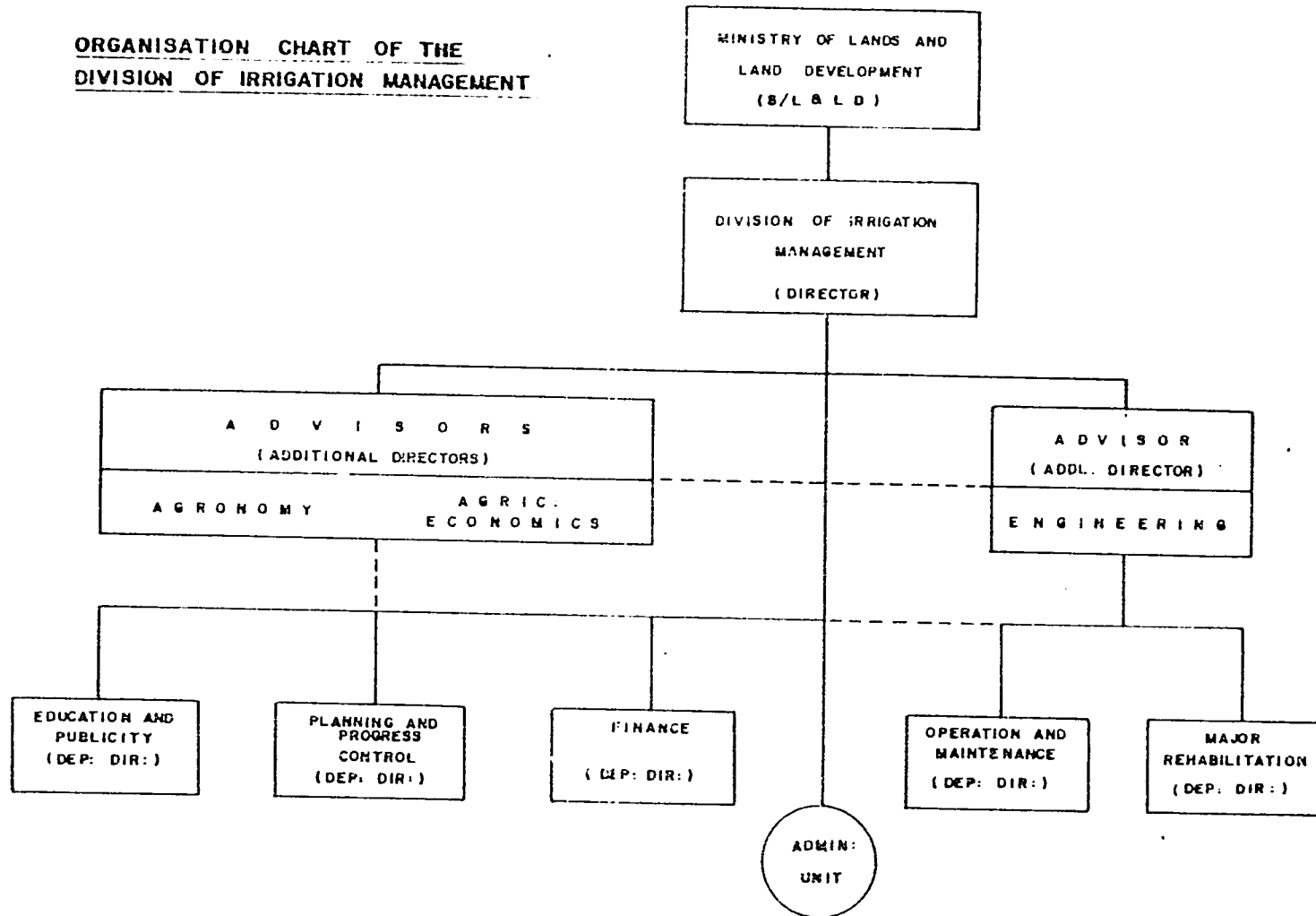
3.30 The Irrigation Management Division of the Ministry is a multi-disciplinary unit organised for the purpose of co-ordinating the individual efforts of many disciplines such as Agriculture, Agronomy, Sociology, Economics, Management, Engineering, etc. contributed by the many Government Departments and Agencies serving the irrigated agriculture sector.

The Irrigation Management Division has identified the following goals towards which its efforts will be directed:

- (a) A programme of integrated management of major irrigation settlements (INMAS) to provide the farmers with all inputs and services efficiently
- (b) Formation of farmer associations for farmer participation in the management of projects
- (c) Efficient operation and maintenance of the projects to optimise the use of irrigation water
- (d) Improve financial support for O & M costs by implementing a programme for the collection of contributions from farmers
- (e) Rehabilitation of major agricultural settlements where necessary

3.31 The overall responsibility for the O & M programme rests with the Irrigation Management Division which functions in accordance with policy guidelines provided by the Ministry through the Standing Committee set up for the O & M programme. The Irrigation Management Division has the responsibility for the collection of O & M rates, organising propaganda and publicity and providing farmer education to ensure acceptance of the programme by farmers.

ORGANISATION CHART OF THE
DIVISION OF IRRIGATION MANAGEMENT



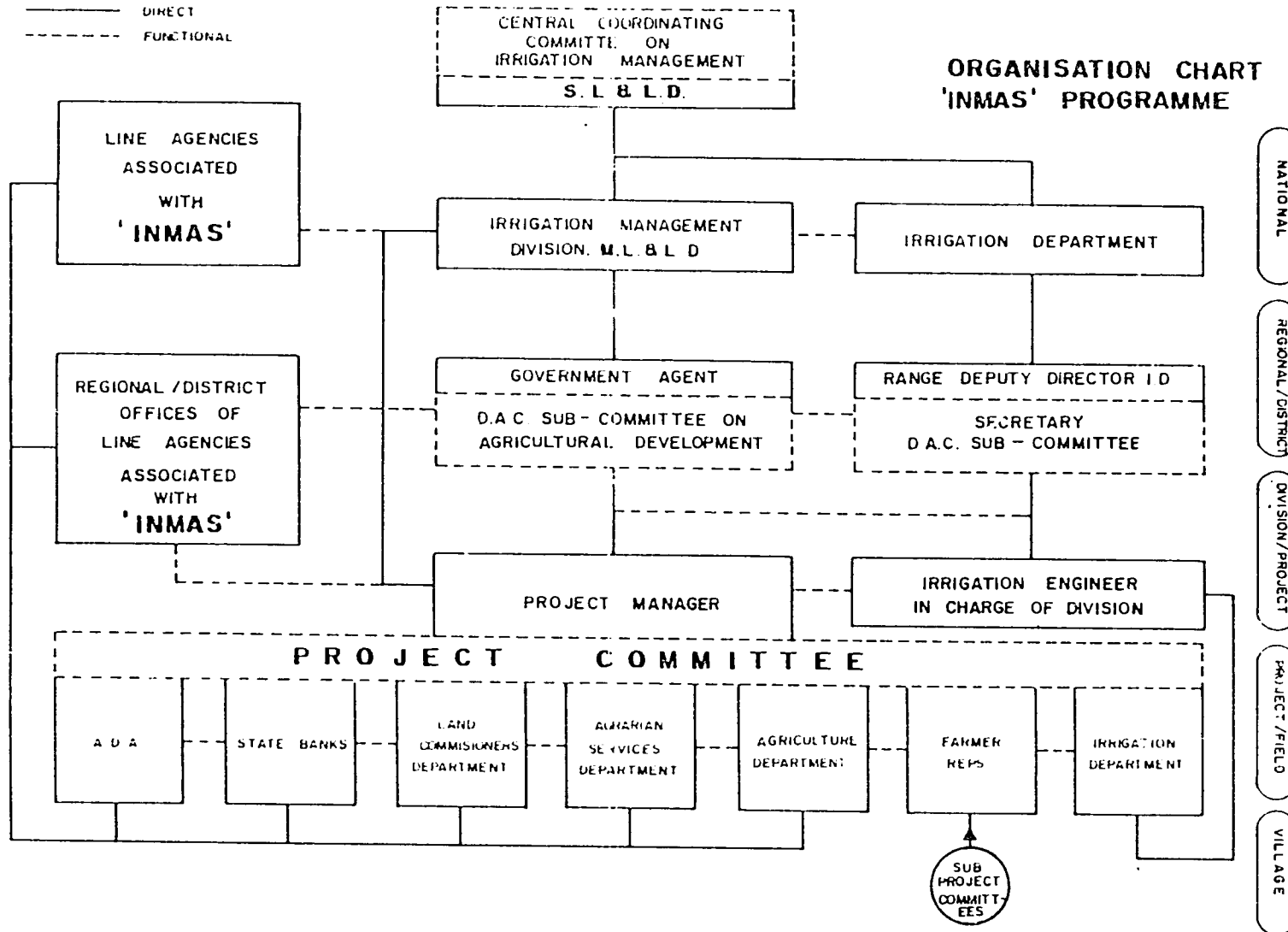
3.32 At present this division consists of a small team with an irrigation engineer as director, 3 additional directors covering the areas of agricultural economics, agronomy and engineering and five deputy directors covering the areas of planning and progress control, education and publicity, operations and maintenance, major rehabilitation and finance: (See diagram on page 53)

3.33 This central organisation located in Colombo carries out its work through committees established in each major irrigation project under a project manager and consisting of all the project level officers in a settlement scheme together with representation from the farmers. During 1984 there were 25 projects under this programme which is known as the "Integrated Management of Major Irrigation Schemes" (INMAS) and it is expected to increase this number to 40 in 1985. The manner in which this programme is co-ordinated is shown in diagram on page 55.

3.34 The Irrigation Department which is the agency responsible for executing the O & M programme through its staff working in each scheme, has been obtaining its funds until recently for O & M directly from the Government. With the introduction of the O & M cost recoveries programme in 1984 funds for O & M work are allocated to the Irrigation Department by the Irrigation Management Division of the Ministry of Lands and Land Development.

From 1985 the Irrigation Management Division has adopted a new basis of providing allocations according to channel lengths, structures etc. in order to make the allocation more consistent with the actual needs in the different schemes.

The MEA gets its funds for O & M from the Mahaweli Authority. Here again the funds are allocated directly by the Government.



3.35 The general staffing pattern in major irrigation schemes is as follows :

Irrigation Engineer

Technical Assistant

Supervisor

Maintenance Labourers

The O & M staff is identifiable at present from construction and other staff classifications only to a limited extent. There is some overlap. For instance the Irrigation Engineer and the Technical Assistant would be involved in both construction and maintenance work if there is construction work going on in a scheme. Otherwise they could be treated as being available fully for maintenance work. But at the level of Supervisor and the Maintenance Labourer they could be considered as being engaged fully in O & M work.

3.36 At present there is a cadre of 1134 Work Supervisors in the Irrigation Department for the entire island and nearly 1280 maintenance labourers. Out of the 1134 Work Supervisors approximately 330 have been assigned to O & M. No finality has been reached on a proposal to make a specific assignment, in the Budgetary Estimates, of Work Supervisors for O & M work (possibly around 390).

SECTION FOUR

4.0 O & M RECOVERIES
POLICY AND IMPLEMENTATION

4.01 Since the central focus of this study is on the successful implementation of a programme for recovery of O & M rates from farmers, with their consent and support, and the utilisation of these funds for a properly drawn up programme of O & M, it is useful to place the problem of O & M recoveries within the context of a long standing tradition of welfare services in the country.

4.02 After Sri Lanka attained independence, it was the objective of all Governments to develop the country within the framework of welfare policies and distributive justice, specially towards the weaker sections of the community. These objectives came to be translated into practical terms in the provision of free education, free health services, food subsidies, subsidised transport and generous Government expenditure in providing irrigation facilities for the agricultural sector.

4.03 An irrigation rate was in existence for a very long period of time. It was purely a nominal amount of Rs. 2/- per acre in the 1930s which was not based on an actual calculation of costs. But even this nominal per acre irrigation rate (irrespective of the volume of water utilised) was rarely paid. All-island collections in the past were insignificant. There were also no sanctions imposed on defaulting farmers and consequently those who made the isolated payments felt that they had been cheated of their money. Irrigation water was not understood as a scarce and expensive resource. The farmers considered it as a gift from the Government which was always the great paternal benefactor.

4.04 The attitude of dependence on a benevolent Government which provides goods and services free or nearly free to the people was so prevalent in major settlement schemes that it was not unusual for a settler who had damaged tiles on the roof of his house (given free by the Government) to petition the Government Agent of the District to replace the tiles rather than spend time and money attending to it himself.

4.05 This popular attitude of receiving welfarism from the state could be illustrated from several sectors of the economy. However, our comments being confined to the agricultural sector, another good example is the collection of land revenue. Here again, the collections were insignificant and the Government Agencies responsible for collecting land revenue had to periodically ask for write-offs. The collection of land revenue has now been stopped.

4.06 Another particularly striking instance is the case of short-term agricultural production credit. During the course of the last several decades, numerous credit schemes have been introduced specially for paddy cultivation. All these schemes collapsed within relatively short periods of time because of loan defaults. When the amounts in arrears become appreciable, the Government generally intervenes, largely on account of political considerations, waives off the arrears and launches a new credit scheme. The ILO Employment Mission which submitted a report to the Government in 1971 had some particularly devastating comments to make regarding short term agricultural credit in Sri Lanka, to the effect that:

"Ceylon has several times repeated an unfortunate rural credit sequence. Funds are lent on a generous scale to cover production costs, without supervision. They often do not yield the output to cover repayment

because they finance inappropriate techniques - or even consumer needs, weddings, or payment to village money lenders. Some borrowers are promised re-scheduling as a political gesture, and so they delay repayments. Local co-operative credit societies then default on their own debts (under the current scheme through the People's Bank) and become defunct, so that not only defaulting farmers but also their innocent neighbours are unable to borrow. Credit dries up, fertilizer and pesticide off-take falters and the innocents decide that they too might as well default next time. The government winds up the scheme, then starts a new one, and the cycle begins again".*

4.07 In Paragraph 4.03 we have mentioned the failure of the Government to recover irrigation rates in the past. No significant steps were taken to recover irrigation rates or to penalise farmers who defaulted. During the period 1970 to 1977 the collection of any form of water charges in the Agricultural sector was virtually abandoned. The enforcement of irrigation rates is a politically sensitive issue and political elites would rather refrain from advocating water charges which are bound to be unpopular with the farmers.

* Matching Employment Opportunities and Expectations
ILO Report, 1971, Part I, p. 98

4.08 The Government's policy on irrigation rates has changed over time. Prior to 1970 the rate was Rs.5/- per acre in most schemes and in others the rates varied from -/50 cts. to Rs. 2/- per acre. The precise details of the actual collections over time are not available but the collections were insignificant and are said to be less than 2% of what was in fact due.

4.09 The Government then in office decided to introduce an irrigation rate of Rs.40/- per acre in the initial stages of the Mahaweli Development Scheme in the late 1960's. However, this matter became an election issue specially in electorates having major irrigation schemes and the new Government of 1970 declared that it would not proceed with the levy of an irrigation rate as proposed by the previous Government. Instead, the Government of 1970 to 1977 wanted to introduce a Land Betterment Tax which was to include the cost of irrigation water as well. But this proposal was not implemented.

4.10 Again, the present Government introduced an irrigation rate of Rs. 30/- per acre for cropping intensity of over 150% and Rs. 20/- per acre for less than 150% cropping intensity in irrigated paddy lands. Although this was implemented for major irrigation systems for a short period of time between 1981 and 1983 the collections were insignificant and these irrigation rates have now been repealed in favour of the O & M recovery rate. There have also been legal difficulties in enforcing sanctions against defaulting farmers through the courts of law.

4.11 The changes in irrigation rates were not meant to match actual cost of irrigation water or cost of maintenance. At best they were only a nominal charge which was never seriously imposed. These rates also had no connection whatsoever with a "general price index".

4.12 A policy decision has been taken by the present Government that farmers in all the major irrigation systems in the island, including the Mahaweli Project, should be required to pay a sum of Rs.100/- per acre of asweddumised paddy land per year. At this point it should be remembered that the Government has always borne the total cost of designing, constructing, rehabilitating and maintaining major irrigation schemes. Furthermore, the Government has met all the costs of settlement, land development and development of infrastructure facilities.

4.13 The funds that the Government is able to release for O & M have been insufficient for carrying out a proper programme of O & M work. The Irrigation Department had earlier estimated that on an average about Rs.80/- per acre was spent by the Department on O & M work in the major systems. However, this amount was considered inadequate for a sustained programme of proper O & M work.

Hitherto Government funds for O & M were provided in the annual budget of the Department of Irrigation. Government expenditure on O & M in major irrigation schemes over a long period of time and annually over the last decade is given in Annexe 3. It will be seen that the annual expenditure has been rising steadily from 1974 except in the years 1983 and 1984 when there has been a slight reduction from the amount spent in 1982.

In addition to this sum of money, financial provision was made each year under the Department of Irrigation for expenses connected with improvements to major irrigation systems and flood damage repairs. On occasions when O & M funds were insufficient, the Department has drawn from provision made for other activities such as flood damage repairs.

4.14 In the case of the Mahaweli project, the funds required for O & M work have been directly provided by the Mahaweli Authority. The Mahaweli Authority has so far not made an assessment of the per acre cost of O & M within its area of authority. But the general indication is that where

O & M work has been undertaken within the Mahaweli System more than Rs. 80/- per acre is being spent.

4.15 The position of the Government is that the O & M charge introduced at the beginning of 1984, (collections having started in May/June), is not an irrigation rate or a water charge or a levy to recover cost of constructing or rehabilitating the irrigation systems. The Government has sought to explain the O & M charge to the farmers as an annual contribution which the farmers are called upon to pay for the proper operation and maintenance of the system and that the farmers themselves stand to benefit by systematic attention to O & M work, specially where the irrigation system is old.

4.16 The Department of Irrigation has estimated that on an average Rs.200/- is required in major schemes for O & M work per acre of asweddumised paddy land per year. A break down of this O & M charge of Rs. 200/- per acre is shown in Annexe 4. This estimate and its break-down has been prepared by the Irrigation Department on the basis of an analysis of the performance of 16 selected schemes, at one per range, in 1981. The calculations are based on 1982 prices.

4.17 The basis for the costing shown in the annexe comprises the following components; viz :-

- (a) Labour
- (b) Supervision
- (c) Drivers and Operators
- (d) Travelling and Combined Allowance
- (e) Fuels and repairs to vehicles
- (f) Purchase of materials and tools
- (g) Physical contingency
- (h) Administration and overheads
- (i) Depreciation of vehicles and equipment

The coverage of the administration in the analysis has been based on the following extents:

Technical Assistants	5,000 acres
Divisional Office (I.E.'s Office)	12,000 acres
Range Office (D.D. Range)	40,000 acres.

4.18 It will be seen that a significant feature of the cost computation for O & M is the high proportion of the cost of labour. One part of the problem is that the Irrigation Department has a large labour force on its permanent pay roll while another category of labour described as 'casual' are on the permanent pay roll for all practical purposes. The other is that on account of the limited funds available for O & M work each year, it is apparently difficult to organise the labour in each scheme for a targetted programme of work on a regular basis. But a good O & M programme will require more units of labour and help in utilising the available labour more productively.

4.19 The policy decision of the Government is that in the first year of implementation of O & M recoveries, namely 1984, the farmers will be called upon to pay only Rs.100/- for the year; i.e. 50% of the estimated per acre cost of Rs.200/-. The O & M recoveries will be credited to a special O & M fund and the collections made in each scheme will be available for expenditure on a properly worked out annual programme of O & M work (to be prepared in consultation with the farmer beneficiaries in each scheme), in that scheme and none other. In the first year of operation, the Government will give a matching contribution at the rate of Rs.100/- per acre to supplement the amount collected from the farmers in each scheme. The contribution made by the farmers for O & M will be progressively increased by 20% each year so that at the end

of the 5th year, the entire sum of Rs. 200/- per acre will have to be paid by the farmers. The Government contribution made each year to the special O & M fund will lapse to revenue at the end of that year if it is not spent on O & M work in that particular scheme during the course of the year. In other words, the matching contribution of the Government each year cannot be held in deposit for expenditure in subsequent years.

4.20 The operation of O & M recoveries will be the same in the Mahaweli Project area. However, the MEA has not taken any decisions so far that the matching contribution it will make will lapse to Mahaweli funds if it is not spent for O & M work in the particular area during the given year. In all probability, the MEA will adopt the procedure applied to schemes falling outside its area of authority.

4.21 It is important to note that there are significant differences between the irrigation rates introduced in the past and the O & M recoveries introduced in 1984. These differences are :

- (a) An estimate of Rs. 200/- per acre per year is considered the amount actually needed to carry out a proper programme of O & M work. Probably this figure of Rs.200/- may have to be altered depending on cost escalations. The irrigation rates of the past were on the other hand purely nominal amounts unrelated to volume of water delivered or cost of delivery.

- (b) The O & M rate is not considered an irrigation rate. It is a contribution that farmers are expected to make for maintaining the system in good order.
- (c) In the past even the meagre recoveries of irrigation rates from farmers were credited to the Government Consolidated Fund so that the farmers in a given scheme had no idea as to how their money was spent. In the case of O & M recoveries, there will be a separate O & M fund where the collections made in each scheme each year and the matching contribution of the Government are placed to the credit of each scheme separately to be spent only on O & M work in consultation with the farmers. This is intended to convince farmers that their contributions are being applied for O & M work in their own schemes.

4.22 It will be seen that the cost of O & M estimated at Rs.200/- per acre per year applies to all the major irrigation systems in the island irrespective of their size. There are also no seasonal variations in the amount charged. It is admitted that the cost of O & M per acre in relatively small major irrigation systems will not require as much as Rs. 200/- per acre. Nevertheless this uniform charge has been applied to all the schemes principally on grounds of convenience. This would mean that farmers in one system are not required to pay any more or less than farmers in another system. If differential O & M rates had been introduced there might have been farmer resistance in schemes where the rates were higher.

This inference is not based on properly established empirical evidence. Nevertheless it is an observation based on the experience of the Study Team. The egalitarian policies of Sri Lanka Governments since independence have always tended to provide taxation or financial assistance schemes on a uniform basis even though actual requirements in different parts of the country may be different. This has been the case with regard to guaranteed price schemes, fertiliser

subsidy schemes and to a great extent with regard to agricultural credit schemes.

The strict legal position, however, is that land and water rates are imposed by the Government Agent of each district in relation to each irrigation system falling within his area of authority. This was provided for as far back as 1946 in the Irrigation Ordinance No. 32 of that year. But since land and irrigation rates were not in fact seriously collected, the question whether differential rates in the different schemes would have been acceptable to farmers was in fact not tested out. It is, however, possible that a carefully prepared programme of farmer education might be able to overcome possible farmer resistance to differential O & M rates.

4.23 The agency responsible for the collection of irrigation rates has always been the Government Agent of the District because it was considered one of his traditional revenue collecting functions. He collected the rates using the field officers of the Land Commissioner's Department such as Colonisation Officer (C.OO) and Field Instructors (FII). The position remains the same with regard to collection of O & M rates. It is only in areas where the number of C.OO or FII are insufficient that the responsibility of collection has been entrusted to other field level officers in the District and in some cases to the Grama Sevaka of the area. This is the manner in which O & M charges are collected in the major irrigation systems outside the Mahaweli Scheme.

4.24 In areas coming under Mahaweli, O & M charges are collected by the Unit Manager under the supervision of the Block Manager and the Resident Project Manager.

4.25 Three important circulars have been issued to the Government Agents by the Ministry of Lands and Land Development regarding the recovery of O & M charges. They are attached as Annexes 5, 6 and 7. These circulars which are self explanatory provide a comprehensive set of instructions regarding the implementation of O & M recoveries from farmers.

4.26 The amounts collected up to 15th October, 1984 in the major irrigation systems outside the Mahaweli Scheme along with an estimate of the amounts that have to be collected is given on a district-wise basis in Table 5 on page 68 . It will be seen that the collections so far in most of the districts are far from satisfactory. The highest percentage of collection (52.55%) has been in the Mannar District, while Polonnaruwa District (21.99%) and Kilinochchi District (14.73%) occupy 2nd and 3rd places respectively.

4.27 The recoveries made up to 30th September, 1984 by the MEA in systems H, G, B and in the Uda Walawe Scheme along with estimates of the amounts that have to be collected from each system are given in Table 6 on page 70 . It will be seen that the collections in the Mahaweli area are much better than in areas outside. The collections are as high as 57 percent in system H. It must of course be remembered that the experience with O & M collections is limited to a period of a few months and that a great deal of preparatory work on farmer education to back up O & M recoveries has yet to be done.

4.28 The collection of O & M rates in the Mahaweli area is being done by field officers of the MEA who are directly accountable to the Resident Project Manager through the respective Block Managers and Unit Managers. The success achieved so far in the collection of a large amount of O&M rates in the Mahaweli area is largely attributed to the efficiency of this unitary style management organisation which functions within the Mahaweli Scheme. In the case of irrigation systems outside Mahaweli, the efficiency of collection depends on the coordination of different field level officials from different departments of Government. This system has not commenced functioning efficiently as yet.

4.29 The successful collection of O & M rates depends to a large extent on the interest taken by the collectors and the supervisory work done by the Project Coordinators appointed for that purpose to each irrigation project. The

TABLE 5
RECOVERY OF OPERATION AND MAINTENANCE
RATES FOR MAJOR IRRIGATION SCHEMES
(OUTSIDE MAHAWELI)

Name of District -----	Amount Collected upto 15.10.1984 -----	%	Assessed Amount -----
1. Kurunegala	87,405.85	3.62	2,415,000.00
2. Polonnaruwa	1,086,750.00	21.99	4,941,700.00
3. Mannar	1,691,689.58	52.55	3,219,100.00
4. Kilinochchi	446,116.77	14.73	3,028,800.00
5. Ampara	205,153.00	1.64	12,506,200.00
6. Ratnapura	3,876.50	1.31	296,100.00
7. Mulativu	175,000.00	10.33	1,693,300.00
8. Anuradhapura	22,624.00	0.34	6,671,500.00
9. Badulla	10,825.00	1.13	954,500.00
10. Vavuniya	11,000.00	1.02	1,070,900.00
11. Moneragala	38,169.00	6.86	556,500.00
12. Hambantota	11,362.00	0.44	2,586,700.00
13. Kandy	97,081.00	7.12	1,364,000.00
14. Matale	7,325.00	0.91	806,700.00
15. Trincomalee	61,351.50	1.33	4,618,800.00
16. Puttalam	200.00	0.02	758,900.00
17. Batticaloa	2,175.00	0.06	3,463,400.00
	-----	-----	-----
	3,958,101.00		50,952,100.00
	=====		=====

Source : Irrigation Management Division,
Ministry of Lands & Land Development

senior level officers in the districts of Mannar and Kilinochchi have devoted considerable time to explaining the O & M programme to farmers and winning their cooperation to secure collections. Such attention has not been paid so far in the districts of Puttalam, Anuradhapura and Batticaloa.

Furthermore, in these districts viz. Puttalam, Anuradhapura, Batticaloa and even Kurunegala, there are private paddy lands served by the irrigation system. We understand that in these areas land owners have been organising resistance against the collection of O & M rates. But this kind of political pressures can still be successfully overcome if the field staff in the district is alert and active in liaising with the farmers in the collection of O & M rates. For instance, a by-election was held in the Polonnaruwa district during the peak period of O & M collections. The collection of O & M rates became an important election issue. Nevertheless, the ruling party won the election and the collection of O & M rates has also shown an upward trend.

4.30 The O & M collections in the major irrigation systems outside Mahaweli are first credited to an account in the Bank Branch at the nearest Agrarian Service Centre by the officer authorised to collect these charges. There is a procedure by which the District Kachcheri maintains a record of the collections deposited in the Bank Branches. An account of these collections is also maintained in the main District Bank as well. As already mentioned, O&M recoveries will not be credited to the Government Consolidated Fund. They will be maintained to the credit of each major irrigation system and allocations made annually by the Ministry of Lands and Land Development through the Irrigation Management Division of the Ministry for regular programmes of O & M which are decided upon at system level in consultation with the representatives of farmers and farmer associations where they have been established.

T A B L E 6

RECOVERY OF O & M CHARGES UPTO 30.9.84
MAHAWELI AND UDA WALAWE SPECIAL AREAS

Name of Project Area	Net Irrigated Area (Ha)	Water Charges Assessment for Net Irrigated Area for 1984 (Rs)	Actual Water Charges collected (Rs)	Percentage of Collections
System - H	22,934	5,733,500	3,283,150	57.26
System - G	2,101	525,250	77,657	14.78
System - B	1,351	337,750	152,000	45.00
Uda Walawe	9,418	2,354,500	1,076,970	45.74

SOURCE : MAHAWELI ECONOMIC AGENCY, COLOMBO

In areas falling under the Mahaweli Project O & M recoveries along with the matching contribution will also be placed in a special O & M fund to be released for O & M work, as decided by the management in consultation with the farmers.

4.31 The O & M recovery programme has been in operation only for about six months and as such it is too early to say how the Government will enforce the fee payment rules and what sanctions will be imposed on defaulting farmers. There is provision under the Irrigation Ordinance for taking action against farmers who do not pay charges and levies imposed under this ordinance. This aspect of the matter will receive fuller attention in Section Seven. The present concern of the Government is mainly to ensure that the new scheme is acceptable to the farmers. The scheme provides for a fine of Rs.125/- per acre per year to be levied from encroachers who are taking unauthorised benefits from the irrigation systems. If it is intended to be a fine, we do not see why the full sum of Rs. 200/- per acre is not recovered in such cases.

4.32 The collection of O & M rates is based on a Specification Register for each irrigation system prepared under the supervision of the Government Agent of the District. This Register which is provided for under Section 50 of the Irrigation Ordinance gives the name of the legal allottees and tenant cultivators, the extent of their paddy holdings in the scheme, their location and other relevant particulars. The Specification Register is intended to cover all those who hold allotments in the scheme and are deemed to be irrigation beneficiaries including settlers in Purana Villages and regularised encroachers.

It is most unlikely that any of the Specification Registers utilised for the programme of O & M recoveries in the districts are accurate and up-to-date in all respects. The reason simply is that since these registers were prepared long years ago a large number of changes have taken place on the ground. The allottees have

changed, encroachments have been regularised, the extents of allotments have changed through sub-divisions or encroachments and the number of farms served by irrigation water may have changed. The Ministry of Lands and Land Development has anticipated these difficulties and therefore issued detailed instructions regarding the up-dating of the Specification Registers for the purpose of recovering O & M rates. These instructions are contained in Ministry Circular No.162 of 12th September, 1983, issued by the Secretary, Ministry of Lands and Land Development. This Circular is at Annexe 5.

It will be seen that instructions have been issued for the exhibition of Registers for the benefit of farmers, entertaining applications for revision, conducting inquiries on claims made by farmers, redisplaying the lists for public inspection after corrections are inserted and certification of the revised lists. It will necessarily take time before the Specifications Registers can be brought up to date for the implementation of the O & M recoveries programme in an equitable manner. But as at present there appears to be no other alternative because detailed field investigations in each scheme would be required if these Registers are to be up-dated during a short period of time. It is unlikely that the necessary financial, and other, resources for such an undertaking would be available immediately.

4.33 As will be evident from the discussion so far, the O & M charge of Rs. 200/- per acre is not related in any way to a general price index. The Cost of Living Index for Colombo is prepared monthly by the Department of Census and Statistics and a Wholesale Price Index is prepared by the Central Bank. There is no relationship between these and the O & M rate of Rs.200/. No distinction is made between nominal command area and actual command area irrigated in the recovery of O & M charges. Even in the past the maintenance work carried out by the Department of Irrigation has not made a distinction between the nominal command area and the actual command area. It is not easy to demarcate the nominal and actual command areas in each major irrigation scheme without detailed field surveys being carried out.

SECTION FIVE

PART I - PREAMBLE

Out of the four irrigation systems that were selected, three of them, namely, Minipe, Gal Oya Left Bank and Mahaweli H area were stipulated by the client and we were required to suggest a major scheme in the Polonnaruwa District. We suggested the Parakrama Samudraya Scheme because it is one of the old and important irrigation systems in the Polonnaruwa District and in the country as a whole. As such we have not considered it necessary to explain or justify the basis on which these four major systems were selected.

With regard to farmer interviews, it should be noted that in terms of the contract, we were required to engage a maximum of eight field investigators each of whom, under proper guidance and supervision, should interview in depth, a minimum of 10 farmers each. This would have meant interviewing a minimum of eighty farmers in all the four schemes. Within the constraints of time and resources we were able to interview 94 farmers. The numbers interviewed in each scheme were as follows :

Minipe	- 20
Mahaweli H area	- 32
Gal Oya LB	- 22
Parakrama Samudraya	
Scheme	- <u>20</u>
Total	- 94
	===

It should, however, be noted that these 94 farmers were not intended to be a representative sample of the settlers in these schemes. Our objective was to interview as many farmers as possible and obtain their reactions to some of the major issues with which this study is concerned.

We, however, selected these 94 farmers purposively taking into account the following considerations :

- (a) Location of the farmers paddy holding in the irrigation network i.e. head-end, middle-reach and tail-end;
- (b) The size class of the allotment;
- (c) Where applicable as in Minipe Scheme, the stage of settlement at which the farmers received land in the scheme; and
- (d) The farmer's status as a cultivator i.e. whether official allottee, encroacher or person engaged in cultivation by using water from the drainage channels.

The farmer interviews were conducted in the month of September, 1984. Guide Lines were prepared for the field investigations and were pre-tested through interviews with some farmers in the Gal Oya Left Bank by the Study Director and the Agricultural Economist who supervised the field work.

In the light of these interviews, the original guide lines were modified suitably and these modifications have been incorporated in the final version of the guide lines, a copy of which is attached as Annexe 10.

These guide lines were sent to the Client for his concurrence prior to the commencement of the farmer interviews.

PART II - THE MINIPE IRRIGATION
AND SETTLEMENT SCHEME

(A) GENERAL

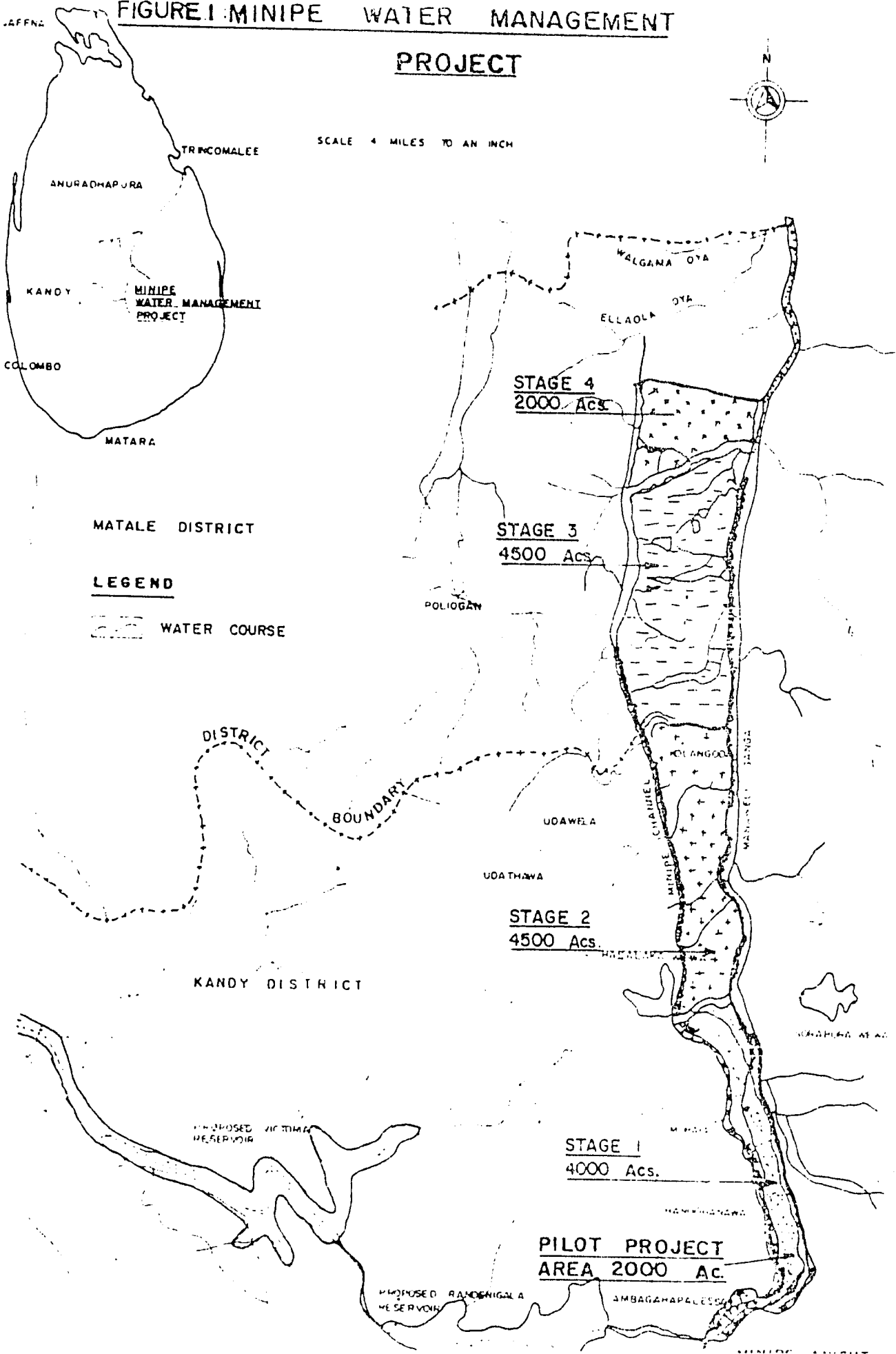
The Minipe irrigation and settlement scheme located in the Kandy and Matale Districts gets its water supply from a low diversion dam constructed across the Mahaweli river. The water is carried along a left bank canal 48 miles long with about 12,000 acres (4,800 hectares) under its command. In this respect the Minipe Scheme differs from most other major irrigation systems in Sri Lanka in that there is no major reservoir in which the water is stored. The Minipe Scheme came into existence through the restoration of an ancient scheme which is said to have been linked to the Ambanganga. Along the length of the main channel, there are about eight sub-tanks through which water is delivered (See Figure 1 on page 76 of the Minipe Scheme). The scheme consists of four stages which were settled at different points of time. Thus the Minipe scheme covers a large area and there is noticeable variation between the different stages of settlement in regard to availability of water and farm size. The following table provides information on some basic features of the Minipe settlement scheme :

T A B L E 7
SOME BASIC FEATURES OF THE MINIPE SETTLEMENT SCHEME

Stage	Year	Acreage (Approx.)	No. of Allottees	Reservations taken for cultivation (approx. acreage)	No. of dis- tributory channels
Stage I	1939	3,570	473	440	49
Stage II	1958	4,070	1,502	1,020	34
Stage III	1968	3,725	785	450	23
Stage IV	1970	1,455	770	40	4

- SOURCES (1) Irrigation Engineer's Office, Hasalaka
(2) Water Management in the Minipe Settlement Scheme,
P. Wickramasekera, 1981, Unpublished Research Report

FIGURE I MINIPE WATER MANAGEMENT PROJECT



The first stage of the settlement took place during the period 1936 to 1939. The unit of alienation at the time was 5 acres of lowland and 3 acres of highland. Stage II was completed in 1958 under the system of advanced alienation where settlers were brought in to the land long before irrigation facilities were provided. The unit of alienation was reduced to 2 acres of lowland and 1 acre of highland.

Stages III and IV were completed in 1968 and 1970 with the extension of the main Yoda Ela up to 48 miles in length. This required improvements to the head works and expansion of the capacity of the channel to carry a greater volume of water to serve the larger acreage cultivated in paddy. The unit of alienation was similar to that in Stage II, viz. 2 acres of lowland and 1 acre of highland.

The extension of the scheme to Stages III and IV led to serious water difficulties for farmers and specially to tail-enders of Stages III and IV. These water problems have been aggravated with the diversion of the river at Polgolla under the Mahaweli Development Programme.

In Stages III and IV there is now a full cultivation only during the Maha season utilising rainfall, while in the Yala season cultivation is possible only in Stages I and II.

(P) DELIVERY

Water released from the Randeniḡala dam flows into the Minipe left bank main canal through the diversion anicut referred to earlier. Depending on the availability

of water, the flow is continuous. But during times of water scarcity, intermittent irrigation is practised. The concept of water rotation, as we understand it, is that water available in a field channel is distributed equitably between individual farm holdings in rotation, i.e. generally about two farmers at a given time. Each farmer gets water for a specified number of hours. A rotational system of this type cannot be operated in Minipe because it is an old scheme designed for continuous flow without a major reservoir (as you find in Gal Oya and Parakrama Samudraya Schemes). However, water rotation as between field channels is practised in the Minipe Scheme.

(C) AGE OF SYSTEM AND REHABILITATION

As already mentioned, the age of the system varies according to its four stages. Stage I is now about 44 years old while Stage II is about 26 years old, Stage III about 16 years old and Stage IV about 14 years old.

There has been no important rehabilitation of the irrigation system since its inception except for a major desilting programme of the main channel which was carried out by farmers in 1979 under the Minipe Water Management Project.

(D) SEASONAL AVAILABILITY OF WATER

Reference has already been made to this aspect of the Minipe irrigation system. Stages I and II generally have water available for paddy cultivation during both the Maha and Yala Seasons. In Stages III and IV Maha cultivation is dependent on rainfall and there is no irrigation water for paddy cultivation during the Yala season.

(E) CROPS GROWN

During the Maha Season nearly 90 percent of the lowland tracts are cultivated in paddy. During the Yala Season, there is paddy cultivation in most of the lowlands in Stage I and II along with some vegetables, cowpea and chillies.

(F) CROPPING INTENSITY

The following table gives the area cultivated in paddy in the different stages of the Scheme and the cropping intensity during two recent Maha and Yala Seasons.

TABLE 8
AREA PLANTED AND CROPPING INTENSITY BY SEASON

Season	Area cultivated (a) Acres	Stage/s	Type of Crops	Cropping Intensity (b)
1982 Yala	8121.5	I & II	Paddy	99.20
1982/83 Maha	13591.5	I to II	Paddy	91.98
1983 Yala	9704.5	I to IV	Paddy	65.68
1983/84 Maha	14042.5	I to IV	Paddy	95.04
1984 Yala	10289 399.5	I to III (c) All Stages	Paddy (e) OFC	72.34 (d)

Notes : (a) Asweddumised area includes colony land, temple land and reservations

(b) $\text{Cropping Intensity} = \frac{\text{Area sown}}{\text{Asweddumised area}} \times 100$

(c) Stage III had less areas cropped during the season

(d) Based on total asweddumised extent in paddy and the extent under OFC within that extent of paddy land.

(e) Other Field Crops

Average paddy yield: 60 bushels of paddy per acre for 1980 Yala season.

Source : Irrigation Engineer's Office, Hasalaka

Lack of water appears to be the main reason for low cropping intensity in the scheme, particularly in the tail-end.

As seen in Table 8, the cropping intensity has varied from season to season. In Yala Seasons, the cropping intensity reflects the total area irrigated while in Maha it includes some rainfed cultivated areas as well for which a break-down is not available.

(G) THE NUMBER OF FARMS SERVED

The number of farms served in the different stages of the scheme are as follows :

Stage I	approximately	720 farms
Stage II	approximately	2,035 farms
Stage III	approximately	1,865 farms
Stage IV	approximately	730 farms

The above figures do not include encroachments which have taken place on a substantial scale. But reliable figures regarding extent under encroachment are not available. The total extent served by irrigation water is therefore higher than the above figures would indicate.

(H) RAINFALL FIGURES

Rainfall figures for the Minipe Scheme are given in table 9 on page 81. The Maha rainfall is normally received in the months of October through February while the Yala rainfall is received in the months of March through July. It will be seen that the rainfall figures in both seasons show a high degree of variability. There has been some rainfall during the months of June, July and August in this scheme because it is located in the Kandy and Matale Districts. The Kandy District and a part of Matale District fall into the Mid-country wet zone where the rainfall pattern is different from that of the dry zone.

TABLE 9

RAINFALL IN MILLIMETERS (HASALAKA) BY YEAR (MM)

Year	Month	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981		128	216	84	36	44	0	105	0	0	28	0	531
1982		57	0	178	114	77	0	13	0	51	243	407	585
1983		139	23	0	50	180	25	75	0	0	179	239	578
1984		547.5	166	150	29	4	0	31	NA	NA	NA	NA	NA

N A : Not available

Source : Irrigation Engineer's Office, Hasalaka

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16
1

(I) WATER PROBLEMS

As indicated earlier water problems in the scheme have become more complex after the Polgolla Diversion. Stage III and IV do not get water for cultivation during the Yala season and Maha cultivation is dependent on rainfall. On the other hand the head-end areas of the scheme viz. Stage I and II usually have no water problems during both seasons. Cropping intensities in the scheme are low because of inadequate water supplies.

The following table gives some relevant particulars pertaining to the farmers interviewed:

T A B L E 10
TYPE OF HOLDING AND LOCATION OF FARMERS INTERVIEWED

Stage	No. of Farmers Interviewed	Type of Holding	Average Plot Size (Acres)
I	10	Colony 4)	3.4
		Temple 6)	
II	1	Temple 1	3
III	9	Colony 9	2

NOTE: It should be noted that Stages I and II are the head-end areas of the scheme while Stage III represents the tail-end areas. No farmers in Stage IV were interviewed because this is about 40 Miles away from Hasalaka Town and there were logistical difficulties in organising interviews within the time available for completing the field work.

Out of the 20 farmers interviewed, 11 reported having water problems, while 9 stated that they did not have any water problems. It is significant that the 9 farmers who did not have any water problems were from Stage I of the scheme.

Eighteen out of the 20 farmers interviewed stated having water problems during the Yala season. The types of problems they had in Yala were inadequate water (5), no water (8) and irregular supply (5): (the numbers within parentheses are the number of farmers). Out of these 18 farmers who had water problems during the Yala season, 8 were from Stage 1, one was from Stage 2 and 9 were from Stage 3 of the Scheme.

Thirteen farmers attributed water problems to defects in conveyance system and principally the construction/design of channels. As remedial measures farmers suggested reconstruction particularly of field channels.

When farmers are confronted with water problems they seek the help of officers of the Irrigation Department such as the Jala Palaka ("Irrigator")*, the Technical Assistant and the Irrigation Engineer and also of the "Yaya Niyojitha" (Farmer Representative)**. The time taken to attend to individual complaints appears to vary a great deal. Two farmers were of the view that quick action is taken while eight said that it takes a time period of a few days to a few weeks.

(J) OPERATION OF SYSTEM

The starting point of system operation for each cultivation season is the Kanna Meeting*** which is held in several locations of the scheme. The farmer interviews indicate that twelve farmers attended the Kanna

* This English term used locally corresponds roughly to term 'ditch rider'

** Farmer representatives are elected by the farmers in terms of the Regulations made under the Agrarian Services Act No. 58 of 1979.

*** This is a meeting between farmers who are officially settled in the Scheme and relevant officials, held before the commencement of each paddy cultivation season to decide upon a schedule of water deliveries from the tank and a calendar of cultivation operations for the forthcoming season. It is chaired by the Government Agent of the district or his official representative. Kanna Meetings are provided for under the Irrigation Ordinance.

Meeting. They however, expressed the view that the decisions are made by the officers. They also complained that it was necessary to consult with farmers in the preparation of the water schedule for each season.

The implementation of the decisions taken at the Kanna Meeting in this scheme appears to be satisfactory. Only six farmers stated that actual water deliveries deviated from the decision of the Kanna Meeting. Two farmers had no comments to offer on this matter, while the remaining twelve farmers stated that the decisions of the Kanna Meeting were duly carried out.

When asked to suggest measures in order to improve the pattern of water distribution, four farmers suggested changing the intermittent system in field channels while five farmers suggested changing the intermittent system in the distributory channel.

Water issues are made by the Irrigation Department at the commencement of the season. The type of water issues, i.e. whether intermittent flow or continuous flow etc., are also decided at this stage. The intermittent flow refers to a particular method whereby water is delivered continuously for a few days followed by a period when no water at all is issued.

The intermittent supply can operate in respect of field channels or distributory channels. The farmers who wanted a change in the intermittent system expressed a preference for a continuous water supply. The implementing agency for water supplies is the Irrigation Department.

Twelve farmers (all from the tail-end allotments) indicated that their problems were due to the manner in which the system was operated whereby head-end farmers had access to more water than was required for their purpose.

(K) MAINTENANCE OF SYSTEM

When the Minipe Water Management Programme was in operation the farmers were organised to carry out channel maintenance work. In 1979 when this project was started a greater part of the 48 mile long main channel was desilted by farmers.

The officers indicated in the course of interviews that farmers continued to carry out maintenance activities through Shramadana* and that in some instances the Irrigation Department had helped farmer organisations in carrying out maintenance activities. However, the interviews with farmers indicated a somewhat different situation. Eleven farmers stated that maintenance work has been neglected by farmer organisations, that clearing of channels has been undertaken on an individual rather than on an organised basis and that cattle damage is being caused because of farmers' negligence.

Seventeen of the farmers interviewed said that maintenance of field channels was their responsibility, while seventeen farmers suggested that both channel clearing and other maintenance work on the distributory channels be carried out by the farmers under official supervision. One farmer complained that clearing the distributory channels was confined only to removing the secondary growth and that on account of silting water flows had been adversely affected.

The officers indicated that the funds made available for maintenance were grossly inadequate. They stated that the present maintenance allocation given to the district gets exhausted half way through the year. However, the farmers had a different opinion. They felt that maintenance work could be effectively carried out with the available funds if they were not used for purposes not directly related to maintenance work.

* Self help, by way of provision of labour services free

(L) FARMER ORGANISATIONS

THE MINIPE WATER MANAGEMENT EXPERIMENT

The Minipe Scheme has been saddled with a host of problems of which the major one was lack of sufficient water and its poor management. Farmers in the head areas generally use more water than is required thereby depriving water deliveries to tail-end farmers. As a result of this situation farmers have resorted to illegal acts such as cutting bunds, destroying irrigation structures and engaging in water piracy. As a consequence there have been numerous conflicts between farmers and officials as well as among the farmers themselves.

It was against this background that the Minipe Water Management programme was started by the Regional Organisation of the Irrigation Department in 1979. The driving force behind this effort was the Deputy Director of Irrigation in the Kandy region who evolved a system of water management and an effective O & M programme with the funds made available to him by the Irrigation Department.

The important features of the farmer organisations in the Minipe experiment are the following :

- (a) The bottom most rung of the organisation are Field Water Management Committees formed in relation to specified village areas. These committees were mainly composed of farmers and a few village level officials such as the Cultivation Officer (C.O) and the Agricultural Extension Worker (A.E.W. or K.V.S.)
- (b) The next tier in the organisation is the Sub-Project Committee which functioned at the level of Stages I to IV. For this purpose approximately 12,000 acres of paddy land in the scheme were demarcated into six sub-divisions

each of which consisted of about 2,500 acres of paddy land. Each of these sub-divisions had a Sub-Project Committee. The Technical Assistant (T.A.) of the Irrigation Department is the Secretary of this Committee. A farmer representative from the respective Field Water Management Committees functions as Chairman ;

- (c) The third tier was the Project Committee which was chaired by the Project Manager while the Irrigation Engineer in charge of the scheme functioned as the Secretary. It had more officers but there was representation from farmers'. On occasions when the Project Manager was absent, farmer representatives chaired these meetings ; and
- (d) The District Level Committee was to be chaired by the Government Agent of Kandy, and to consist of district level officers of Government and quasi-Government agencies concerned with development work in the Kandy and Matale districts but this District Level Committee does not appear to have functioned.

The project attempted to utilise locally available resources for organisation work. Officers of Government Departments, local leaders such as Buddhist monks, farmers with leadership qualities and even the support of private organisations were enlisted for the purpose.

A serious attempt was made to promote a group spirit among farmers. It was assumed that the farmers were trustworthy, intelligent and rational people and that, given necessary encouragement and responsibility, they would extend their willing co-operation for improving the conditions in the settlement.

The farmer organisations participated in system maintenance work, water allocation, maintenance of field channels and resolution of conflicts. The farmers were encouraged to come forward and participate in taking decisions. Because of the creation of farmer organisations in Minipe, farmers have been able to accomplish many tasks which they could not attend to as long as they operated as individuals. Some of the specific incentives farmers have in participating in farmer organisations in Minipe are listed below :

- i. Farmers have been able to clean channels and attend to regular repair work to the conveyance system which has led to an improvement in the status of water supply;
- ii. Regular meetings between farmers and officers have been arranged through the farmer organisations. The officers have to attend such meetings because the request comes from the farmer majority. These meetings have improved the morale of the farming community;
- iii. Farmers have an opportunity of securing important repairs to the irrigation system through the Irrigation Department by being in farmer organisations.

The document Resource Development 1978-1982 which has already been referred to in this study, commented on the Minipe water management experiment in the following terms :

" In many respects Minipe Water Management Programme is a unique experiment. It throws a ray of light on the strategies to be adopted in irrigation management and rehabilitation of irrigation systems in other parts of the country.

An interesting feature of this experiment is that the concept and initiative has come from the periphery with little or no direction from the centre" (p.41)

The present position as reflected in the discussions with the officials during our study is that the committee system set up under the Minipe Water Management Project was still active and meets regularly as was planned in 1979.

The farmers on the other hand indicated a different position. Only 6 out of the 20 farmers mentioned the existence of farmer organisations. When asked about the decisions taken by the farmer organisations during the last two seasons only 5 farmers reported that they were involved with water rotation.

When farmers were asked to suggest what support and facilities should be given by the Government the majority had no comments to offer. This would appear to indicate that farmer organisations are still not firmly established in the area and that they are not as active as was reported when the water management project was in full operation. The majority of farmers identified the need for farmer organisations as a way of better managing the irrigation problems of the system.

(M) ROLE OF GOVERNMENT

Farmers identified two principal roles to be performed by the Government. Firstly, they suggested that the Government should shoulder the responsibility for operational work both at systems and tertiary levels. Nine of the interviewed farmers were of this view. Secondly, they wanted the Government to undertake maintenance work. On this matter thirteen farmers stated that Government support was needed for major repairs at the field channel

level whenever necessary. Five farmers wanted the Government to take the entire responsibility for maintenance at field channel level. But ten farmers suggested that the Government should bear the entire responsibility for maintenance at the systems level. This appears to be a reaction to the recovery of O & M costs by the Government. That is to say, if the recoveries are to be made from farmers, the Government might as well undertake all O & M work. Two farmers were of the view that the Government should bear half the cost of O & M work while fifteen farmers expected the Government to bear more than half the cost of O & M.

(N) O & M RECOVERIES

There are three types of charges that farmers in the Minipe Project have to pay. Firstly, the acreage tax of Rs. 6/- per year levied by the Agrarian Services Committee of the area under Section 46 (2) (b) of the Agrarian Services Act No. 58 of 1979. All the farmers interviewed did not understand how these funds were utilised and what benefits they were receiving for this payment.

Secondly, there is an acreage tax collected by the Mahiyangana temple for the temple lands allocated in Stage I and II of the scheme. The tax in this case is three bushels of paddy for every bushel of seed paddy used per season. This works out to six bushels of paddy per acre per season. This acreage tax has to be paid to the temple authorities in cash calculated at the present Government floor price of Rs. 62.50 per bushel of paddy. This works out to Rs. 375/- for an acre for a season.

We understand that in addition to this payment the settlers who are living on lands belonging to the temple and have put up a house on their own have to pay a rental to the temple for the house. This rental is said to be Rs. 25/- per annum if the house is a wattle and daub

one and Rs. 75/- if it is a lime plastered house. In addition, if the highland allotment is fully cultivated - generally perennial tree crops such as coconut, jak fruit, mango etc. are grown by the settlers on their highland allotments - a sum of Rs. 300/- per annum has to be paid by the allottee to the temple authorities. The payments to the temple have to be made irrespective of the yield obtained in a given season. These farmers do not receive any support from the temple authorities in the matter of irrigation water or other supporting services.

The third charge is the new O & M cost recovery introduced in 1984.

The 20 farmers interviewed had paid the three taxes levied by three different authorities as follows:

	Acreage	O & M	Temple
Stage I	9	9	6
Stage II	1	0	1
Stage III	9	2	0

Fourteen of the farmers interviewed, however, expressed their willingness to pay O & M charges while six did not agree to the payment. Cultivators of temple land, in particular, disliked the O & M payment since they already had to pay a large sum of money as acreage tax to the temple.

Eleven farmers made suggestions regarding the collection of O & M charges. Firstly, they emphasised the necessity to impose the levy according to the extent of the paddy land cultivated. The rate charged at present does not strictly adhere to the extent cultivated. It was indicated that a request has already been made by the Engineer in charge to the Government to give some concessions to these farmers who are in the tail-end of the scheme where cultivation is done only in one season.

Secondly, the farmers wanted the responsibility of collection entrusted either to farmer representatives or a senior Government Officer.

Thirdly, it was suggested that the levy should be imposed on all water users including encroachers/drainage operators. At present it would appear that collection is only from the colony allotment.

Fourthly, 17 farmers suggested that legal action should be instituted against defaulters. Two farmers suggested that defaulters should be deprived of irrigation water until they paid up.

Fifthly, farmers appeared to be of the view that they should be allowed to work as maintenance labourers on payment through O & M funds. They suggested this both as a means towards better quality of maintenance work as well as financial support to farmers, particularly during periods when there was no cultivations.

Finally, the farmers suggested that the Government should provide inputs such as fertiliser, agrochemicals and credit on convenient terms so that their capacity to pay O & M would be enhanced.

PART III

MAHAWELI DEVELOPMENT PROJECT

AREA SYSTEM - H

(A) GENERAL

The Mahaweli Project is expected to irrigate 364,372 hectares of land in the dry zone of Sri Lanka. The entire scheme is divided into 13 systems, A to M. System H covers about 38,855 hectares of irrigable land, of which 14,572 hectares were brought under cultivation prior to the inception of the Mahaweli Project. System H area comprises of several sub-systems from H₁ through H₁₂ (Figure 2) at Page 94.

The major regulating reservoir is Kalawewa which holds about 100,000 acre ft. of water. The water in the reservoir is replenished from the diversion of the Mahaweli Ganga. Each sub-system is further divided into blocks for purposes of co-ordination of work related to water Management. Table 11 on Page 95 gives some basic features of the Mahaweli H System.

The Government has paid a great deal of attention to the development of the Mahaweli Project. The first major step in this regard was the creation of a separate Ministry of Mahaweli Development. The Mahaweli Economic Agency discussed in Section Three is now responsible for all development and management work in several zones of the Mahaweli Project including area H.

The MEA has undertaken the responsibility of organising all agri-support services required by the farming community. In addition to the development of agriculture, community development, health care activities, recreation, programmes for farm women etc. have also been provided. A computer network has been established recently in System H area in order to monitor and control water allocation for the entire system.

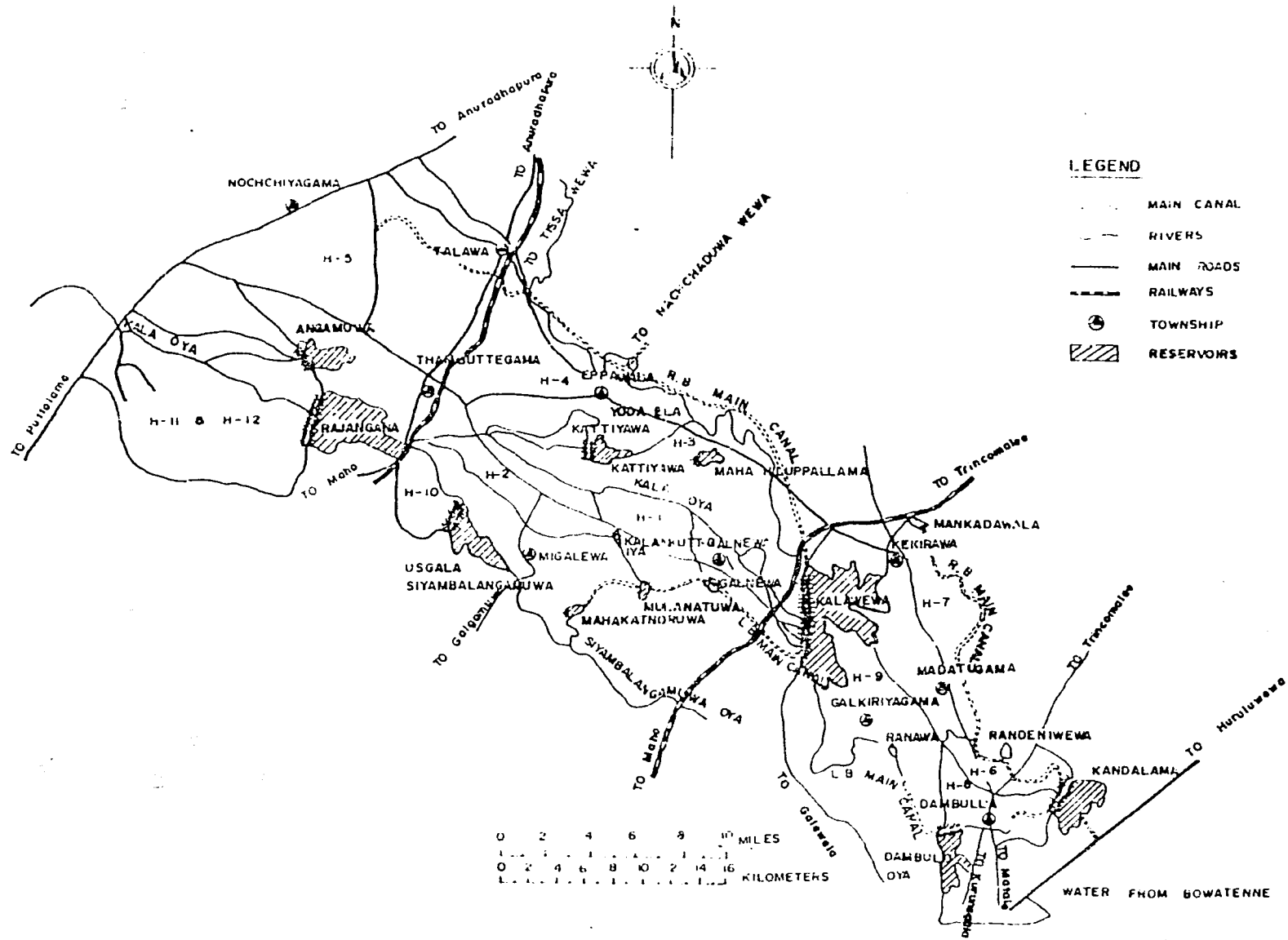


FIGURE 2 : SRI LANKA ACCELERATED MAHAWELI GANGA DEVELOPMENT PROGRAM SYSTEM - H

T A B L E 11

SOME BASIC FEATURES OF SYSTEM H OF MAHAWEI PROJECT AS AT 31-7-1984

Zone	Blocks	Total No, of allotment	No. of allotments suitable for Settlement	No. of farm families settled	Total irrigable extent (Acres)	Year/s of Settlement
H ₁	301 to 304	1874	1786	1786	4702.5	1976 to 1981
H ₁ and H ₂	305 to 309	2112	1927	1927	5288.2	1976 to 1981
H ₃	310 to 314	2173	1906	1908	5245	1976 to 1981
H ₄	401 to 410	8414	7923	7604	20011.2	1979 to date
H ₅	411 to 421	5585	5332	5101	12490	1979 to date
H ₇	101 to 104	2942	2639	2639	7382.1	1977 to 1981
H ₉	201 to 205	2350	1964	1964	5950	1978 to 1981

NOTE : H₃, H₆, H₈, H₁₀, H₁₁, and H₁₂ areas of the old settlement are excluded.

SOURCE: Mahaweli Economic Agency, Colombo

This step has been taken to improve the overall efficiency of water use and avoid waste of water.

The settlement programme began in 1976 and is nearing completion. During this period a total of approximately 22,929 farm families have been settled in the zones as given in Table 11. Each settler family was given 2.5 acres of lowland and 0.5 acres of highland as a homestead. However, the discussions with farmers during the course of this study indicate that land allocation procedures have had certain limitations. For example, 5 farmers out of 32 interviewed (2 nonrespondents) had irrigable blocks of less than 2.5 acres which is the officially accepted size of a holding in the Mahaweli Scheme.

The incidence of sale, mortgaging, leasing and similar land transactions appear to be less common than in other major irrigation schemes. Only three of the farmers interviewed reported incidence of leasing/mortgaging their allotments. But we understand that the real situation regarding these matters cannot be found out without a detailed study as these transactions are generally concealed from the officials.

The reservoir has two major commands under the Left Bank (LB) and the Right Bank (RB) channel and two minor commands fed by Kalawewa Goda Ela and Kalawewa Yoda Ela. The command area under RB channel is the largest (Figure 3). Paddy is the major crop during the Maha season and Other Field Crops (OFC) together with paddy are planted during the Yala season.

(B) DELIVERY OF WATER

Water diverted from the Polgolla Reservoir enters the Bowatenna Reservoir and finally the Kalawewa Tank. Depending on the level of water in the Kalawewa

reservoir either a full or Bethma* cultivation is undertaken in System H. The system of water distribution is continuous in the main channel while it is rotational in the distributory channels and below. The settlement is planned in such a way that two farmers along a field channel can obtain water simultaneously within 12 hours. The turn-out leaders are expected to distribute water at the field channel level.

(C) AGE OF THE SYSTEM

System H was settled in two phases. The old area which comprises of H₃, H₆, H₈ and H₁₀ through H₁₂ was settled from 1946 to 1964. This part does not come under the purview of the MEA except for the marketing of the agricultural produce. The new area which is being settled since 1976 includes sub-systems H₁, H₂, H₄, H₅, H₇ and H₉. This is managed by the MEA. There has been no rehabilitation of the irrigation system in the new area.

(D) SEASONAL AVAILABILITY OF WATER

Depending on the availability of water in the Kalawewa Reservoir and the amount that can be diverted from the Bowatenna Reservoir, either the Bethma system or full extent cultivation is adopted. During the Yala season, the cultivation is usually on the Bethma system on account of inadequacy of water for the cultivation of the full extent. During the Maha season the full extent is cultivated using rainfall with supplementary irrigation water.

* A traditional system of sharing irrigation water in the tank when the available water is insufficient for a full cultivation of the paddy fields. This is practised even now. Under this system farmers agree to cultivate an area close to the head-end in an equitable manner.

(E) CROPS GROWN

During the Maha season almost the entire area is cultivated in paddy. In the Yala season other field crops such as chillies, green gram, cowpea, onions etc. are cultivated except in the valley bottoms which are planted in paddy. As mentioned earlier, cultivation during the Yala season is subject to the availability of water. Table below gives the cropping intensity by season and type of crops planted.

T A B L E 12

CROPPING INTENSITY BY SEASON AND CROPS IN SYSTEM - H
ZONES H₁, H₂, H₄, H₅, H₇ and H₉

Season	Extent Cultivated (Acres)	Type of Crops	Cropping ^a Intensity (%)
1982 Yala ^b	6229	Paddy	10.19
	7417	OFC	12.14
	13646	Total	22.34
1982/83 Maha ^c	55239	Paddy	90.45
	365	OFC	0.59
	55604	Total	91.05
1983 Yala ^d	9074	Paddy	14.85
	3242	OFC	5.3
	12316	Total	20.16
1983/84 Maha	56100	Paddy	91.86
	786	OFC	1.28
	56886	Total	93.15
1984 Yala	36606	Paddy	59.94
	9614.5	OFC	15.74
	46220.5	Total	75.68

NOTE. 1. (a) $\text{Cropping Intensity} = \frac{\text{Area sown}}{\text{Total asweddumised area}} \times 100$

(b) H₇ area had no cultivation

(c) H₁, H₂, H₅, H₇ and H₉ had no OFC planted

(d) H₄ and H₅ were not issued with irrigation water for cultivation.

OFC : Other Field Crops

2. Total area available for cultivation is assumed to be 61,069 acres.

3. Average paddy yield : 61.50 bushels per acre for 1981 Yala.

SOURCE : Mahaweli Economic Agency, Colombo.

(F) CROPPING INTENSITY

As shown in Table 12, the cropping intensity varies with the season. In Yala, the intensity is lower (except in 1984 Yala) on account of inadequacy of water. In 1984, the water level in the Kalawewa Tank as well as in other storage tanks were full subsequent to torrential rains in the preceding Maha and 1984 Yala seasons. It will also be seen from this table that the cultivation of the entire extent has not been undertaken since the 1982 Yala season.

(G) THE NUMBER OF FARMS SERVED

The number of farms served in the new area of system H is given in Table 11 on page 95, since some of the allotments are not suitable for irrigated farming, farmers have not been settled in these allotments. Unlike in the three other schemes considered in this study, the problems of encroachment are not so serious in System H.

(H) RAINFALL FIGURES

Rainfall figures for Thelhiriyawa (Block 404) in H₄ area is given in Table 13. Although the rainfall is variable, the typical dry zone rainfall pattern is seen. The Maha season brings rain from September through December. The Yala rains are received during the period from March through May, while June, July and August are relatively dry months. In 1984 there was unusually high rainfall from January to April.

(I) WATER PROBLEMS

It appears that water problems have begun to emerge at systems level and at farm level. The RE area had received water for cultivation only in Yala 1984 after settlement commenced in 1979. In the LB area Yala cultivation is done on the Bethma system. In Yala 1984 only 66% of the total command of LB received water for cultivation. The RE received water for cultivation of the

T A B L E 13

DISTRIBUTION OF MONTHLY RAINFALL IN SYSTEM-H (THELHIRIYAWA BLOCK 404) MM

<u>Year/Month</u>	<u>Jan.</u>	<u>Feb.</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
1979	N A	N A	N A	N A	N A	N A	N A	N A	N A	279	360	162
1980	1	0	116	84	6	56	0	16	164	316	168	92
1981	30	4	72	191	68	14	144	19.5	132	234	192	156
1982	0	0	121	240	124	20	4	3.5	54	219	280	157
1983	1.7	N A	0.5	41.9	150	22.2	58.5	7	27.3	57	154	289.5
1984	216.4	294	273	277	85	0	70	0	N A	N A	N A	N A

N A Not Available

SOURCE : Block Manager's Office, Thelhiriyawa

full extent for the first time in Yala 1984. This was after six years of settlement. Cultivation during Maha season is usually undertaken with rain water, supplemented with irrigation water wherever possible. This applies to both LB and RB areas.

Thirty Two farmers from System H area were interviewed in the course of this study. The interviews were conducted mainly in Block 404 of the RB command where the problems of the settlers appear to require special study. They have received irrigation water only once for a full Yala cultivation since they were settled on the land in 1979. Farmers in the LB command on the other hand have no serious water problems even when Bethma* cultivation was undertaken. They continue to receive a dependable water supply and therefore enjoy a higher level of income. For this reason our interviews sought to concentrate on the RB area. However, one farmer from the LB command was also interviewed. Apart from the farmers, officers at different levels in the LB and RB command areas were also interviewed.

The following table provides relevant particulars with regard to farmers interviewed:

T A B L E 14

TYPE OF HOLDING AND LOCATION OF FARMERS INTERVIEWED IN SYSTEM-H OF MAHAWELI

Block No.	Village	No. of Farmers Interviewed	Type of allotment	Average size of Operational holding per Settler in (1984 Yala) (Acres)
301	2	1	Colony	1.25
404	1	11	Colony	2.06
	4	9	Colony	2.15 (b)
		1	Encroachment	1.0
	5	10 (a)	Colony	2.47

NOTE: (a) One farmer is a mortgagee while another farmer operated one parcel on Ande basis in addition to his own allotment (i.e. as a tenant cultivator)

(b) Average for 8 allotments

* Bethma system operated in parts of Block 404 and in Block 301 during the season when the present study was undertaken.

The farmer interviews indicate that 23 out of the 32 farmers had water problems. The major problem in Yala appears to be the inadequacy of water. Twenty two farmers stated that water supplies during the Yala season were inadequate, two farmers indicated that water supplies were irregular and unreliable while 2 other farmers indicated absence of water in the Yala season.

Twelve farmers reported having water problems in the Maha season. The types of problems are inadequacy, irregular supplies and lack of water: (the term lack of water here refers to insufficient supply of water in terms of farmer perception, which is entirely quantity problem). The number of farmers reporting on each of these problems in the Maha season are less than in the Yala season.

Twenty one farmers said that channels have not been constructed properly. The defects are said to be both in respect of field channels as well as distributory channels. Majority of farmers indicated that water flow through unlevelled pipe inlets was inadequate. Hence they suggest reconstruction of field channels and levelling of pipe inlets. Arrangements are being made by the Mahaweli Authority to change designs and reconstruct some of the channels. However, the extent to which farmers will be consulted before undertaking reconstruction is not known.

(J) OPERATION OF THE SYSTEM

The season commences with the Yanna Meeting where officers meet farmers at Block Level and discuss arrangements for the preparation of the calendar of cultivation operations and specially the plan for water issues from the reservoir during the forthcoming season. At this forum, however, it is not easy to take clear decisions on account of the large number of farmers involved. What actually happens is that the officers present a set of decisions and expect the farmers to respond to these decisions. The general complaint of farmers in all schemes

under consideration is that the decisions taken at this meeting are not correctly implemented.

However, the Kanna Meeting as a vehicle for decision making appears to be better in the H area when compared to other schemes considered in this study. Not only did a large majority of farmers attend the Kanna Meetings but they also reported that the decisions taken at the meeting were implemented. A similar finding was reported by the Diagnostic Analysis Study which was undertaken in Blocks 306, 307 and 309 in System H in 1983. This situation can perhaps be due to the manageable number of farmers involved in the Kanna Meeting. Moreover the Unit Manager is known to all the farmers within his area and can obtain a better feed back from the farmers.

Although farmers complain that water issues deviated from the decisions of the Kanna Meeting, such delays are quickly attended to by the officers. Almost all the interviewed farmers settled their water problems with the Unit Manager. Thirteen farmers reported that action is taken on complaints very quickly. One half of the farmers interviewed reported that the officers performed a good service while about thirteen farmers indicated that the officers were lethargic and did not have good relations with them.

(K) MAINTENANCE OF THE SYSTEM

Farmer interviews indicate that the lack of regular maintenance work of channels appears to have affected water flow. However, only 12 farmers indicated that channel maintenance was poor. Five out of 10 farmers attributed poor maintenance work to the negligence of the officers while only one farmer attributed poor maintenance work to the negligence of the farmers themselves. It should be mentioned that the quality of channel maintenance work in the System H area is better than in any

of the other three schemes included in this study. With regard to the frequency of field channel clearing, only 7 farmers said that clearing is done once every season by the authorities while 4 farmers indicated that clearing is done by farmers once a year. The majority of farmers (13) however, reported that the field channels are never cleared. This can be due to poor co-ordination of work of the turn-out leaders.

The tail-end farmers complained that head-end farmers do not care to clear the field channels. As regards the clearing of distributory channels, the majority of farmers indicated that the authorities undertake this work once every year. However, they indicated that the quality of the work was very poor and that only secondary growth is being cleared. Farmers complained that the distributory channels are silted and not cleared for years. Most of the farmers are unaware of maintenance work undertaken by the authorities in respect of the main channels. However, they believed that the quality of main channel clearing could be poor. Farmers indicated that both distributory as well as main channel clearing work were assigned to private contractors who did not perform a good job of work.

The field level officers on the other hand indicated that most of the field channels were cleared properly by farmers. Some officers revealed that as much as 90 percent of the field channels were cleared properly. The officers also shared the view that the distributory as well as the main channels were cleared properly. None of the officers stated that the funds allocated for channel clearing were inadequate.

The majority of farmers suggest that field channel clearing should be undertaken by the farmer groups concerned. Twenty four farmers suggested that distributory/branch channels should be cleared by the Government. However, they indicated the necessity to carry out supervision by officers in the event that farmers undertook

clearing of distributory channels. Thirteen out of the 22 farmers attributed water problems to poor water management practices adopted in the head-end areas.

(L) FARMER ORGANISATIONS

As a part of the Water Management Programme in the scheme, the MEA has made an attempt to involve farmers in water management work. The pivotal point of this organisational work is the farmer turn-out area which comprises of about 12 to 20 irrigable lots of two and half acres each. Water is usually issued in bulk to each turn-out area. Farmers in turn are expected to distribute it among themselves. The turn-out group is also responsible for any clearing work and maintenance of the channel network.

Farmers in each turn-out area elect a leader who is expected to co-ordinate the work. Another farmer is elected as the Contact Farmer for agricultural activities of turn out groups. These two categories of leaders were given formal training by the MEA. Each farmer was paid Rs.10/= for attending a training session. This was to compensate them for any loss of working time due to attending these training classes. The attendance at these training sessions had been good and these farmer leaders had taken an interest in solving problems at the turn-out level.

However, in some areas the turn-out groups have not been formed. Some of the farmers are not aware of the presence of turn-out groups. In areas where turn-out groups function some of the turn-out leaders were not considered trustworthy. Similar observations were made in a previous study which stated that "only 26 percent of the sample farmers were aware that they belong to a turn-out group."*

* Diagnostic Analysis Report, 1982

Field observations indicate that the turn-out groups are not effective in the performance of water management activities. Channel clearing was not done properly and some of them have not been cleared for years. In some areas the irrigation structures were damaged, illegal water tapping reported and as a result farmer conflicts were growing. Thirty one farmers indicated that the turn-out group system was not functioning at all. The MEA appears to be aware of the poor performance of turn-out groups and has repeatedly urged farmers to elect new leaders. However, it appears that the majority of farmers have not elected new leaders.

Four reasons can be identified as causes for poor performance of turn-out groups. Firstly, farmers in the head-end areas have good access to irrigation water and is using it wastefully thereby depriving the share of water to the tail enders. There was no mechanism to initiate discussions between head-end and tail-end farmers.

Secondly, lack of social coherence was observed even among farmers belonging to the same turn-out area. Some turn-out groups had farmers selected from outside areas and from adjoining Purana Villages. There are conflicts and friction between these groups with different social backgrounds even within the same turn-out area.

Thirdly, the number of farmers operating on Ande, leasing and mortgage cultivation even within the same turn-out groups have increased over the years. It was also observed that some turn-out leaders have also given their allotments on Ande. An officer revealed that as much as 50 percent of the plots are being held by lessees, mortgagees etc. in a covert manner. These developments have resulted in more conflicts among farmers and group work such as

channel clearing, water rotation etc. was neglected.

The Diagnostic Analysis of Mahaweli System H of 1982 also reports a high rate of leasing (nearly 50 per cent by allottees. The report adds that :

" Although there were some share cropping and leasing arrangements among farmers themselves, many of the lessees were outside the class of farmer settlers. From the perspective of irrigation behaviour, this introduced another group of cultivators with different goals, beliefs and values into the irrigation system. 'The lessees' cultivation operations and relative influence have adversely affected organised water management activities. The problems created include :

- (1) disruption of rotation within turn-outs, and in some cases even with D-Channels,
- (2) illegal procurement of water,
- (3) poor maintenance of F-Channels, and
- (4) disintegrating influences within turn-out groups" (P.28)

The disintegrating influences refer to lack of motivation within turn-out groups who have leased out or mortgaged their allotments without disclosing such transactions to the authorities in charge of the scheme because they are illegal and will not receive official approval.

Twenty farmers are of opinion that if turn-out groups were organised, the water management activities could be better accomplished. The majority felt that getting together was an effective means of accomplishing a task. When they were asked to suggest how farmer organisations could be established, the majority stated that officers should be involved in the process right from the beginning. They however, suggested that a farmer should be elected as leader of the organisation.

(N) ROLE OF GOVERNMENT

Farmers identified three principal roles to be performed by the Government. Firstly, they suggested that the Government should carry out work connected with the operation of the scheme both at system and tertiary level. This includes the organisation of Kanna Meetings, release of water from the reservoir, co-ordination of water allocation/management activities in different areas of the scheme. With regard to water distribution work at the field channel level 17 farmers suggested that the Government should be involved while 14 were of opinion that it should be accomplished by farmers alone. The majority of farmers identified the necessity for the Government to be involved with operations at systems level.

Secondly, farmers indicated that the Government should carry out maintenance activities in respect of the irrigation scheme. Twenty four farmers said that the Government should undertake all maintenance work above the field channel level while 5 farmers were of the opinion that Government should be involved only at times when the farmers alone find it difficult to carry out maintenance work. With regard to the maintenance work in respect of field channels, 17 farmers indicated that the Government should be involved only when farmers find it difficult to undertake repair work while 6 farmers suggested that the Government should undertake all maintenance work even at the field channel level.

Thirdly, farmers suggested that the responsibilities to be performed by the Government could be carried out with the assistance of established farmer organisations. The specific role envisaged for the Government in this regard was to promote the formation of farmer organisations and provide incentives and support for the establishment of such organisations.

(N) O & M RECOVERIES

It is observed that in System H, certain farmers pay only the O & M rates while those in H 7 and H 9 pay an additional acreage tax of Rs. 6/- per acre under the provisions of the Agrarian Services Act No. 58 of 1979. This acreage tax is supposed to help in maintaining the Agrarian Services Centres.

Usually the Agrarian Services Centres are non-existent in the Mahaweli Authority areas because the Mahaweli Management Organisation is expected to perform similar functions. However, there are certain areas under the MEA such as H 7 and H 9 which have been handed over to MEA together with the existing organisations such as the Agrarian Services Centres. In such areas where a cadre of officials called Cultivation Officers have been already appointed and Agrarian Services Centres have been established, the practice of collecting the acreage tax of Rs.6/- per acre per annum is being continued, although the Mahaweli Organisation does not attach much significance to the continuation of this line departmental function within its area of operation. From all that is observed in the areas where this system is being practised, the MEA seems to have allowed the continuation of this system with no meaningful significance attached to its performance.

* A field level Officer of the Department of Agrarian Services

Twenty eight of the farmers interviewed have already paid O & M rates for the current year. Only three farmers were not prepared to pay. Two of them were cultivating reservations while the other had some personnel problems which prevented him from making the payment. The majority (28) agreed that they should pay the O & M charges. A total of 24 farmers had no idea as to why an O & M charge was collected while only 4 farmers said that the funds were utilised to repair channels, roads etc.

Information regarding the collection of O & M charges up to December, 1984 in respect of the RB and LB area has been provided in Table 15 on page 113. It is not possible to provide figures of the number of farmers in the LB and RB who have paid O & M charges. It will be seen that the percentage payments in the RB is 75 percent as against 59.1 percent in the LB. This difference may not prove to be a significant one in the long run because the irrigation facilities available in both areas are very similar even though farmers in Block 101 of the RB command area have received irrigation water only during one Yala season since they were settled on the land in 1979.

The farmers interviewed had several suggestions to make regarding the collection and utilisation of O & M charges.

Twenty farmers emphasised the need to collect O & M charges according to the extent of paddy land cultivated. Farmers have been requested to pay amounts which are not consistent with the extents cultivated by them.

Nineteen farmers indicated that the responsibility of O & M collections should be entrusted to an officer in the MLA and not to turn-out leaders or other farmers.

Twenty two farmers suggested that action should be taken against defaulters while 7 farmers emphasised that water supply should be withheld from those who did not pay. Two farmers were of the view that O & M charges should be recovered by convincing farmers through persuasion.

Twenty five farmers made the suggestion that they should be allowed to work as maintenance labourers on payment through O & M collections. Farmers believe that this would improve the quality of maintenance work.

Twenty nine farmers urged that the Government should consider providing inputs at subsidised prices so that the capacity of the farmers to pay O & M would be enhanced.

During farmer interviews, it was observed that some farmers in Block 404 were not in a position to cultivate the 2.5 acre allotment fully both due to lack of water and lack of financial resources. They have had only one Yala cultivation, on the Bethma system, since 1980 Yala.

T A B L E 15

O & M COLLECTIONS IN MAHAWELI RB AND LB AREAS
UP TO DECEMBER, 1984 (IN RUPEES)

Name of Block	Block Manager Area	Total Estimated	Collection upto Dec.'84
H5	Talawa	366,500.00	286,000.00
	Helambewa	355,500.00	253,250.00
	Ipalogama	429,250.00	297,750.00
	Sub Total I	1,151,250.00	837,000.00
H4	Eppawala	498,750.00	332,125.00
	Telhiriyawa	484,500.00	412,150.00
	Tambuttegama	430,500.00	314,650.00
	Pahalagama	431,250.00	351,175.00
	Sub Total II	1,845,000.00	1,410,100.00
	Grand Total for RB	<u>2,996,250.00</u>	<u>2,247,100.00</u>
H1 H2	Galnewa	458,175.00	359,275.00
	Kalankuttiya	509,100.00	337,350.00
	Migallewa	510,425.00	276,800.00
	Grand Total for LB	<u>1,477,700.00</u>	<u>973,425.00</u>
<u>Percentage Collection</u>			
	Right Bank	74.99	
	Left Bank	59.1	

NOTE : H1 and H2 are in the LB area while H4 and H5 in the RB area. Within the given time period, it was not possible to collect O & M collections in respect of all the Blocks coming under LB and RB areas. The above Table presents available figures for the two areas.

Source : Mahaweli Economic Agency, Colombo.

PART IV

GAL OYA LEFT BANK IRRIGATION AND SETTLEMENT SCHEME

(A) GENERAL

The Gal Oya river is about 70 miles in length and rises at about 5,000 feet above sea level in the Madulsima hills of Uva and flows eastward to enter the Bay of Bengal, south of Kalmunai, through a number of separate outfalls. In the Gal Oya valley are to be found the ruins of Deegavapi reservoir bearing evidence of the development of this area during ancient times. In 1936 J.S. Kennedy, the then Director of Irrigation, conceived the possibility of constructing a large reservoir to be held up by a dam at Inginiyagala primarily to reduce flood damage in one season and shortage of irrigation supply in the other in the Pattipola Aru Scheme. The Gal Oya Project was a major multipurpose scheme established by the Government in the early 1950s. The major reservoir, Senanayake Samudraya, which has a capacity of 770,000 acre feet was constructed by damming the Gal Oya river. The Project was designed to provide :

- (a) Flood protection for the Pattipola Aru fields;
- (b) Irrigation of these fields and 42,000 acres of new land of which 10,000 acres was set apart for the cultivation of sugarcane for the manufacture of sugar;
- (c) The generation of approximately 12 MW of power by passing the water for irrigation through 4 turbines. It was anticipated that if a sugar industry was established it would absorb a greater part of the power to be generated;

(d) The provision of drinking water for 20,000 people .

The Gal Oya Project also embarked on several industrial undertakings in order to provide for a diversified economic structure for the settlers. For this purpose a tile making factory, quarrying, paddy processing were started. All of them had to be abandoned after some time. The Scheme has three major sub-commands namely, the Left Bank (LB), Right Bank (RB) and River Division (RD). See (Figure 4) on page 116 . - The LB has about 62,000 acres devoted entirely to paddy cultivation. The RB comprises of about 28,000 acres of land under sugarcane and paddy. The RD has a series of anicut schemes providing irrigation water for about 32,123 acres of paddy cultivation.

The following table provides information on some basic features of the Gal Oya Left Bank Settlement Scheme:

T A B L E 16
PROGRESS OF COLONIST SETTLEMENT

Financial Year	Administrative Units	Families settled
1950/51	1 and 2	296
1951/52	3,4,5,8,9,10,11, 12,19 and part of 18	1,500
1952/53	7,13,14,15,16,17 and parts of 10,22,23, 24,25 and 26	1,765
1953/54	27,28,29 & 30	600
1954/55	31,32,33 & 34	619
1955/56	35,36 & part of 37	332
1956/57	Nil	-
1957/58	38,39,40	348

SOURCE : Annual Reports of the Gal Oya Development Board.

It should be noted that the settlement pattern in Gal Oya LB was in terms of administrative units each of which had approximately 150 settler families. As seen in the above table there were altogether 40 such administrative units. Out of the four schemes included in the study Gal Oya LB is the most complex scheme for management. It is complex principally for the following reasons :

- (a) Three ethnic groups Sinhalese, Tamils and Muslims were settled in different parts of the scheme;
- (b) The settlers were drawn from widely different socio-economic and cultural backgrounds which have made it extremely difficult to foster the development of homogeneous communities;
- (c) The length of the main channels, branch channels, distributory and field channels are longer than in nearly all other major irrigation schemes of the island. This compounds the problems of maintenance and water distribution. The main channels are roughly about 36 miles in length while the distributory and field channels are about 300 and 700 miles in length respectively: See (Figure 5) on page 118. Quite apart from the length of the irrigation channels, there are complexities connected with gradient, pipe inlets to individual farms and interference caused in water distribution as a result of the heavy incidence of encroachments. The nature of the soil (largely Non-Calcic Brown) causes severe erosion of channels and adds to the problems of water management in the scheme.

(B) DELIVERY OF WATER

The concept of water rotation as we understand it has already been explained in the discussion of the Minipe Scheme. See: A, page 77A. In the Gal Oya Left

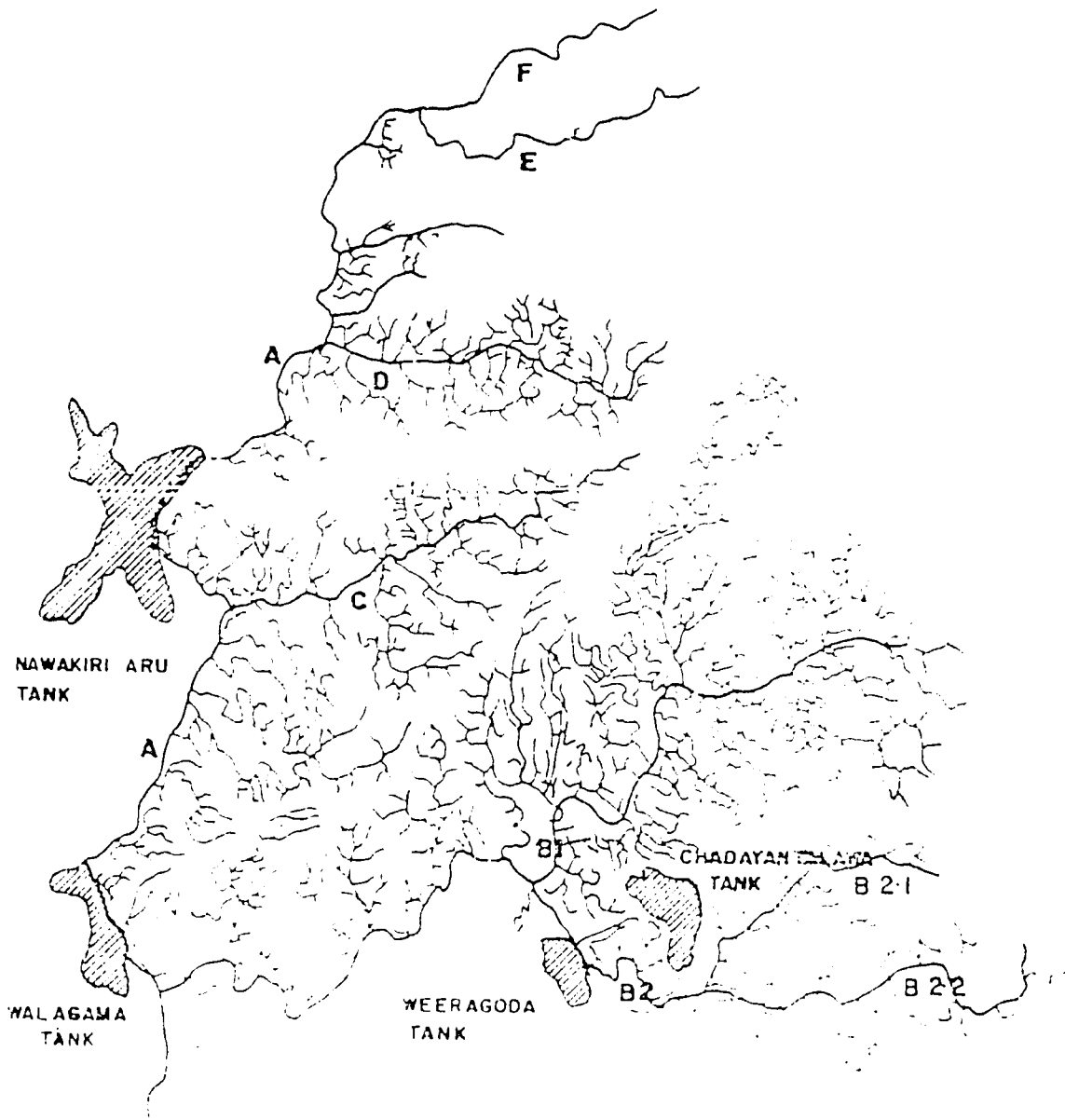
FIGURE 5 : MAP OF THE GAL OYA LEFT BANK



SCALE ONE INCH TO 2.37 MILES



1:150,000



- MAIN CHANNEL
- BRANCH CHANNEL
- DONAGOLLA BRANCH CHANNEL
- SELLAYELI BRANCH CHANNEL
- THUMHANKERMI BRANCH CHANNEL
- THUMHANKERMI BRANCH CHANNEL
- B1 MANDUWA IRA CHANNEL
- B2 MALWATTA IRA CHANNEL
- B2-1 CHADAYANMALAGA IRA CHANNEL
- B2-2 CHADAYANMALAGA IRA CHANNEL

Bank there is a system of intermittent irrigation. According to this system, channel by channel is taken up for irrigation by temporarily closing water to certain areas of the system.

(C) AGE OF SYSTEM AND REHABILITATION

The system is now approximately 34 years old and no major rehabilitation work was carried out until the present rehabilitation programme was started in 1981.

(D) SEASONAL AVAILABILITY OF WATER

The irrigation water for cultivation is drawn from the storage in the major reservoir, Senanayake Samudraya. Since the reservoir fills very rarely, there is often not enough water available for cultivation of the entire LB command. On account of this the tail-end areas are rarely cultivated during the Yala season. During the Maha season, the tail area of the command has a rainfed cultivation with supplementary irrigation water drawn from the reservoir whenever possible. The head-end tracts on the other hand receive irrigation water for cultivation during both seasons. Usually channels are kept open for 5 days followed by a period of non-issue for 5 days. In some cases, particularly when the crop is maturing, the period of continuous issues are reduced to 3 days with a non-issue period of 6 days.

(E) CROPS GROWN

During the Maha season the entire asweddumised area in the LB is cultivated in paddy while in the Yala season only the head and middle-end tracts are cultivated in paddy. Some parts of the tail-end area is cultivated in such other field crops as tobacco and vegetables during the Yala season.

(F) CROPPING INTENSITY

Table 17 on page 121 gives the area cultivated and cropping intensity by season during the period Yala 1981 through Maha 1983/1984. As seen from the table, the cropping intensity in Yala season is very low compared to Maha on account of water scarcity.

As mentioned earlier, the type of farms and number of farms given in Table 18 are at best approximations. Since the first settlers were brought to the project in 1950/51, the real situation on the ground has changed a great deal from the original settlement pattern that was worked out. This has been principally due to large scale encroachments, the magnitude of which can be gauged from the fact that the present asweddumised area dependent on irrigation supplies is said to be more than 60 percent of the area originally intended to be irrigated. As such, reliance on old official records regarding the number of farms served by the irrigation system can be misleading. The true position can only be gauged through a detailed survey of the entire LB. This is an expensive and time consuming effort which has so far not been attempted and may still be worthwhile doing. This is particularly relevant because sizes of holdings, (not only encroachments but also fragmented allotments), and their economic potential, may have wide disparities leading in turn to serious socio-economic problems which can undermine the human potential of the project.

(H) RAINFALL FIGURES

The rainfall figures for the period 1981 to 1984 (September) are given in Table 19 on page 122. It should be noted that these figures are for the Ampara town area and have been used when considering water management issues in the scheme.

T A B L E 17

AREA CULTIVATED AND CROPPING INTENSITY BY

SEASON - GAL OYA LEFT BANK

Season	Area Planted (acres)	Cropping Intensity (%)
1981 Yala	12,800	20.64
1981/82 Maha	61,818	99.7
1982 Yala	12,000	19.35
1982/83 Maha	61,818	99.7
1983 Yala	17,000	27.41
1983/84 Maha	61,818	99.7

- NOTE : 1. $\text{Cropping Intensity} = \frac{\text{area sown}}{\text{Total asweddumised area}} \times 100$
2. The total command area is assumed to be 62,000 acres.
3. Average paddy yield : 53.0 bushels per acre for 1983 Yala

SOURCES : Irrigation Engineer's Office, Ampara

Gal Oya Water Management Project:

Seasonal Report for 1982 Yala Season,

ARTI Occasional Publications, No. 31

(C) NUMBER OF FARMS SERVED

The following table gives very tentative figures of the number of farms served in the LB command:

T A B L E 18

TYPE AND NUMBER OF FARMS

Type of Farms	No. of Farms
Allottees	5,380
Regularised encroachments	4,293
Encroachments not yet regularised	7,044
Total	16,717

- SOURCE : 1. Assistant Government Agent, Thana
2. Assistant Government Agent, Semminthurai

T A B L E 19

RAINFALL FIGURES FOR GAL OYA LEFT BANK (AMPARAI) BY MONTHS (MM)

Year	January	February	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	103.00	220.00	16.75	103.00	34.50	0	97.75	28.0	113.5	232.25	180.5	419.75
1982	2.75	0	87	78.25	117.0	40.25	0	18.25	109.25	231.0	287.0	599.5
1983	68.75	0	0	13.25	17.5	66.75	120.0	13.50	140.5	113.75	119.75	657.25
1984	418.25	803.25	67.25	156.0	24.75	0	121.75	7.75	NA	NA	NA	NA

Source : Irrigation Engineer's Office, Amparai

NA : Not available

81 945 - (Sept - Dec) 3, 10.50
 82 1000 - (Sept - Dec) 3, 07.00
 83 1050 - (Sept - Dec) 3, 12.00

(I) WATER PROBLEMS

The following table gives the details of the 21 farmers interviewed in this Scheme :-

T A B L E 20

TYPE OF HOLDING AND LOCATION OF FARMERS INTERVIEWED

Distributory Channel	No. of Farmers Interviewed	No. and Type of Parcels	Average Size of Paddy Parcel
UB 1	7	(Colony 8	1.25
		(Encroachment 5	1.7
UB 2	1	Colony 2	2.5
UB 7	1	Purana Land 1	3
M 16	5	Colony 8	2.81
M 18	3	(Colony 6	1.75
		(Encroachment 3	2.16
M 31	5	(Colony 6	3.0
		(Encroachment 2	1.5

NOTE: Distributory channels UB 1, 2 and 7 represent the head area, M 16 and M 18 the middle and M 31 the tail-end of the system.

It will be seen from the above table that the farmers interviewed had different types of land parcels. For instance, under distributory channel UB 1, 7 farmers interviewed had between them 13 parcels of paddy land of which 5 were encroachments and 8 were within the framework of the colonisation scheme. A similar situation is seen in regard to the 2 farmers interviewed from distributory channel M 18 and the 5 farmers interviewed from distributory channel M 31. In this respect the farmers interviewed in the Minipe Scheme presented a different picture because every one of them had only one parcel

of land each. But this does not mean that in the Minipe Scheme there are no farmers having more than one parcel of land of different types.

The 22 interviewed farmers had among them 43 parcels of paddy land. Out of these 17 plots had no water problems while the others reported having water problems. In the head-end area water problems were reported mainly in respect of encroachments and farmers using drainage water for cultivation. In the tail-end areas there were water problems irrespective of the type of land i.e. whether purana land*, encroachments or colony land. The type of water problems experienced by the farmers interviewed were irregular supply, inadequacy and total absence of irrigation. In general, more farmers complained of water problems in the Yala than in the Maha season. The farmers attributed the presence of water problems to four main reasons:

- (i) Inadequacy of water for cultivation;
- (ii) Unsatisfactory operation and maintenance work;
- (iii) Technical shortcomings of the conveyance system; and
- (iv) Wasteful use of water by farmers in the head-end area.

Eight farmers complained of defects of the conveyance system, 10 complained of lack of maintenance work and 11 complained of poor water management.

The technical defects of the system identified by farmers were excessive channel bed erosion, accumulation of silt deposits in channels and incorrect placement of pipe inlets in relation to the individual paddy allotments. In the tail-end area farmers complained of not having enough water for cultivation but they could not identify the reasons for this situation.

*Land falling within the old villages

Farmers suggested measures such as reconstruction of field channels, levelling of pipe inlets and construction of cross structures etc. in order to rectify the defects of the system. It must be noted that farmers from already rehabilitated areas also indicated such problems as channel bed scouring, excessive siltation etc. which affect water flow through channels.

By the end of September 1984, farmer organisations (F.CO) were established in the head and middle areas of Gal Oya LB. At present there are 235 farmer organisations at field channel level. There are also 8 distributory channel farmer organisations. A report prepared by the ARTI based on a survey conducted in 1983 stated that farmer organisations had begun to take much of the maintenance responsibilities at the level of the field channels and that there has been a rapid improvement in group work particularly channel clearing by Shramadana after the formation of farmer organisations.

The table below which is reproduced from this report of the ARTI indicates that a substantial percentage of farmers have participated in channel clearing work both on an individual basis and on a group basis, after the commencement of the Gal Oya LB rehabilitation project.

T A B L E 21
CHANNEL CLEARING BY FARMER ORGANISATIONS

Season	Individual	Shramadana	Both
Maha (pre-project)	79	0	21
Yala (pre-project)	76	0	24
Yala 1982	30	21	48
Yala 1982/83	27	27	45
Yala 1983	30	15	55

SOURCE: Gal Oya Water Management Project : Mid Term Impact Assessment (1984), ARTI Research Report

NOTE 1. In the above table the figures under column 'Individual' and 'Shramadana' indicate the percentage of F.CO which stated that channel clearing was carried out by farmers either on an individual or group Shramadana basis.

2. The last column, "Both", indicates the percentage of F.OO which state that channel clearing was carried out both individually and on a Shramadana basis. The figures from Yala 1982 cover the Project period.

Our field investigations indicate that Farmer Organisations (F.OO) have been active in the clearing of channels, management of water rotations and organising meetings in order to improve farmer - officer interaction. Fourteen out of the 22 farmers interviewed were members of farmer organisations. (Note: Farmers from tail-end area were also included in the study even though farmer organisations have yet to be formed in these areas). Almost all the farmers perceived that maintenance activities can be better accomplished if farmer organisations were established. Eleven farmers indicated that farmer organisations should be given a legal basis, while 8 farmers suggested making a payment to the farmer representatives who work purely on a voluntary basis at present. Three farmers also suggested that farmer organisations should be provided with the inputs required for agricultural production. These suggestions have also been made in an ARTI report of 1984 called Gal-Oya Farmer Organisation Programme : Progress and Prospects.

(J) OPERATION OF THE SYSTEM

System operation commences with the holding of the Kanna meeting between water users and the officers. However, farmer attendance at these meetings is extremely poor apparently because the decisions made are not strictly implemented and farmers perceive the Kanna meeting as a forum where officers present decisions already made elsewhere. Only those who have a legal right to land under the scheme are invited to attend the meetings. In reality there are large numbers who are utilising irrigation water and cultivating paddy land even though they have no legal right and this affects the performance of the scheme in a very substantial way. Fourteen farmers indicated that their views and suggestions made at the Kanna meeting are not incorporated in the water distribution schedule. The farmer interviews

indicate that actual water deliveries deviated from a few days to over 10 days from the planned schedule of water issue.

(E) MAINTENANCE OF THE SYSTEM

Ten farmers said that poor maintenance activities were responsible for water problems in their areas. Ten farmers also admitted that poor maintenance was their own fault. Only 2 farmers indicated that the Government had neglected maintenance work at the field channel level. Field channel clearing is usually done once every season in head-end areas where farmer organisations have already been established. In the tail-end areas, however, some of the channels have never been cleared since water is not available. The appropriate officer who was interviewed on the matter agreed with the views expressed by the farmers. With regard to distributory channels, clearing appears to be irregular. Thirteen out of 22 farmers interviewed indicated that channels have not been cleared during the last two years. The situation in respect of the main/branch channels appear to be similar to that of the distributories, although the number of farmer responses in respect of those channels were poor. The officers on the other hand indicated that both the distributory/branch channels are cleared regularly by the Irrigation Department. They, however, agreed that channel maintenance was not regular and was of poor quality on account of improper allocation/lack of maintenance funds. The farmers were of the view that only the secondary growth is cleared whereas the silt deposits are not cleared for years. Although the programme of rehabilitation has enabled the clearing of most of the channels, particularly in the head-end areas of the scheme, excessive siltation is yet to be solved.

When farmers were asked to suggest measures for the improvement of field channel clearing work, almost all of them indicated that it should be their own responsibility. This view is supported by the findings of a representative sample survey in Gal Oya IB conducted by the ARTI in 1983.*

*See Gal Oya Water Management Project : Mid Term Impact Assessment, ARTI. Research Report, 1984.

With regard to clearing distributory and branch/main channels, farmers suggest that it should be undertaken by the Irrigation Department. Twelve farmers indicated that poor water management in the head-end areas had led to water problems in the down stream areas. The poor water management in the head-end areas appear to be mainly due to inappropriate water use practices by the farmers.

(L) FARMERS ORGANISATIONS

(GAL OYA LEFT BANK WATER MANAGEMENT PROJECT)

In 1979 the Government of Sri Lanka prepared a plan for the rehabilitation of LB area in Gal Oya with assistance from the US Agency for International Development (USAID). The project envisaged improvement of water management by physical rehabilitation of the scheme and improved water user participation. Prior to the commencement of this project an aerial survey was conducted to find out the total area under cultivation but a reliable estimate of the extent of land under encroachment and the number of encroachments is not available at present. It is proposed here to provide some details of this project as it is an integral part of the LB rehabilitation programme that is now being carried out and has considerable relevance for the operation and maintenance of the scheme.

Initially 35 young graduates with a rural and farming background who had qualified in the Social Sciences and have a sense of commitment to working in the rural areas were selected for appointment to the project on contract to function as "catalysts". They were designated Institutional Organisers (I.OO). These young men and women were given a four weeks theoretical training on a broad spectrum of subjects such as Agriculture, Management, Human Relations, Sociology, Leadership and Principles of Irrigation Engineering etc.

This training was further backed by training on the job itself. These 35 I.OO were stationed in groups within the pilot project area of 5,000 acres in the head-end parts of the L B. Each group was responsible for about 12 to 32 field channels depending on the number of farmers. On the average each I.O had an area of 170 hectares with 75 to 100 farmers.

These I.OO took up residence in their respective areas and generally lived with the farm families themselves and won their confidence and acclimatised themselves thoroughly to the problems of the area in which they were going to work.

Each I.O was initially required to prepare several profiles pertaining to the areas in which they work. These profiles dealt with such matters as agricultural practices, socio-economic conditions, the condition of the irrigation systems etc. in the area.

After completion of these profiles, they met the farmers individually in their homes and motivated them and organised them for the proper management of the system and to take an active part in all matters pertaining to water management. Having met the farmers individually, each I.O then encouraged the farmers to form themselves into small groups and undertake group work such as clearing field channels, allocating water between the different farms along the field channels etc.

The I.OO also acted as intermediaries between farmers and the relevant field level officials to establish a dialogue and interaction between them. The meetings between these farmer groups and relevant officials were held once a month.

After working informally in this manner for a few months, farmers were gradually encouraged to organise themselves into more structured water user organisations.

This process of institution building is still under way. The basic unit of these water user organisations is the level of the field channel which has on the average about 10 to 15 farmers. These include not only the officially recognised settlers but also those who are illegally utilising irrigation water for cultivation.

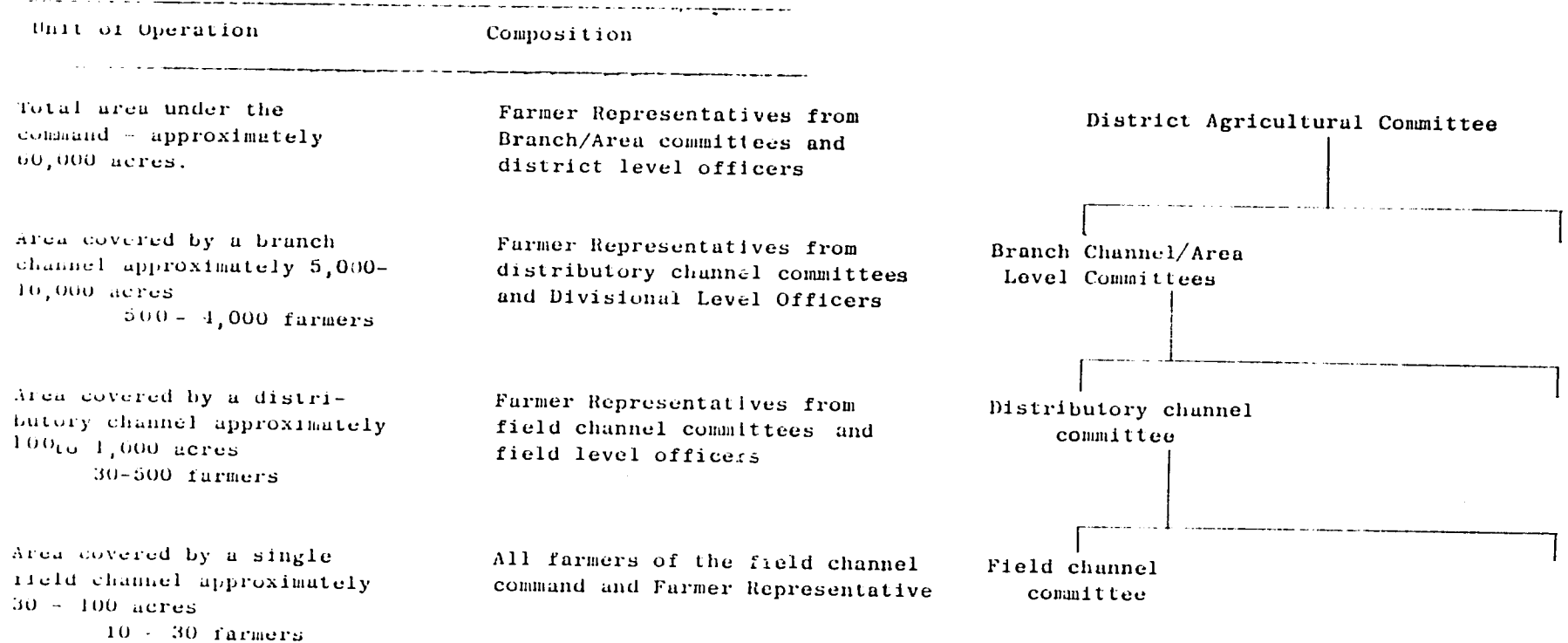
These field channel organisations then chose by consensus their representatives for organising the management of water problems at field channel level and also to represent them at the next level of the organisation which was at the level of the distributory channel. Here again the organisation consisted entirely of farmers. The distributory channel organisations in turn selected farmer representatives to the Area Councils of which there are three.

Each Area Council of Farmers again selected by consensus a farmer to represent the Area Council at meetings of the District Agricultural Committee (DAC) which is an old standing institution established under the Irrigation Ordinance. These meetings are conducted under the chairmanship of the Government Agent. Members of Parliament, and District heads of Government Agencies working in the agricultural sector are ex-officio members of the DAC.

The present structure of the farmer organisations operating at different levels of the Gal Oya LB is given in Chart 4 on page 131.

C H A R T 4

STRUCTURE OF THE FARMER ORGANISATIONS IN GAL OYA LEFT BANK



It is of interest to note that the organisations at the field channel, distributory channel and the Area Council consisted of only farmers and the meetings are conducted under the chairmanship of a farmer representative. The officials are invited to attend meetings as and when required.

The I.CO are the prime source of motivation for farmers for organisational work. The impact of the organisational efforts by the I.CO. in Gal Oya can be briefly summarised as follows:-

- (i) The views of farmers obtained through consultations were incorporated in the design plan;
- (ii) Farm labour was mobilised for construction work;
- (iii) Equitable distribution of water was obtained;
- (iv) Regular channel clearing work was done;
- (v) The farmers participated in decision making on matters directly affecting them; and
- (vi) There was a better channelling of extension advice.

It should, however, be noted that the development of farmer organisations in Gal Oya through I.CO. is still in an experimental stage.

(M) ROLE OF GOVERNMENT

It appears that the Government should continue to play several roles in the management of major irrigation schemes. Among them are the re-erection of broken structures in field channels as well as in distributory/ main channels, maintenance of head works and the conveyance system, release of water from the reservoir, allocation of water to different sections of the command area etc. Such activities may not be taken over by water users because they still lack the special skills and finances required to undertake such work. However, there is room to involve farmers in improving the performance in all these activities.

The farmer interviews identified two major roles that the Government should continue to play. Firstly, the State should endeavour to operate the system in such a way as to provide water to all water users. Secondly in doing so 13 farmers indicated that the Government should be involved in the operation of the system at field channel level. On the other hand 13 farmers suggested that the Government should be involved at system level.

The farmer interviews suggested that the Government should consult water users in the preparation of operational plans to improve the performance of the irrigation system at its various levels. Although 21 farmers felt that they should undertake field channel maintenance work, the majority felt that the Government should continue to effect repairs etc. to the conveyance system in the event farmers alone find it difficult to attend to such work. However, only one farmer suggested a complete take over of all the maintenance activities at field channel level by the Government. This suggestion was probably made on account of the programme to recover a part of the O & M costs from the farmers. Seventeen farmers suggested that the Government should take over the entire responsibility of maintenance work at systems, distributory level, while 3 farmers indicated that

the Government should be involved only with repair/ construction work at distributory channel level.

(N) O & M RECOVERIES

Farmers at present are expected to pay an acreage tax of Rs.6/- to the Agrarian Services Committee and a quarter bushel of paddy for each acre cultivated to the Yaya Niyojitha (Farmer Representative) *. Only 19 farmers had paid the Rs.6/- acreage tax while the quarter bushel of paddy due to the Yaya Niyojitha had generally not been given. Although defaulters can be prosecuted under the Agrarian Services Act, no such action had yet been taken. The acreage tax is said to be utilised for minor repair work of the conveyance system and meeting expenses of Agrarian Service Centres in the area. However, none of the farmers were aware of the purposes for which these funds were collected and utilised. Farmers perceive the acreage tax merely as an imposition which did not provide a service to them. The payment in kind (paddy due to the Yaya Niyojitha) is not given because the farmers feel that he does not perform any service.

With regard to O & M charges, the farmers have no proper understanding of the purpose of this charge. The opinion of two farmers was that it would be used to maintain roads and channels. Some of the farmers questioned the necessity for this collection when farmer organisations maintained the distributory and field channel system regularly. After the background to the proposed O & M charges was explained all head-end farmers expressed their willingness to contribute to the scheme while the tail-end farmers agreed to pay only if the Government provided them with irrigation water. In general, the majority of the farmers believed that they levy should be paid.

* see footnote on page 33

The majority of the farmers also felt that the Government should provide greater support for production by way of agricultural credit and other supporting services, so that farmers will be able to pay the O & M charges through increased productivity.

The encroachers in general were willing to pay O & M rates because they felt that such payments would enhance their claim to receive the land that they were now cultivating without legal permission.

With regard to the amount of fees necessary to maintain the system, the majority of farmers had no suggestions to offer. Some believed that the proposed amount of Rs.100/- per acre per annum was adequate.

The farmers had several suggestions to make in regard to the collection of O & M costs in an equitable manner. They suggested that it should be collected from all types of water users including those practising illegal methods of obtaining water. At present only those farmers whose names appear in the Paddy Lands Register had been requested to pay the costs. They argued that even the farmers using drainage water should be called upon to pay O & M rates. They also requested that O & M rates should be based on actual plot size rather than the plot size shown in the Paddy Lands Register. It was observed that those having less than 4.0 acres of lowlands have been requested to pay a levy of Rs.400/- per plot per annum and vice versa.

There was a request by some farmers that the O & M rate should be levied according to the cropping intensity of a particular plot. It was observed that even those farmers who cultivate only in the Maha season have also been required to pay the full sum of Rs.100/= per acre per annum. Farmers pointed out the advisability of collecting O & M rate in two instalments over two seasons so that the financial inconvenience caused to them could be minimised. Their final suggestion was to entrust the responsibility of collection to a senior Government official, if they feared that the funds collected may be misappropriated by some of the collectors.

As far as the utilisation of O & M funds are concerned, the majority shared the view that it should be done only after farmer consultation. They also suggested employing farmers for maintenance work with payment from O & M funds. At present channel clearing is usually assigned either to contractors or patrol labourers whose work appear to be unsatisfactory.

The farmer interviews indicate clearly that sufficient work has not yet been done to explain to the farmers the true background and purpose of the O & M charge. They were suddenly exposed to a printed post-card sent from the Kachcheri to each farmer whose name appears in the Paddy Lands Register. This has resulted in certain misconceptions with regard to the nature and operation of the fund. Some farmers have even been informally organising themselves to avoid payment.

* Paddy Lands Register

The maintenance of a Register of Paddy Lands within the area of a Cultivation Committee was provided for under the Paddy Lands Act of 1953. This Act stands repealed but the Paddy Lands Registers are available even though the information embodied in them may not be completely accurate.

PART V

THE PARAKRAMA SAMUDRAYA SCHEME

(A) GENERAL

The Parakrama Samudraya Scheme (PSS) popularly known as the "Sea of Parakrama" is the largest and most important irrigation system in the Polonnaruwa District. It also ranks as one of the most prestigious and ambitious undertakings in the history of irrigation in the island. The PSS is associated with the name of one of the most respected Sinhala Kings, Parakramabahu the Great, who is said to have constructed this reservoir in the twelfth century AD (1152 - 1186 AD). It is traditionally claimed that PSS was the largest tank in ancient Sri Lanka. Construction of PSS had been achieved by bringing together a series of small tanks which had existed up to that time. This tank is said to have supported a large rice cultivating population at a time Polonnaruwa was the capital of the Sinhala Kingdom. However, like many other irrigation schemes in the dry zone, the PSS fell into disuse with the collapse of the dry zone civilisation after the thirteenth century. The decay was so great that towards the last century it was difficult to correctly locate the situation of this ancient tank. Later investigations and information gathered from rock inscriptions found on the remaining traces of the old bund established the correct location of the Samudraya.

The work of restoring the reservoir was undertaken during the second world war when D.S. Senanayake was the Minister of Agriculture and Lands. The restoration and settlement work was completed during the post independence period and the tank was formed once again by combining 3 smaller tanks, namely, the Topawewa, Eraruduwewa and Dambuduwewa. The reservoir gets its water supply from Ashitankana, a left bank tributary of Mahaweli Ganga.

With the commissioning of the accelerated Mahaweli diversion project, the Ambanganga flow is augmented by water from the Polgolla diversion via the Bowatenna reservoir. Downstream of Bowatenna, there are two existing anicuts at Elahera and Angamedilla. Between these two weirs the Kaluganga, a right bank tributary, joins the Ambangana and provides an important water supply to the PSS. The drainage and excess flow from Elahera scheme is also received at Angamedilla which again becomes a source of considerable supply. Apart from the sources of water supply discussed above, the PSS has also another catchment area of 28 square miles of its own. The present storage capacity of the reservoir is 109,000 acre feet of water. Water is distributed across the scheme through a channel network comprising about 36 miles of three main channels and 60 miles of distributory channels and about 73 miles of field channels. The actual command area of the scheme is not precisely known. It is said that the three main channels supply water to 18,200 acres while the specification register gives a figure of 19,600 acres. The figure given by the Land Commissioner's Department is 15,916 acres of lowland.

Large scale encroachments have occurred and the total encroached area is believed to be about 5200 acres. For purpose of water issues, a command area of 25,000 acres is considered.

The process of settlement continued from 1942 through 1953. The unit of settlement was the Blocking-Out Divisions derived from the Blocking-Out Plans (BOP). There are 20 such BOP Divisions in the scheme (figure 6 on page 139). Particulars of actual number of farm families settled are not available. According to the Land Commissioner the number of allottees is said to be 3,213. However, we understand

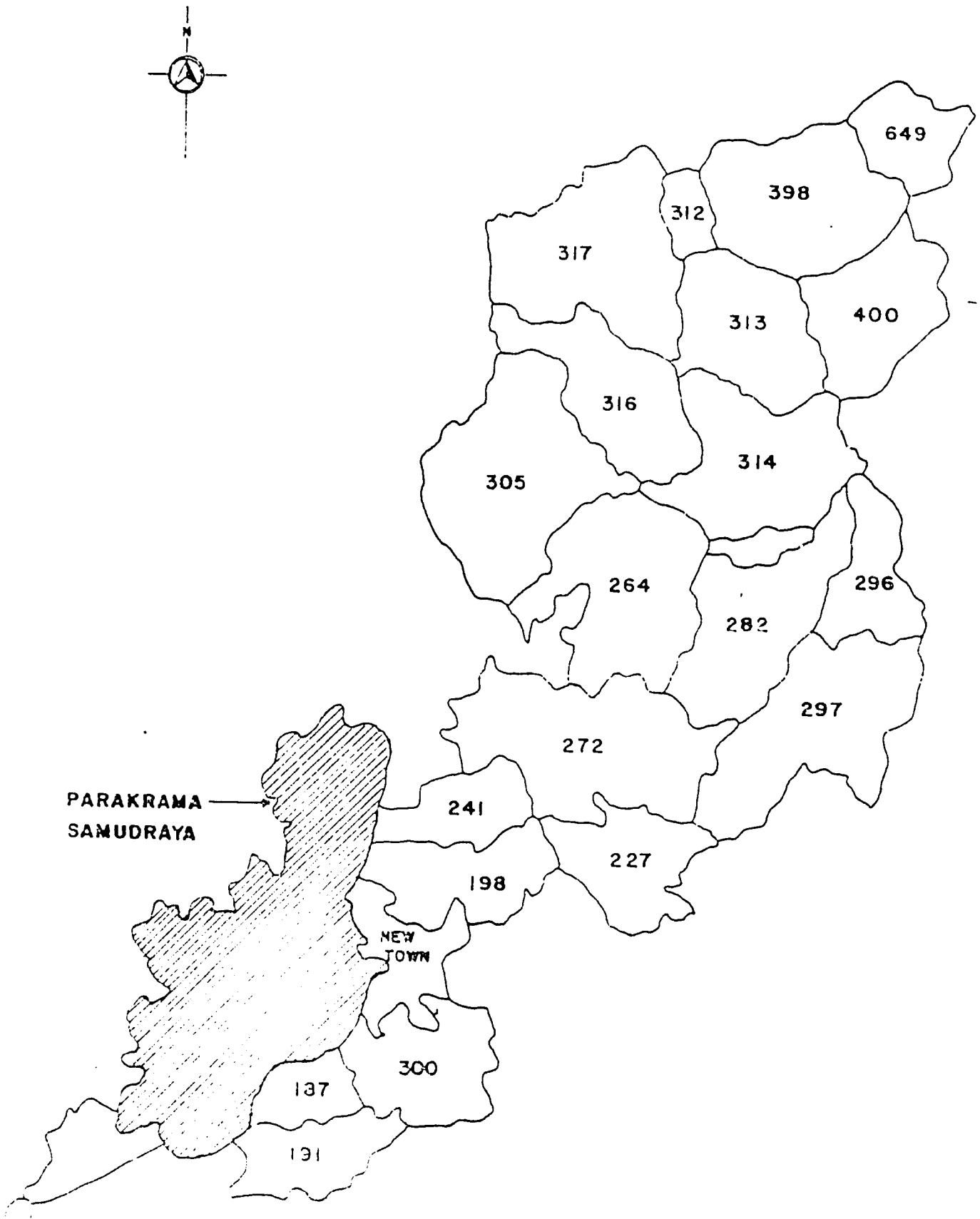


FIGURE 5: PARAKRAMA SAMUDRAYA SCHEME (D. D. P. DIVISIONS)

that the number of allottees is much more than this figure particularly on account of large scale encroachments.

The unit of alienation during the initial years was 5 acres of lowland paddy and 3 acres of highland. In subsequent years the size of allotment was reduced to 3 acres of lowland.

The system has had no serious water problems and full extent cultivation is carried out during the Maha season. In the Yala season however, only the head-end part of the scheme receives water for cultivation.

(B) DELIVERY OF WATER

The system of water delivery throughout the cultivation season is rotational. Usually a continuous issue of water is provided for one month for land preparation work. Thereafter water rotations are adopted. The time interval between rotations depends on the stage of crop growth. At the time of primordial initiation of paddy - this period is usually at 45 days after planting of the crop - a continuous water supply for about two weeks is given.

(C) AGE OF THE SYSTEM & REHABILITATION

As already mentioned, the scheme is over three decades old. The head-end parts of the scheme were settled about three years before the tail-end part. No rehabilitation has been undertaken after the restoration of the scheme in 1948.

(D) SEASONAL AVAILABILITY OF WATER

Reference has already been made to this aspect of the PSS. In the Maha season cultivation of the entire command is by rain water with supplementary irrigation as may be necessary. During the Yala season cultivation is restricted to the head-end area because of inadequate water in the reservoir.

(E) CROPS GROWN

The main crop cultivated across the system during Maha season is lowland paddy. In the Yala season other crops such as chillies, cowpea, and tobacco are cultivated in the lowland.

(F) CROPPING INTENSITY

The table below shows cropping intensity for different seasons. As seen in the table the cropping intensity in the Yala season is less than in the Maha season where it is 100% because the total area is cultivated.

T A B L E 22

CROPPING INTENSITY BY SEASON IN THE PARAKRAMA SAMUDRAYA SCHEME

Season	Extent Cultivated	Cropping Intensity
1980 Yala	19,600	78.4
1980/81 Maha	25,000	100
1981 Yala	19,600	78.4
1981/82 Maha	25,000	100
1984 Yala	19,600	78.4
1982/83 Maha	25,000	100

- Notes: 1. Cropping Intensity = $\frac{\text{Area sown}}{\text{Area Asweddumized}} \times 100$
2. Total Asweddumized area estimated to be 25,000 acres.
3. No reliable yield estimates are available for PSS.
The district figure for Colonnarawa is 75.4 bushels per acre in 1981 Yala and 77 bushels per acre in 1981/82 Maha.

SOURCE : Irrigation Engineer, P.S.S. Colonnarawa.

(G) THE NUMBER OF FARMS SERVED

As already mentioned the actual number of farms in the scheme is not available. The figures of settlement at the time of original alienation of land cannot be considered accurate now because there have been several changes in the pattern of settlement on account of encroachments, fragmentation of holdings consolidation of allotments etc.

(H) RAINFALL FIGURES

Rainfall figures for one station, namely, Angamedilla in the PSS are shown in Table 23 on page 143 . The rainfall follows the typical monsoonal pattern of the dry zone with a high incidence of rainfall during the months of October to December. In some years the time of commencement of rains has shifted to some extent.

Table 23 on page 143 indicates that 1984 has been an exceptional year with regard to the distribution of rainfall. The first three months of the year have registered a very high incidence of rainfall. The rainfall figures across the years however, show a high degree of variability.

(I) WATER PROBLEMS

After the completion of the Polgolla - Bowatenna complex in 1976 the availability of irrigation water in PSS has improved very much. The fact that the scheme has other sources of water namely, the Kaluganga and return flow of Elaheera Project, backed by a catchment of its own, has ensured that there are no serious water problems in the PSS. Because of this unique position a greater part of the command area is cultivated even during the Yala season. In the tail-end parts of the scheme corresponding to BOP Divisions 649, 398 and 400, the major problems are unavailability of water in the Yala, and lack of water in the Maha, season. Unavailability refers to total absence of water while lack of water is a quantity problem. The head-end areas of the scheme had no water problems during either the Maha or Yala seasons.

T A B L E 23

RAINFALL FIGURES FOR PARAKERAMA SAMUDRAYA (ANGAMEDILLA) MM

Year	Jan	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1979	123.97	38.86	61.21	88.40	89.66	0	0.18	41.91	128.62	188.19	393.46	307.78
1980	20.83	0	32.57	333.25	34.04	0	0	0	2.85	195.18	258.85	214.38
1981	147.32	119.64	20.32	104.20	58.67	0	49.03	119.38	93.97	146.56	82.80	291.10
1982	1.27	0	106.16	63.50	160.83	6.35	6.10	4.57	35.31	184.02	264.40	505.21
1983	17.02	0	0	12.5	161.0	5.84	109.98	0	3.56	230.12	111.50	558.81
1984	448.57	578.89	216.15	121.14	31.34	0	38.36	9.65	NA	NA	NA	NA

SOURCE : Irrigation Engineer's Office, Polonnaruwa

NA : Not Available

Farmer interviews indicate that 16 farmers (cut of 20 interviewed) had water problems both in Yala and Maha seasons; but of these farmers, 4 are at the tail-end (BOP 640) and 8 farmers are in the middle reach.

The type of water problems are irregular supplies, inadequacy and total absence of water. In the Maha season, all farmers interviewed in BOP 643 cultivated by rainfall in the Maha season and usually had no cultivation during the Yala season. When asked the reasons for water problems, 4 farmers attributed such problems to waste of water in the head-end area while 4 others indicated that poor maintenance of the system was the cause of their water problems. Only one farmer said that the defects of the conveyance system had led to water problems.

Table 24 below shows the type of holding and location of holding of the farmers interviewed in PSS.

T A B L E 24
TYPE OF HOLDING AND LOCATION OF FARMERS INTERVIEWED IN PSS

Bank	BOP Division	No. of Farmers Interviewed	Type of allotment	Average size of operational holding per settler in acres (1994 Yala)
Left Bank	649	4 ^(a)	Colony	2.12
		1	Encroachment	1.0
Right Bank	305	7 ^(b)	Colony	2.35 ^(c)
		316	8	Colony

(a) - One farmer operated on Ande basis

(b) - Three farmers operated on Ande/Lease basis

(c) - Average for 6 allotments

(J) OPERATION OF THE SYSTEM

As in any other major scheme, the system operation commences with the Kanna Meeting which decides on the cropping calendar, water allocation procedures across the system and the schedule of activities in respect of the forthcoming season. Only 7 interviewed farmers have attended the Kanna Meeting and 2 farmers agreed that there is some kind of farmer consultation with regard to the operation of the system. The majority appear to believe that the decisions are made by officers without proper farmer consultation.

Nine farmers complained that water deliveries had deviated from the decisions made at the Kanna Meetings. In this regard another 9 farmers indicated that the delays were for a few days while 2 are of the opinion that the delays were of about a weeks duration. These two farmers are from the tail-end of the scheme. Farmers bring water problems to officers of the Irrigation Department such as the Jalapalaka, TA and I.E. as well as officers such as Cultivation Officer and Vel Vidane. Four farmers said that the complaints were looked into immediately by the officers concerned while 2 farmers indicated that remedial action was taken within one day. Seven farmers indicated that it took a few days to settle water problems. Five farmers from the tail-end area indicated that their grievances with regard to water problems were never settled.

When asked to suggest measures in order to improve the pattern of water distribution, four farmers were satisfied with the methods adopted at present. Eight of them suggested a change in the rotational system towards a continuous flow system while another 3 urged the necessity to install field channel gates. The number of farmers suggesting that gates should be installed at distributory channels is seven. The officers concerned indicated that arrangements were being made to install wooden gates wherever necessary. The officers are aware that wooden gates are not

leak-proof and that they do not last long like gates made out of cast iron. However, cast iron gates are much more expensive and the limited funds available for O & M work does not permit the installation of gates made out of cast iron.

(K) MAINTENANCE OF SYSTEM

Maintenance of the system is carried out by the Irrigation Department through the given maintenance allocation. The state of maintenance appears to be unsatisfactory. Eighteen farmers indicated that maintenance was poor. As regards the reasons for the poor state of maintenance, 13 farmers said that it was due to the negligence of the Government while 5 accepted that it was due to the farmers' own negligence. Farmers are aware that channel clearing had been neglected both by the Irrigation Department and by the farmers themselves. Six farmers said that field channel clearing was done once every season while 2 said that clearing was done only once a year. Three farmers said that field channel clearing was not done recently while 6 farmers said that channels had never been cleared. Regarding the maintenance of distributory channels, 15 farmers said that the Department has neglected clearing them. Farmers complained that only the secondary growth along distributory channels was being cleared once a year by the Irrigation Department whereas desilting had not been undertaken for many years.

The officers indicated that the maintenance funds were used mainly to support a permanent labour force of about 60 persons. Therefore funds available for maintenance work were very limited.

When farmers were asked to make suggestions in order to improve maintenance work, 11 interviewed farmers said that the farmers themselves should undertake

that work while 2 farmers suggested that it should be undertaken by the Government.

Ten farmers suggested that maintenance of distributory branch channels should be done by the Government while 9 indicated that farmers should undertake this work with supervision by the Irrigation Department.

(L) FARMER ORGANISATIONS

There have been no farmer organisations for water management in the PSS. Nevertheless, an attempt has been made by some officers of the Irrigation Department to develop farmer organisations in the scheme. At the initial stage farmers involved in organisational work have asked for legal recognition of their organisation. The officers could not meet this request and as a result farmers became less interested and the farmer groups have disintegrated. However, the majority of farmers felt that water management can be better accomplished if farmers worked together. They shared the view that getting together was an effective means of facilitating successful programmes of group work. Nineteen farmers agreed that a farmer should be appointed as the leader of the farmer organisation.

(M) THE ROLE OF GOVERNMENT

Farmer interviews surface two principle roles to be performed by the Government. Firstly, they identified that the Government should be responsible for some of the maintenance work. Only two farmers suggested that the maintenance of field channels should be undertaken by the farmers under official supervision. Regarding maintenance at systems level, 10 farmers said that it should be undertaken by the Government. Secondly, they suggested the necessity for the Government to be involved in the operation of the distributory branch channels. Nine farmers said that

operation at the field channel level should be undertaken by the Government. With regard to operation at systems level, 17 farmers indicated that it should be undertaken by the Government.

(N) O & M RECOVERIES

As in the three other schemes, farmers in the PSS have to pay the acreage tax of Rs. 6/- to the Agrarian Services Committee of the area. All the farmers interviewed are not aware of the purpose for which the tax is levied. A certain amount of publicity has been done by the officers regarding O & M recoveries. This was first discussed at the Kanna Meeting and later the I.E. has had discussions with small groups of farmers in several locations of the scheme. In spite of this publicity, the officers feel that the majority of farmers will not make the payment because the amount appears to be too high. Officers also expressed the view that O & M collections may prove difficult on account of a large number of farmers operating their holdings on Ande, mortgage and lease basis. The majority of the farmers interviewed, however, showed willingness to pay the cost of O & M proposed by the Government.

The farmers had several suggestions to make with regard to O & M recoveries. Firstly, they suggested that a senior Government Officer should be entrusted with the responsibility of collection to safeguard against possible misappropriation of funds.

Secondly, 19 farmers emphasised that the rate should be based on the actual extent of land held by the farmer. At present some farmers cultivate areas larger than that shown in the Paddy Lands Register and vice versa.

Thirdly, the majority of farmers suggested that the rate should be recovered from all the water users including the beneficiaries of drainage water. In this regard 17 farmers said that it should be recovered from defaulters through legal action while 3 suggested that the defaulters should be deprived of irrigation water until they pay up.

Fourthly, 17 farmers expected more support from the Government in the form of subsidised inputs, which would enhance the paying capacity of the farmers.

Finally, 12 farmers suggested that they should be permitted to undertake channel clearing work on payment through C. I. R. funds.

PART VI

GENERAL OBSERVATIONS ON FARMER INTERVIEWS

As stated in the preamble to this Section of the study, the 94 farmers interviewed were not intended to be a representative sample of the settlers in the four selected irrigation systems. The objective was to interview as many farmers as possible and obtain their reactions to some of the major issues with which this study is concerned. It should therefore be noted that the results of the farmer survey are not amenable to generalised conclusions. Hence a synthesis of the findings of the survey per se would not yield useful results. However, because the intimate knowledge the study team has had over the systems under consideration, it has been possible to draw some tentative conclusions in respect of the main issues surfaced in this study. We make no attempt to calculate percentages, means, standard deviations etc. which are the normal tools applied in presenting comparisons of the results of social surveys.

The guidelines issued to the Field Investigators for farmer interviews of this study are shown in Annexe 7 of this report. We have selected some important issues and presented them as Annexe 11 incorporating 26 tables.

These tables cover the following matters:

- A. Classification of sources of water supply by allotments;
- B. Number of farmers with water problems by scheme;
- C. Type of water problems during Yala season;
- D. Type of water problems during Maha season;
- E. Reasons for water problems;
- F. Farmer response in terms of defects of the conveyance system;
- G. Farmer reasons for poor channel maintenance work;
- H. Type of persons contacted by farmers when confronted with water problems;

- I. Time period taken to remedy water problems;
- J. Farmer suggestions to improve channel maintenance;
- K. Farmer responses with regard to previous channel clearing work;
- L. Farmer attendance and participation at Kanna meetings;
- M. Conformity of Kanna meeting decisions with actual deliveries;
- N. Number of days delay between actual water delivery and Kanna meeting decisions;
- O. Farmer satisfaction with the method of operation of the system;
- P. Farmer suggestions to improve water distribution at field channel level;
- Q. Farmer suggestions to improve water distribution at distributory channel level;
- R. Farmer attitudes towards officers;
- S. Activities accomplished by farmer organisations during the last two seasons;
- T. Farmer attitudes towards farmer organisations;
- U. Farmer suggestions regarding Government's responsibility in respect of operation of the Scheme;
- V. Farmer suggestions regarding Government's responsibility in respect of maintenance work;
- W. Type of taxes and utilisation of funds;
- X. Farmer attitudes towards O & M levy;
- Y. Farmer suggestions to recover O & M levy from defaulters; and
- Z. Farmer suggestions regarding the utilisation of O & M funds.

In addition to the tabulated data presented in the 26 tables, we have the following general observations to offer :

(1) Information on different Systems

We have observed that adequate data are not available in respect of these schemes except in the case of System H. This is a serious constraint to the proper management of these Schemes. Basic information on such matters as the number of farm families actually served with irrigation water, accurate acreages under cultivation by crops, the extent under rainfed cultivation in each scheme is not available. In Mahaweli system H, however, sufficient emphasis has been placed on collecting important data of the kind referred to earlier. We think that action should be taken to collect this basic information in respect of all major irrigation systems in the Island.

(2) Type of water supply

Although the four schemes studied are classified as major irrigation systems, the actual position is that there are different sources of water supply in each of the schemes. Apart from irrigation water, two other sources of water supply for farmers in the four schemes are drainage water and rain. Even in the Mahaweli system H which is of recent origin, some farmers depend on rain and/or drainage water for agricultural production. We have reason to believe that of the four schemes studied the most complex scheme in terms of water supply is the Gal Oya LB. The number of individual paddy allotments fed by drainage water in this scheme is the highest of the four schemes. This has been the result of large scale encroachments in the Gal Oya LB which have no legal source of water supply. Table 25 on page 153 gives the number of paddy allotments by source of water supply in the four schemes:

TABLE 25
NUMBER OF PADDY ALLOTMENTS BY SOURCE OF WATER SUPPLY

Scheme	Irrigation Water	Drainage Water	Rainfed
PSS	20	2	1
Minipe	18	1	1
Gal Oya	33	9	1
System H	33	2	0

Source :Farmer Interviews

(3) Water Problems

Water problems have emerged in almost all schemes studied. The type of water problems range from total absence of water to inadequate and unreliable supplies. We observed that the cause for these problems, as reported by farmers, are similar across the four schemes. The most common problems are lack of water in the reservoir, waste of water by head-end farmers, poor channel maintenance and defects of the conveyance system. A significant feature is that the number of farmers reporting water problems are lower in the Maha season than in the Yala season. This observation confirms the fact that rainfall appears to be a major source of water supply even in major irrigation schemes.

Farmers have access to officers functioning at different levels of the system. The three schemes viz. Gal Oya LB, Minipe and PSS have similar institutional structures which are different from that of System H.

(4) Maintenance Work

In schemes where farmer organisations have been established, there appears to be greater responsiveness from the farmers in clearing irrigation channels, adopting water rotation and undertaking channel maintenance work. The table below shows farmer suggestions for the clearing of irrigation channels in the different schemes:

TABLE 26
FARMER SUGGESTIONS FOR CHANNEL CLEARING (NUMBER OF FARMERS REPORTED)

Scheme	Field Channel			Distributory Channel		
	Officers	Farmers	No Response	Officers	Farmers	No Response
Minipe	2	17	1	1	17	2
System H	5	20	7	3	22	7
Gal Oya LB	0	14	8	0	17	5
P S S	2	18	0	10	9	1

Source : Farmer interviews

Although in System H there is a programme for securing farmer participation in channel clearing work, it is seen that some farmers yet believe that officers of the Mahaweli Authority should take care of even field channel clearing work. This may be because farmer organisations in System H are not functioning properly as yet. Farmers in Gal Oya LB and Minipe have indicated that farmer organisations have been active in channel clearing, adopting water rotations and holding meetings to advise farmers on water management and agricultural work. Farmers in PSS and in System H have not reported undertaking work of a similar nature.

(5) System Operation

The Kanna meeting is being held regularly in all the schemes prior to the commencement of the cultivation season. However, it is seen that farmer attendance at this meeting is poor in three of the four schemes studied. In PSS, Gal Oya LB and Minipe Schemes the Kanna meeting as a vehicle of decision making appears to have failed in that it has not been able to produce effective solutions to farmer problems. We also observe that the decisions taken by the Kanna meeting are not in conformity with the actual timing of operations. In System H, however, the fact that the area covered by a Kanna meeting is relatively small and the Unit Manager is known to almost all the farmers

in the area, the meeting is well attended by farmers. It is also seen that in System H the majority of farmers interviewed reported that actual water deliveries are in conformity with the decisions taken by the Kanna meeting.

(6) Tax Collections

The majority of farmers have paid the acreage tax in all the schemes studied. However, very few had a knowledge of what in fact happens to the collected funds. The situation is similar in all four schemes. In the Minipe scheme farmers are expected to pay a tax to the temple. The farmers in all four schemes are also united in their thinking about the O & M levy. The majority of farmers in each scheme are agreeable to pay the O & M levy except those who do not have a dependable source of water supply. The farmer responses are also consistent across the schemes in their suggestion that farmers should be allowed to attend to repair and maintenance work on payment through O & M funds. The number of farmers who are of this persuasion is higher in System H because they appear to be more aware of the poor quality of maintenance and repair work carried out by contractors who are usually entrusted with such work.

SECTION SIX

6.0 FARMER ORGANISATIONS

6.01 We are inclined to use the expression "Farmer Organisations" rather than "Water User Organisations/Associations" because farmer organisations can cover a wider spectrum of activities in irrigation systems. While undoubtedly water use and water management is a critical input, we think that properly functioning farmer organisations can undertake a wide range of responsibilities in several areas of economic and social development within a scheme.

6.02 The present policy of the Government towards establishing farmer organisations has been stated in the following terms in Resource Development 1978 to 1982 issued by the Ministry of Lands and Land Development in March 1983:

"The system of management practised in the major irrigation systems, which is more input oriented is by no means a satisfactory method for mobilising the resource available in those systems. The basic concept underlying the effort to involve the farmers in sharing management responsibilities is that farmers when organised can allocate water and distribute it efficiently and equitably than any other organisation Organisation built on sound concepts and approaches for farmer participation have proved to be able to provide an institutional forum for the farmer to relate and reconcile their individual objectives and interest with those of a collective group whose interests are primarily addressed to obtain an adequate supply of water reliably and predictably."

Thus farmer management of water at the tertiary level of the irrigation system offer two important advantages over management by government agencies. Firstly, farmer management makes the system more responsive to farmer needs and this increases productivity. Secondly, farmer management takes some of the responsibilities from the Irrigation Department and other agencies thus reducing direct government expenditure on irrigation management": (p. 41 and 42)

6.03 The traditional and time honoured approach to the management and development of major irrigation systems has been through the Government bureaucracy. This included largely the officers of the Irrigation Department at the centre, district and project level and officials of several other Government Departments such as the Land Commissioner's Department, Agriculture Department, Survey Department, Land Development Department, the Co-operative Department and officers of the provincial administration such as the Government Agents and Assistant Government Agents.

6.04 If we may rather simplify matters for purposes of presentation, the traditional approach to irrigation management in a major system through Government officials is conditioned by certain attitudes and assumptions which are sometimes made explicit and sometimes have to be inferred. These assumptions and attitudes can be roughly summarised as follows:

- (a) The officials managing the irrigation system know what is best for the farmers because they have qualifications and experience in irrigation matters.
- (b) An important consideration for the officials was the amount of water released to the main channels and the distributory channels at a given point of time or during a given period of time. They are not greatly concerned with

the question whether the water had reached the farmer's fields at the time he needed it and in the quantities that were required.

- (c) Little or no attention was paid by the officials in charge of agriculture and irrigation to advise and train farmers on water management and land shaping within his individual allotment.
- (d) The officials complain of excessive water use by farmers. Very often they were right. But very little attempt was made to adopt necessary remedial measures.
- (e) Officials complain of wilful damage by farmers to irrigation structures specially during times of water scarcity.
- (f) There was also considerable damage to irrigation bunds, channels and structures by cattle belonging to farmers. Here again the absence of proper grazing grounds or a system of stall feeding was not given due recognition.
- (g) The official attitude generally was that they were called upon to receive representations and complaints from farmers even on most trivial grounds.
- (h) The officials were not accountable to the farmers for the manner in which they operated and managed the irrigation system.
- (i) Government was in any case paying for everything including the construction, rehabilitation and maintenance of the irrigation system and the water was being provided free of charge. As such the farmers were not expected to complain too much.

- (j) The officials did not consider it necessary to consult farmers because they felt that the farmers did not have any special knowledge of irrigation designs, structures, etc.
- (k) The officials felt that the farmers complicated matters by failing to observe the calendar of operations agreed upon at the Kanna meetings before the commencement of each season and that delayed/staggered cultivation often necessitated additional issues of water beyond the agreed dead line. This entailed among other things that there was no "Close Season" when the channels could be closed for undertaking maintenance work.

6.05 As opposed to this traditional official attitude, the attitude of the farmers could also be roughly summarised as follows.

- (a) The water supply for cultivation was very often unreliable. He did not receive water at the right time and in the right quantities for maturing his crops,
- (b) The farmers feel that many officials are indifferent in the performance of their duties.
- (c) The farmers feel that their views with regard to the functioning of the system were not sought for and were generally disregarded.
- (d) The farmers attribute the defects in the irrigation system to poor design, poor maintenance and inferior quality of the work done by the department and contractors engaged by the Government.

- (e) The farmers had no understanding or interest in the subject of irrigation costs because the water was being provided free. They therefore did not think that lack of funds was a valid enough reason for not carrying out proper maintenance work.

6.06 This simplified presentation of the divergent view points of the officials and the farmers indicates basically a situation of mutual distrust some times leading to confrontation.

6.07 It is now declared policy of the Ministry of Lands and Land Development and indeed the Government that this traditional situation should be changed if the full potential of major irrigation systems are to be developed. The key factor in such development is basically the management of water for optimum productivity. It is in this context that the Government has made a commitment to the development of farmer organisations in the major irrigation systems. The basic thinking of the Government in regard to this matter can be broadly identified as the following:

- (a) The beneficiaries of irrigation schemes are the farmers themselves and unless they are brought into the framework of decision making and programme implementation at suitable levels, it would not be possible to proceed with the all-sided development of these schemes. Policy makers are now gradually realising that the management of irrigation and settlement schemes exclusively through the channels of the bureaucracy had failed in several major schemes such as Gal Oya Project and later the River Valleys Development Board. Even an exceptionally good effort in improving agricultural

productivity in the major irrigation schemes through Special Projects launched in the 1960s had reached a point of exhaustion after some time. The Special Project approach was a well intended and imaginative effort at organising the factors of production within the major irrigation schemes. But they basically left the farmer out of the equation,

- (b) That farmers must be entrusted with certain responsibilities of decision making and management. They have skills and experience which may not be recognised within the framework of formal education but can be invaluable in changing the environment in which they work,
- (c) Farmer Organisations could provide institutional avenues for a continuing interaction between the farmers and the officials. It is a dialogue in which both sides stand to benefit.
- (d) The development of farmers' associations can lead to leadership structures evolving within the farming community itself. This will enable the farmers themselves to organise the human and material resources within their immediate environment more efficiently and at least cost to the Government.

6.08 The above identification of the broad objectives of Government policy would indicate that the Government is not thinking in narrow terms of collecting water charges or O & M costs through these organisations. In fact no farmer organisations are at present involved in collection of fees. The objective as stated earlier is to change old traditions and create a new environment for farmer participation in a broad spectrum of activities including water management and O & M in each scheme.

6.09 In Section Five we have dealt with the farmer organisations where they exist in the four selected schemes. Mention should also be made of another irrigation scheme, (which does not fall within the scope of this study) namely, Kimbulwana Oya which is a medium scale tank with a command area of about 1400 acres of paddy land situated in the Kurunegala District where innovative attempts are being made by field officials of the Irrigation Department to develop farmer organisations. It is encouraging to note that the experiments that are being tried out in Kimbulwana Oya are not being entirely guided by the Gal Oya Water Management Experiment because there are some important dissimilarities.

6.10 This is as it should be, because farmer organisations must not be straight-jacketed by directives from the centre laying down an organisation structure throughout the island. In fact there are valuable lessons to be learnt from the mistakes made in the past when decisions were taken at the centre to establish multipurpose Co-operative societies throughout the island in 1953, to appoint Cultivation Committees within the legal framework of the Paddy Lands Act of 1958 and again Agricultural Productivity Committees under the Agricultural Productivity Law of 1972.

6.11 The lesson that has to be learnt is that within a broad legal or policy framework, farmer organisations should have the freedom to develop on individual lines which may be applicable to the environment in which they are going to function.

6.12 The formation of farmer organisations in the major irrigation schemes is still in its infancy. The most meaningful progress has so far been made in the Gal Oya Water Management Project which commenced in 1979. The Minipe Water Management Experiment appears to have lost some of the momentum which it had generated earlier. The basic position however is that there is a policy commitment

towards building these organisations. But the realisation of this objective must necessarily take a substantial period of time.

6.13 In considering farmer organisations, we have observed somewhat different policies in the Mahaweli Project Area. The approach here seems to be an integrated management service provided through official channels. There is a system of turn-out farmers which consists of about 15 to 20 farmers in each group where officials discuss matters pertaining to the area in which the farmers work. But there has been no effort so far to promote farmer organisations for participation in decision making. It is perhaps understandable that in the present status of development within the Mahaweli Project, including Area H, there has to be a high degree of Government intervention. But the question is how long such intensive Government intervention should continue and whether sooner or later some of the responsibilities should not be passed on to the farmers themselves.

POSTSCRIPT

After we finalised the preparation of this Report, we learned that the Irrigation Management Division of the Ministry of Lands and Land Development has issued a Hand Book on Farmer Organisations in Major Irrigation Schemes, February 1985.

We regret that we have not been able to examine the contents of this document and incorporate our comments in this report.

Nevertheless we consider that the issue of this Handbook is encouraging evidence of the commitment of the Government and specifically the Ministry of Land and Land Development in fostering Farmer Organisations in the overall development of Major Irrigation Systems.

SECTION SEVEN

7.0 OPERATION AND MAINTENANCE RECOVERIES:
SOME LEGAL IMPLICATIONS

(A) OWNERSHIP AND ITS LEGAL BASIS

7.01 The Law of property in Sri Lanka is the Roman Dutch Law (the residuary common law of the land) as modified by statute and judicial decisions and subject to a limited extent to the special rules recognized by the personal laws such as the Kandyan Law, Thesawalamai and Muslim Law which are applicable only to persons governed by them. These personal laws do not have any bearing on the subject matter of this Study and are therefore not specifically considered herein.

7.02 The rights involved in the concept of ownership, (the dominium of Roman Dutch Law), have been dealt with by the Privy Council in Attorney General V. Herath, (1960) 62 New Law Reports (NLR), page 145. The Privy Council accepted the definition given by Lee* that :

"Dominion or Ownership is the relation protected by law in which a man stands to a thing which he may: (a) possess,
(b) use and enjoy
(c) alienate".

The Privy Council quoted with approval the comment by Maasdorp **

* An Introduction to Roman Dutch Law , 5th Ed. p.121

** Institutes of Cape Law, Volume 2, p. 27

"The rights of an owner are comprised under three heads, namely, (1) the right of possession and the right to recover possession; (2) the right of use and enjoyment; and (3) the right of disposition".

Maasdorp has also stated therein that :

"These three factors are all essential to the idea of ownership but need not all be present in an equal degree at one and the same time".

In the Privy Council case cited, their Lordships concluded that :

"The possession of the rights mentioned are generally sufficient to constitute a person an owner under the law of Ceylon". *

7.03 The questions posed regarding ownership have to be considered in relation to the concept of ownership as stated in the preceding paragraph and to the Roman Dutch Law principle of "Accession" as a primary mode of acquisition of property recognized by it. This principle has been referred to by Professor G.L. Peiris in his work entitled "The Law of Property in Sri Lanka, Volume 1", at page 29, in the following terms :

"as far as land was concerned, it was an absolute principle that structures and plantations acceded to the soil and enured to the benefit of the owner of the soil. The rule that whatever is built or cultivated on land becomes part of the land was received without modification in Roman Dutch Law and applied equally to the case of a person building on his land with the

materials of another and to that of a person building on another's land with his own materials". (Emphasis Added)

7.04 Individual ownership rights have, however, been considerably restricted both by statute and, to a lesser extent, by judicially recognised custom. Accordingly specific rights of property vest in, are acquired by, or are granted to, persons other than the owners. But, according to Lee* "the residuary right, however reduced, is a right of ownership (dominium - jus in re propria** the specific rights, however extended, are rights inferior to ownership (jura in re aliena)".***

7.05 An important legislative enactment relating to the law of property in Sri Lanka is the Crown Lands Ordinance, (Legislative Enactments of Ceylon 1956, cap. 454), (C.L.O), of which the sections most relevant to this study are Sections 72 and 73 which read as follows :

"Right of Crown^o in waters of public lakes and Streams.

72. The right to the use and flow and to the management and control of the water in any public lake or public stream shall, subject to the restrictions hereinafter mentioned, vest in the Crown. And in the exercise of that right, the Crown, by its officers and servants, may enter any land and take such measures as may be thought fit or as may be prescribed for the conservation and supply of such water as aforesaid and its more equal distribution and beneficial use and its protection from pollution, and for preventing the unauthorised obstruction of public streams".

* op. cit. at page 122

** Right over one's own property

*** Rights over the property of another

o The rights of the Crown now vest in the State.

"Restriction to right of the Crown

73. The right vested in the Crown by section 72 shall be subject to the following restrictions:

- (1) it shall not be exercised in contravention of any right conferred on and lawfully exercisable by any person, company, corporation, board, or local authority by or under any written law other than this Ordinance or of any licence granted by the Crown:
- (2) it shall be subject to the rights of the occupiers of land on the banks of public lakes and public streams as hereinafter defined;
- (3) it shall be subject to the rights of the holders of permits issued under this Part of this Ordinance."

These sections should be read in conjunction with Section 71, i.e.

"Tanks may be declared as lakes

71. The Minister may, by Notification published in the Gazette, declare that any tank or reservoir described in that Notification shall be a lake for the purposes of this Part notwithstanding that such tank or reservoir is an artificial work; and, upon the publication of any such Notification any reference in this Part to a lake shall be deemed to include a reference to the tank or reservoir described in that Notification".

and the definitions of the following terms as appearing in Section 70, i.e.

"Lake" includes a lagoon, swamp or other collection of still water, whether permanent or temporary, not being water contained in an artificial work;

"Private Lake" means a lake which is situated entirely within the boundaries of any private land;

"Public Lake" means any lake other than a private lake; and

"Work" includes any dam, lock, tank, reservoir, weir, flume, race, channel (whether an artificial channel or a natural channel artificially improved), and any cutting, tunnel, pipe, sewer, and any machinery and appliances".

7.06 Inquiries made at the Ministry of Lands and Land Development and the Irrigation Department reveal that no tanks or reservoirs have, at least in recent times, been declared as lakes under the provisions of Section 71 of the C.L.O. The effect of this omission, is that the State cannot rely on the wide statutory provisions of Section 72 of the C.L.O. as the legal basis for "the right to the use of flow and to the management and control of the water". The legal basis for the exercise by the State of this right , in respect of any irrigation works not so declared as lakes, would therefore be (a) the legislative enactments, such as the Waste Lands Ordinance, the Encroachments upon Crown Lands Ordinance (L.E.C., 1956*, Cap. 465) the Land Settlement Ordinance (L.E.C., 1956, Cap. 463), in terms of which certain lands were presumed to be the property of the Crown (now the State):

(b) the statutes such as the Land Acquisition Ordinance , 1876 and the Land Acquisition Act (L.E.C. 1956, Cap. 460) under which the land/part thereof has been acquired by the State; and (c) the Roman Dutch law in respect of the works built on such lands which would accede to the State: (para 7.03).

* L.E.C. 1956 - Legislative Enactments of Ceylon, 1956.

7.07 In connection with ancient irrigation customs and the Irrigation Ordinance it would be pertinent to remark, in the wording of the My/L. & L. D. publication entitled "Resource Development: 1978-1982", that:

"The first Irrigation Ordinance was enacted in 1856 during the time of the British to codify and remedy the non-observance of the ancient irrigation customs and practices which were considered highly beneficial for irrigated agriculture. This Act was called The Ordinance to Facilitate Revival and the Enforcement of Ancient Customs Regarding Irrigation and the Cultivation of Paddy". (At p. 19) (Emphasis Added)

7.08 The main provisions of the Irrigation Ordinance at present in force (L.E.C., 1956: Cap. 453), (I.O), that have a bearing on the question of the rights subsumed in the concept of ownership (in the sense already stated) are those relating to the rights of the Cultivation Meeting which is empowered inter alia to decide, before the commencement of the cultivation season, and subject to the approval of the Government Agent, such matters pertaining to cultivation as :

- (1) the dates of the commencement of cultivation operations including ploughing, sowing and reaping and
- (2) arrangements for the annual maintenance of irrigation works and any other matters relating to the execution of rules made under sub-sections (1) and (2). (I.O. Section 11 (5) (c)).

and the regulations made in terms of Section 64 and the rules made in terms of Section 11 .

7.09 Other written provisions that have a bearing on this question are the conditions regarding irrigable land (a) in the Permits issued under section 19 (2) of the Land Development Ordinance (L.E.C. 1956, Cap. 464), (L.D.O) which reads :

"If the land or any part thereof is irrigable or becomes irrigable hereafter, by any irrigation work already constructed, in the course of construction, or to be constructed hereafter, the permit-holder shall comply in respect of the irrigable area with the provisions of the Irrigation Ordinance (Chapter 453) and any rules framed thereunder:" (Item 16 in the Schedule to Permits issued under the L.D.O.).

(b) In the Grants issued under Section 19 (4) of the Land Development Ordinance which reads:

"If the holding or any part of it is irrigable or becomes irrigable hereafter by any irrigation work already constructed, in the course of construction or to be constructed hereafter, the owner shall comply, in respect of the irrigable area, with the provisions of the Irrigation Ordinance (Chapter 453) and any rules framed thereunder": (Item 5 in Second Schedule to Grants issued under the L.D.O.)

7.10 The above provision would of course be only applicable to the rights and obligations in the statutory contract between the State on the one hand and allottees/grantees under the L.D.O. on the other. The terms thereof impose on such allottees/grantees the obligation to "comply, in respect of the irrigable area, with the provisions of the Irrigation Ordinance (Chapter 453) and any rules framed thereunder". The permits/grants issued at present under the L.D.O. do not expressly confer any

water rights even in respect of irrigable lands.

It may, however, be urged that water rights in relation to instruments of land disposition relating to lands specifically described as irrigable or included in the specification of lands benefited/to be benefited by an irrigation work could be deemed to be imported into these statutory contracts as an implied term.

7.11 Professor C.G. Weeramantry makes the following comments on "Terms Implied by Custom" * viz :

"An invariable, certain and general usage or custom of any particular trade or place is impliedly imported into any contract relating to a matter to which such usage or custom has reference in the absence of any express stipulation inconsistent with or excluding such usage or custom. The incorporation of such usage or custom rests on the presumption that "the parties did not mean to express in writing the whole of the contract by which they intended to be bound, but to contract with reference to those known usages".

7.12 The question of ownership of system facilities and of the water has to be considered in the light of the observations made in the preceding paragraphs on the law relating to property in general and to ownership in particular. It would be unrealistic, however, to consider "system facilities" in isolation from the water they are designed to conserve and make available for the purposes for which the particular system has been installed. This distinction is an artificial one in so far as irrigation systems have no meaning and validity outside the purpose/s of their installation. A building can be put to different uses subject only to the constraints of design, size and other physical characteristics but a system for the conservation

* Law of Contracts, Vol. II, Section 597

of water only relates to the purposes for which the water is intended to be used be it irrigation, domestic requirements, power generation, flood protection or soil conservation, or concurrently for more than one such purpose.

7.13 Subject to this qualification one could say that the State owns the system facilities i.e. the physical features such as bund, headwork, sluices, channels, drainage structures, etc., in as much as all major irrigation systems have been installed on lands owned by the State. But State ownership of such system facilities is in the nature of a residuary right in so far as the beneficiaries under the system too have certain rights of property over these State-owned facilities. These rights, however, are not canvassed by such beneficiaries for the reason that the formal acceptance of such a claim could result in their being obliged consequentially to accept responsibility for the operation and maintenance of these facilities. On the other hand governmental agencies tend to treat system facilities as unreservedly the property of the State. The My/L. & L.D.'s Information Booklet No.1* speaks of Irrigation Systems as "built by the State" as "public property" and again as "public property designed to benefit large groups of people in the Society", (at pages 1 and 2 therein) and states that "over time the irrigation systems were deemed to be the property belonging to the Government", (at page 8)

7.14 This notion of State ownership of system facilities is an important factor to be taken into account in evolving codes for the motivation of farmers to pay O & M rates. Under the ancient systems of land tenure, farmers holding lands irrigated under a village tank accepted an obligation to maintain the irrigation works or to pay water rates to the owner of the system facilities, whether it was the king himself or a private land owner. Dr. S.Paranavitana says in the Chapter on the civilisation of the Early period in the University of Ceylon, History of Ceylon, Volume 1, Part 1

* See Annexure 2

that

*In addition to this land tax" (i.e. a tax levied by the king), ".....irrigated fields were subject to water rates, called daka-pati in inscriptions, which were collected in the case of some fields at one harvest only, while in the case of others at every harvest during the year. The water-rate was very often the property of private individuals:" (at p. 239)

Dr. Paranavitana goes on to state that

"The king, in theory, was the lord of the soil; this however, did not preclude any person who could command the necessary labour from constructing reservoirs and bringing new lands under cultivation. It was indeed in the interests of the king to encourage land development by private parties; the more the land that was brought under the plough, the greater was his revenue. Persons who constructed reservoirs had proprietary interests in them, that is to say they were entitled to water-rates from fields irrigated by them. There are numerous epigraphs, from about the second century B.C. upto the end of this period,* which refer to private individuals who owned reservoirs, or shares of the fields irrigated by them. These could be donated or sold at the owner's will, and were heritable. There are reference in inscriptions as well as in the chronicle to kings purchasing tanks and lands". (ibid, p. 240)

7.15 With the intervention of the State which has played an exclusive role in undertaking the restoration of major tanks (reservoirs), the perception of farmers of their obligations in respect of the maintenance of system facilities has been blurred, if not totally displaced, by the notion that it is the duty of the State to maintain these irrigation works except possibly

* Note Up to the end of the reign of King Mahasen (275-301 AC) with which the ancient chronicles of Sri Lanka the Dipavamsa and the Mahavamsa end.

the field channels the maintenance of which they would undertake grudgingly and generally in an inadequate manner. It is unfortunate that the provisions of the Irrigation Ordinance, in Sections 56 and 34 (vide para 7.33 below) which could have ensured that farmers were involved in at least maintenance programmes have not been implemented. This was understandable in the initial stages of the settlement of the pioneer colonists in early irrigation schemes such as Minneriya but is without justification when the colonists so settled could within a short time be able to attain economic stability.

7.16 Ownership of the resource of standing water is generally governed by the common law principle embodied in the maxim (cuus est solum, eius est usque ad caelum et ad inferos*) but as modified both by statute and by judicially recognized custom. Under the law the state would be the owner of the water contained in the reservoir subject to the common law right of riparian proprietors. This right has been statutorily recognized in Section 75 of the Crown Lands Ordinance which reads as follows :

"Rights of Riparian Proprietors

75. The occupier of land on the bank of any public lake or public stream shall have the right to use the water in that lake or stream for domestic purposes, for the purpose of watering cattle or other stock and for agricultural purposes, subject to the condition that the water to be used for any of the said purposes shall not be diverted through a channel, drain or pipe or by means of a pump or other mechanical contrivance, but shall be removed in a bucket or other receptacle."

* This maxim, translated freely, means "The landowner's right of ownership extends both up to the sky and to the depths of the earth".

Further the ownership rights of the State could be limited by an implied term or rule of law, (see paras 7.10 and 7.11), or by express conditions as in the case of any private landowners who have been deprived of their former sources of water by the installation of new irrigation facilities where, we understand, that in certain instances the supply of water has been guaranteed by Gazette Notification.

7.17 Farmer perception of rights to the water conserved in a tank (reservoir) or other irrigation work under the irrigable command of which the lands lie are quite different to their perception of their rights in relation to the system facilities. Farmers holding lands under a tank feel that the water in the tank is theirs to use and enjoy on the one hand and that the State has no right to divert it to other uses, (e.g. for a town water supply scheme), on the other. We understand that there have been several instances where the latter issue has been raised and decisions taken thereon administratively.

7.18 Notwithstanding the rights vested in the State under the specific provisions of the C.L.O. in respect of public lakes (Section 72 ibid) and the rights of ownership of the State flowing from its ownership of the land upon which the system facilities have been installed, the rights of farmers holding land under a tank (reservoir) have been recognised by Government, rather as an administrative decision than on a strictly legal footing. The extent of the de facto recognition by government of the rights of farmers is reflected in the following extract from page 11 of the Myof L & L.D's Information Booklet No.1*, which reads :

"Irrigation systems are constructed entirely for the benefit of small farmers. These farmers make their living by using the water provided through

* See Annexe 9

these irrigation systems. Much more important is the fact that they take all investment decisions regarding the cultivation work. Therefore the farmers have an inalienable right to be associated and involved with all matters concerning the irrigation systems". (Emphasis Added).

7.19 The grounds that could be urged in favour of a legal right to water have been given in paras 7.10, 7.11 and in the concluding part of para 7.15. It might, however, be noted that landowners' rights to water are latent and have the characteristics of claims until the Cultivation Meeting decides the extent of issue, at which stage the claim becomes a right to receive the quantum of water to be issued to individual allotments /private lands.

7.20 Finally it would be pertinent to mention that factors such as the interdependence of major irrigation systems, the multi-purpose character of some systems, the provision of water for domestic purposes to towns and for the purpose of cultivation of paddy and other crops to governmental institutions as well the grant of fishing rights in tanks (reservoirs) add further dimensions to the questions of "ownership" and rights and obligations of beneficiaries. These matters fall outside the scope of this Study but might be taken into consideration by the Government in the formulation and implementation of its programme for the recovery of O & M costs.

(B) ENFORCEMENT OF PAYMENT RULES AND LEGAL
SANCTIONS AGAINST NON-PAYMENT

(i) LEGAL BASIS OF ENFORCEMENT

7.21 The farmers' organisations that are in the process of being set up in some of the major irrigation schemes have not been assigned the function of collecting O & M rates. They are only required to "motivate farmers to pay irrigation rates (O & M cost)", according to the Ministry of Lands and Land Development Information Booklet No. 2 (at page 12). Collectors have, however, been appointed specifically for this purpose from among Colonisation Officers, Field Instructors and other government officers by the Government Agents of the seventeen administrative districts in which O & M rates are to be recovered.

7.22 It is now proposed to consider certain legal implications of the programme instituted by Government for the collection of O & M rates for the year 1984. As the point of departure we should like to state the official position thereon as given, on page 12 of the Ministry of Lands and Land Development Information Booklet No. 1 entitled "Operation and Maintenance of Irrigation System - Programme for the Recovery of Rates",* as follows :

"The payment of O & M rates is provided under Section 56 of the Irrigation Ordinance. Therefore the farmer is obliged legally to pay their rates. Provisions have also been made in the Irrigation Ordinance to recover these rates from farmers who avoid payment. In that event Section 78 provides for the recovery of rates by one of two methods, namely,

- (a) The Government Agent is empowered to deduct from the sale of produce by the farmer to the government or arrange to make the necessary deductions from any other payments which the government will make to the farmer.

* See Annexure 4

"In the alternative

- (b) The Government Agent is empowered to file a case against the farmer and recover the rate as if that amount is payable by the farmers as a loan from the government.

"Besides other legal provisions and requirements the farmers who pay rates will insist on others also to pay, lest they will be deprived of the benefits that accrue to them through better O & M work".

7.23 In furtherance of the position as set out above action has been taken by the Government Agents concerned to have the farmers whose names have been included in the Specification Register individually informed by the Collectors of the respective areas that they should pay a sum of Rs.100/- per acre per annum for the year 1984. Subsequently post cards have been sent as a reminder to the farmers liable to pay these rates informing them specifically that the sum of money indicated therein "should be paid in terms of section 56 of the Irrigation Ordinance as an Irrigation operation and maintenance rate for the year 1984", and requesting them to make the payment to the collector of the area: (Emphasis added)

7.24 The most important sub-sections of Section 56 of the Irrigation Ordinance are reproduced below :

"Maintenance Rates

56. (1) Except in the following cases, that is to say:

- (a) in the case of any major irrigation work in respect of which a fixed or variable rate per annum in perpetuity is leviable.
- (b) in the case of any major irrigation work in respect of which other special arrangements for the maintenance thereof are sanctioned under this Ordinance.

the lands included in the specification of any major irrigation work constructed, or in course of construc-

tion at the appointed date,* and the allottees and the tenant cultivators, and where there are no allottees or tenant cultivators of any lands the proprietors of those lands thereof, shall severally be bound and liable to an annual irrigation rate (hereinafter called the "maintenance rate") for the maintenance of such irrigation work.

(2) The lands included in the specification of any major irrigation work specified in the Schedule,** and the allottees and the tenant cultivators, and where there are no allottees or tenant cultivators of any lands the proprietors of those lands thereof, shall severally be bound and liable to a maintenance rate for the maintenance of such irrigation work.

(3) The maintenance rate shall be assessed by the Government Agent and divided pro rata among the lands set out in the specification. In making his assessment the Government Agent shall be guided, in the case of any work which has been maintained for a period exceeding five years, by the actual cost of maintenance of such work for the five years preceding the date of assessment, and in the case of any work which has been maintained for a period not exceeding five years, by the estimate of the probable cost of annual maintenance which shall be prepared by the Director of Irrigation.

(5) A maintenance rate under this section may be assessed either separately (hereinafter called a "separate rate") in respect of a single irrigation work, or generally (hereinafter called a "general rate") in respect of any group of irrigation works.

* 1st November, 1946 in terms of the Interpretation Section of the I.O (Section 113)

** 1. The Jaffna Peninsula Lagoon Scheme in the Northern Province

2. The Pahuru Oya Flood Protection Scheme in the Western Province

(7) For the purpose of every maintenance rate under this section the Government Agent shall from time to time prepare a specification in the manner provided by section 50, and all the provisions of that section shall, with the necessary modifications, apply to such specification:" (Emphasis Added)

7.25 The first observation to be made in this connection is that there is no reference in Section 56 of the Irrigation Ordinance or elsewhere therein to any "Operation and Maintenance Rates".

7.26 "Operation" has been defined in the USAID Scope of Work for this Study as "Operation means the allocation and delivery of water supplies including the management of any storage facilities, and handling of drainage runoff", while "maintenance" has also been defined therein as "the upkeep of irrigation and drainage structures, embankments, dams, outlets and channels including the removal of silt and vegetation from canals and storage facilities".

7.27 In the Ministry of Lands and Land Development Information Booklet No. 1* cited above, these two functions have been described as follows :

"- The process leading to the planning of operation and actual operation of the system according to the decisions reached in the cultivation meeting is generally known as the 'Operation' of the system"

"- As most other utility items, even the irrigation systems are subject to a process of decay and sometimes undergo rapid deterioration due to constant use. Actions which are designed to remove constraints, arrest decaying process and contain deterioration to ensure sufficient functioning of the systems are called 'maintenance'.

* See Annexes

7.28 In terms of the Interpretation Section of the Irrigation Ordinance, (Section 118),

" Maintenance" with reference to any irrigation work (whether constructed under this Ordinance or under any previous Irrigation Ordinance) includes any operation for the protection of any existing irrigation work or the irrigable area thereunder or of any part of such work or area, which the authority responsible for the maintenance of the work may declare to be a minor operation".

While the use of the word "Includes" ensures the saving of the normal meaning attached to the word "maintenance", this definition does not include within the scope of the term "maintenance" the meaning assigned to the term "Operation" whether as stated in the USAID definition or the Ministry of Lands and Land Development description.

7.29 It is our view therefore that the propriety of enforcing an "Operation and Maintenance Rate" as against a "Maintenance Rate" under the provisions of Section 56 of the Irrigation Ordinance may be questioned in an appropriate forum should the recovery of O & M rates become an issue in the future.

7.30 Secondly, even for the imposition of a maintenance rate itself under Section 56 there would appear to be certain pre-conditions to be satisfied before its imposition except

- "(a) in the case of any major irrigation work in respect of which a fixed or variable rate per annum in perpetuity is leviable,
- " (b) In the case of any major irrigation work in respect of which other special arrangements for the maintenance thereof are sanctioned under this Ordinance."

(See Irrigation Ordinance Section 56 (1), reproduced at para 7.24).

7.31 Before we consider these pre-conditions it would be pertinent to refer briefly to the provisions of the Irrigation Ordinance regarding the imposition of "Irrigation Rates" as distinct from "Maintenance Rates". The second proviso under Section 2(2) saves "any existing charge imposed :

- (a) by the instrument under which the land was granted, leased, held or occupied, or
- (b) by express agreement between the Crown and the owner, lessee, tenant or occupier of the land, or
- (c) by resolution of the majority of the proprietors of the irrigable area or tract in which the land is comprised, or
- (d) by any other method by which an irrigation rate may have been duly imposed,"

by declaring that such charge "shall be deemed to be the charge imposed by the Government Agent".

7.32 It is also stated in this section that "an irrigation rate under this Ordinance, with reference to any land to which it relates, is a charge in favour of the Crown imposed upon the land in respect of water supplied, or to be supplied to such land or in respect of the cost of or incidental to, the construction or maintenance of any major irrigation work benefiting or intending to benefit, such land, or of all or any of such matters in combination:

with the proviso that, in certain circumstances, as prescribed therein "the irrigation rate shall be deemed to be a charge in favour of the Crown imposed not upon the land but upon such allottee or tenant cultivator in respect of water supplied, or to be supplied, etc."

Section 2 (2) provides that

"Any charge referred to in sub-section (1) may be imposed by the Government Agent whether by way of provision in the scheme of a major irrigation work or otherwise, and may be varied by him from time to time:

Provided, however, that any charge imposed upon an extent of land in respect of which there is an allottee or tenant cultivator shall be deemed to be imposed upon such allottee or tenant cultivator";

7.33 Section 34, read with the other sections in Part IV of the 1.0 enables the preparation of schemes in respect of major irrigation works which could provide, inter alia,

- "for the division of the responsibility for the construction or maintenance of the whole or any part of the irrigation work between the Government and the allottees, proprietors, tenant cultivators, or the Cultivation Committee, as the case may be : " (Section 34 (1) (b);
- for the imposition of any irrigation rate upon the lands benefited or to be benefited under any scheme: (Section 34 (2) (a); and
- for the levying of contributions in labour upon the allottees and the tenant cultivators, and where there are no allottees or tenant cultivators of any lands the proprietors of those lands for the purpose of the construction or maintenance of the irrigation work or any part thereof and for the payment of an irrigation rate by way of commutation of the liability to make such contributions in labour : (Section 34 (2) (b)

These provisions appear to have been made in view of the fact that the imposition of maintenance rates under

Section 56 appear to be limited to the major irrigation works envisaged therein i.e. those constructed/ under construction on 1st November 1946 and the two schemes included in the Schedule.

7.34 The pre-conditions envisaged in Section 56 would appear to be :

- (a) the major irrigation work should have been constructed, or in the course of construction, at the appointed date (1st November, 1946) (Section 56 (1)),
- (b) the specification shall be prepared by the Government Agent in the prescribed manner : (Section 56 (7)) and
- (c) the maintenance rate shall be assessed in the prescribed manner : (Section 56 (3)),

7.35 The questions that would arise in relation to these three pre-conditions are :

- (a) that the imposition of maintenance rates in major irrigation schemes which had not been constructed before nor in the course of construction on 1st November, 1946 would not be in accordance with the law,
- (b) whether the procedure for the preparation of Specification Registers set out in M/y L. & L.D.'s Circulars No. 162 and 163 (copies at Annexes 5 and 6) would satisfy the requirements of Section 50 (1) of the I.O., and finally
- (c) whether the determination of the amount of an Operation & Maintenance rate on an island wide basis by the Ministry and the intimation thereof

to the Government Agents concerned would not run counter to the requirements of Section 56 (3) of the Ordinance, (reproduced in para 7.24)

(ii) SANCTIONS AGAINST NON-PAYMENT

7.36 The Irrigation Ordinance distinguishes between

(a) allottees, tenant cultivators, owner cultivators and unauthorised cultivators (as defined in the next paragraph) and

(b) others

and makes provision for different modes of recovering of money due in respect of each of these two categories in Part VII (Sections 78-92).

7.37 The groups falling within category (a) above have been defined in the Interpretation Section (Section 118) as follows :

- "allottee" means an owner of a holding or a permit holder under the Land Development Ordinance, where the holding or the land in respect of which the permit is granted, is land benefited or to be benefited by any irrigation work;

- "Tenant cultivator" means a tenant cultivator as defined in the Paddy Lands Act, No. 1 of 1958, where the paddy land of which he is the tenant cultivator is land benefited or to be benefited by an irrigation work or is manawari land;

- "Owner cultivator" means an owner cultivator as defined in the Paddy Lands Act No. 1 of 1958, whose paddy land is benefited or to be benefited by any irrigation work or who is the owner cultivator of manawari land;

"Unauthorised cultivator" means

- (a) a cultivator of any State land not alienated under the Crown Lands Ordinance or the Land Development Ordinance or any other enactment; or
- (b) a cultivator of any State land alienated to an allottee under the Crown Lands Ordinance or the Land Development Ordinance or any other enactment and has been abandoned or unlawfully disposed of by such allottee.

7.38 It is not understood why unauthorised cultivators have been included in the same category along with allottees, tenant cultivators and owner cultivators. There is provision under Section 56 (1) for allottees, tenant cultivators, and owner cultivators, (included in the term "proprietors" by the Interpretation Section, 118), to be severally bound and liable to the annual maintenance cost but there is no such provision in respect of "unauthorised cultivators".

7.39 In terms of Section 77 (1) of the Irrigation Ordinance

"All contributions due or deemed to be due under this Ordinance shall be payable in respect of each calendar year, and shall be paid on or before the thirtieth day of June in that year, or on such other date as the Minister with the concurrence of the Minister of Finance may by Order published in the Gazette, appoint.

By Gazette Notification dated 20th September, 1984 the Hon. Minister of Lands and Land Development has with the concurrence of the Minister of Finance appointed the first

day of October, 1984 as the date on or before which contributions due or deemed to be due under the Irrigation Ordinance in respect of the calendar year 1984 shall be paid.

7.40 Notices have been exhibited in the respective areas in the following terms (our translation)

N O T I C E

IRRIGATION MAINTENANCE FUND

The contribution payable in respect of Lands receiving Water under Major Irrigation Schemes is Rs. 100/- per acre.

Please pay your contribution immediately. Legal action will be taken under the Irrigation Ordinance against persons who do not make this payment by 31st October, 1984.

GOVERNMENT AGENT

.....DISTRICT

7.41 Section 77 (2) of the Irrigation Ordinance provides that "All contributions due or deemed to be due under this Ordinance shall be recovered in accordance with the provisions of this Part". As already stated, the procedure for recovery of money due depends on the category into which the defaulter falls. The procedure applicable to allottees, tenant cultivators, owner cultivators and unauthorised cultivators is embodied in Section 78 A.

the provisions of which enable the Government Agent to recover the amount of any contribution or other sum from any moneys due to such persons in respect of a scheduled agricultural product or, failing that mode, by noticing the person to pay such money and on his failure to do so, securing the payment thereof through the Magistrate's Court with the necessary territorial jurisdiction. This procedure for recovery would, we believe, be generally limited to the cases of farmers whose names are included in the Specification Register.

7.42 The mode of recovery of any contribution of money or other sum due or deemed to be due under the Ordinance by a person other than an allottee or a tenant cultivator or a owner cultivator or an unauthorised cultivator is laid down in section 78 and sections 79-92. Since unauthorised cultivators (virtually of State land in accordance with the definition of this term) have been included in category (a) it would follow that "others" would consist of cultivators of private lands. In any event Section 78(1) enables "the Government Agent or any person authorised by writing under his hand to seize such land and any crop or produce thereof and any movables thereon, to whomsoever such land, crop, produce or movables may belong; and if such contribution, or other sum", together with costs of seizure and sale, "are not sooner paid or tendered to sell the land, crop produce or movables, so seized by public auction at any time not less than twenty one days from the date of such seizure." Sections 79 to 82 make provisions in respect of matters consequential on such seizure and sale under Section 78.

7.43 There is also provision in the Irrigation Ordinance, (Section 78 (3)), in respect of the same category that in the event of default in the payment of a fine or penalty imposed under the Ordinance "for the Government Agent or any person authorised by writing under his hand to seize any property whatsoever belonging to the defaulter, wheresoever such property may be found and if the amount due"

together with costs of seizure and sale", are not sooner paid or tendered to sell the property so seized by public auction at any time not less than twenty one days from the date of such seizure".

7.44 In respect of "farmers whose names do not appear in the Specification Register but continue to cultivate with irrigation water the lands they have encroached upon or annexed from reservations", the My/L.&L.D. Information Booklet No. 1* states that :

"In such instances it is necessary for the Project Manager or the Co-ordinating Officer to take action to recover an amount which is equivalent or higher than the specified rates. Legal provision is available in the Irrigation Ordinance for this purpose. The levy imposed on such farmers amount to a fine for unauthorised use of irrigation water for cultivation". (Emphasis added)

7.45 Paragraph 43 of My/L.&L.D.'s Circular No. 177 dated 10th February 1984 (copy at Annexe 7) states :

"Farmers whose names do not appear in the Specification Register for some reason or the other but continue to draw water from the irrigation facilities provided under the scheme should also be charged the same rates. If the names are incorrectly shown in the register, action may be taken by collectors to accept rates and issue a receipt explaining the nature of the payment as being an imposition for obtaining unauthorised water. Action should however be taken during a reasonable period of time by the Collectors and Co-ordinators to report such matters to the Government Agent for remedial action. Unauthorised cultivators who continue to draw water for cultivation should be dealt within a similar way. In the report submitted by the

* See Annex 7

collectors, such payments should be shown separately to avoid possible confusion in accounting and monitoring work".

7.46 It has been ascertained that it has been decided administratively to require persons who obtain water illegally for their cultivation to pay what might be termed a penal O & M rate of Rs. 125/- per acre, the imposition of which is a departure from the provisions of the Irrigation Ordinance in respect of such offenders. For on the one hand there is no provision in the Ordinance for the imposition of an enhanced rate in the case of those who obtain water illegally while on the other there are specific provisions to deal with such offenders. Section 66 A specifically provides where any person cultivates any land in contravention of the provisions of the Ordinance relating to the dates of cultivation operations and arrangements for annual maintenance of irrigation works etc. or obtains water from any irrigation work in contravention of the provisions of the law and thereby causes any loss to any cultivator who is entitled to obtain such water, for the Government Agent to refuse the supply of water to the land so cultivated; to collect the harvest from the land cultivated by obtaining water illegally and to recover the loss incurred by the cultivator wrongfully deprived of the water and the value of the irrigation water so illegally obtained and to compensate the cultivator with the money so recovered.

7.47 Furthermore there is provision in Part VIII under Section 93 of the Irrigation Ordinance to the effect that :

"Every person who

- (a) Wilfully and mischievously blocks up, obstructs or encroaches upon or causes to be in any way blocked up, obstructed or encroached upon any channel or watercourse comprised in any irrigation work; or

- (b) Wilfully and mischievously cuts the bund, bank or any part of any irrigation work, or
- (c) Wilfully and mischievously causes waste of water conserved by any irrigation work or
- (d) Wilfully or wrongfully draws off or converts to his own use any such water shall be guilty of an offence, and shall on conviction after summary trial before a Magistrate be liable to a fine not exceeding five hundred rupees or imprisonment of either description for a period not exceeding one year or to both such fine and imprisonment":
(Emphasis added)

There is also provision, under Section 110 of the Ordinance for a fund to be called the Irrigation Fines Fund to be established to which shall be paid all fines and penalties imposed under Part VIII of the Ordinance, and expenses recovered under Section 66.

7.48 The notice referred to in para 7.40 speaks of an "Irrigation Maintenance Fund" the nature of which has been outlined in Information Booklet No. 1* in the following terms :

"The O & M rate which will be collected now will be credited to a separate account called the O & M fund. It is intended to allocate funds separately to each scheme together with the Government contribution provided through the Advance Account. Before this arrangement was made, the balance money remaining at the end of the year after attending to the O & M work was sent back to the Treasury. A significant feature in the present arrangement is the possibility of retaining the balance money in the funds generated by farmers' contribution so that it could be carried over to the next year without remitting the money to the Treasury".

* See Annexure 2

There is no statutory authority, however, for the establishment of an Operation and Maintenance Fund, as there is in the case of the Irrigation Fines Fund: (it has been learned that the authority of Parliament is being sought for the establishment of such a fund, even administratively as an Advance Account Activity).

Further in terms of Section 2 of the Irrigation Ordinance an irrigation rate under the Ordinance is "a charge in favour of the Crown" (now the State) and all moneys collected thereunder (except fines under Part III and expenses recovered under Section 66) should be credited to the Consolidated Fund.

7.49 In the light of the observations made in the preceding paragraphs we consider it desirable that, notwithstanding the provisions of the Irrigation Ordinance and any other law,

(a) an Operation and Maintenance Fund should be established, and

(b) the collection of Operation and Maintenance Rates should be authorised by separate legislative enactment; and the cases of those who obtain water illegally should be reviewed and, where so deemed fit, the land encroached upon be regularised or where not so regularised, action taken against such encroachers in terms of the penal provisions of the Irrigation Ordinance.

SECTION EIGHT

8.0 CONCLUDING OBSERVATIONS

8.01 The basic themes that have emerged from this study could be summarised in the following manner:

- (1) The provision of irrigation facilities for agriculture and the establishment of large irrigated settlements, specially in the dry zone region, have been a major concern of Government Policy in Sri Lanka for over half a century. This policy received greater emphasis since independence in 1948 and has been maintained to this date in spite of several changes of Government and changes of Ministers holding the portfolios of land and irrigation.
- (2) The emphasis placed on irrigated agriculture can also be seen in concrete terms in the financial outlays made since about 1950 in improving irrigation facilities to already cultivated land as well as in bringing new land under irrigation for agricultural purposes.
- (3) From the late 1950s a variety of shortcomings in the established major irrigation systems came under scrutiny from several sources including the planning documents of the Government. The main thrust of this criticism was that the economic returns from these major systems were not commensurate with the investments that have been made in them. Alongside this main line of criticism, there were also a variety of agricultural, technical, socio-cultural and environmental conditions which were adversely commented upon by a large number of persons who began studying these

major irrigation systems in depth through the view point of a single discipline or inter-disciplinary social science techniques.

- (4) A landmark in this critical trend which pushed the Government towards taking action to rehabilitate irrigation systems and organise the settlers for improved productivity, came from the Report of the Papersak Mission which led to the establishment of Special Projects in 24 major irrigation systems.
- (5) In spite of these adverse criticisms, the major irrigation systems have generated substantial employment and income in the rural areas and are making a significant contribution to national paddy production and to a lesser extent in the production of a range of other field crops such as chillies, cowpea, green gram, soybean etc. This contribution was enhanced as a consequence of the efforts made in these schemes through the system of Special Projects referred to earlier and the application of the strategies of the 'Green Revolution'.
- (6) Even though levels of paddy production in most of the major irrigation systems have risen appreciably over the last decade, the yield levels seem to be now rather stagnant at an average of about 75 bushels per acre when the national average is about 45 bushels per acre. There is every possibility of raising average yield levels in the major irrigation systems provided these schemes are properly co-ordinated and managed.

- (7) From about the late 1960s there has been increasing discussion and attention paid to the subject of water management in these schemes. This interest was fostered by local and foreign water management specialists through their writings, research and investigations and a large number of seminars which were organised with support from the Government.
- (8) The launching of the Mahaweli Development Project and particularly the Accelerated Mahaweli Development Programme has focussed intensive attention on the problems of water management, levels of productivity and settler motivation, in a way that had not taken place when the major irrigation schemes were established in the past. One reason for the great concern with these problems in the Mahaweli Area was the gradual realisation by the policy makers in Sri Lanka that serious mistakes had been made in the design, construction and management of major irrigation schemes in the past and that "water and not land was the major constraint for increased production"
- (9) The bilateral and multilateral aid giving agencies on whom the Government was dependent for the Mahaweli Development Project have exerted considerable influence through their own expertise and their policy recommendations that system management and specially water management should receive priority attention.
- (10) The influence of external aid in intensifying action programmes for improving the all-sided performance of major irrigation programmes, including the management of water, is seen not only within the Mahaweli Project but also in the considerable foreign assistance made available to major irrigation schemes outside Mahaweli and even in the area of minor irrigation.

(11) The policy document of the Ministry of Lands and Land Development, namely, Resource Development 1978-1982, has made it very clear that farmer participation in irrigation management and in improving overall performance of major irrigation schemes is accepted policy. The present concern with the establishment of farmer organisations/water user associations in major irrigation schemes is intended to secure the co-operation of the settlers through an institutionalised dialogue of a continuing nature between farmers and the machinery of Government. Hitherto the latter acted virtually in isolation.

(12) Recovery of O & M charges from farmers commencing in 1984 has to be viewed in the historical context where previous attempts at collecting even nominal irrigation rates or land revenues have been a consistent failure. The populist politics of the country and the ideologies of a welfare state have created traditions in which irrigation water is considered a free input provided by the Government.

8.02 It is against this background that we have examined the question of the recurrent cost problems and the recovery of O & M rates in the major irrigation systems in the country.

8.03 O & M recoveries were introduced by the government from 1984 and actual collections started around May/June of this year. The amounts collected so far in the Mahaweli Development Project as well as in the major systems outside have been given in this study. There is evidence to indicate that unlike in the past the Government intends to proceed seriously with the collection of O & M rates. Increased understanding of the irrigation systems and the issues concerned with the improvement of the systems have driven

home the need to adopting national policy measures to develop a sustainable and efficient system of O & M. It is now recognised that the country cannot afford to relegate O & M to a level of low priority and take up the systems for comprehensive rehabilitation from time to time. Eventually a good system of O & M will have to take care of rehabilitation needs as well.

8.04 In the course of this study and particularly in the course of our interviews with officials at the centre, district level and project level and 94 farmers in the selected major systems of Minipe, Gal Oya Left Bank, Mahaweli H Area and Parakrama Samudraya, we came across certain problems which we feel are central to the successful implementation of an O & M recoveries programme and are discussed in the paragraphs that follow :

8.05 The Government has decided to recover O & M rates from the beginning of 1984. The farmer interviews in all schemes indicated that sufficient propaganda, publicity and farmer education with regard to the necessity to collect these rates had not taken place before collections started even though some efforts have indeed been made in this direction. For instance, the Ministry of Lands and Land Development has issued an Information Bulletin No.1 on Operation and Maintenance of Irrigation Systems, posing questions and providing answers to them in a clear and straight forward manner. This document attached as Annex 9 to this study is intended for distribution to educate farmers and convince them on the rationale of O & M recoveries. There has also been a printed Brochure entitled "This Precious Water is for You" under the hand of the Hon. Minister of Lands and Land Development explaining the reasons for introducing O & M recoveries and the benefits that farmers will receive from it. An English translation of this Brochure prepared by us is attached as Annex 8.

Several programmes on O & M rates collection have been broadcast over the Rajarata Service, Ruhunu Service and the National Service of Radio Ceylon. However most farmers seem to be confused as to the reasons for this levy and the manner in which the collections would be utilised.

8.06 The overall impression that we have obtained is that even the farmers who were in principle agreeable to paying O & M rates were not satisfied that a sum of Rs 200/- is required for O & M work to service one acre of paddy land each year. Some farmers were also of the view that Rs. 100/- per acre per year would be adequate for O & M work, in which case their contribution could be reduced to Rs. 50/- per acre per year. Most of them seem to be unaware that it is the intention of the Government to increase the recoveries from the farmers to cover the full cost of Rs. 200/- over a five-year period commencing 1984. If they were fully aware of this, their reactions against the O & M charge might have been stronger.

8.07 We are inclined to the view that it would have been better if the O & M charges were introduced from January, 1985, devoting 1984 to an intensive propaganda, publicity and education programme for the farmers in all the major irrigation systems in which the levy is going to be imposed.

8.08 The O & M charges are to be recovered on the basis of Specification Registers in respect of each major irrigation system prepared by the Government Agent with the assistance of the field level staff of the related Government Departments. We understand that while Specification Registers have been prepared in all the Kachcheries, they are by no means complete or perfect. This is naturally to be expected because the scheme is still a new one and it may take more time before the specification registers give an accurate

picture of all the settlers who are actually getting the benefits of irrigation water in a given scheme. For instance in the Gal Oya Left Bank we were informed by some farmers that O & M notices had not been served on paddy farmers in some Purana villages falling within the scheme which derived benefits of irrigation water. Similarly in all four selected schemes farmers who had received notices for O & M payments complained that cultivators using water from drainage channels had not been called upon to pay O & M rates. No doubt these deficiencies and gaps in the Specification Registers prepared by the Kachcheri will be remedied in the future but as at present the farmers who have been called upon to pay the rates feel that they have been subject to discrimination.

8.09 It is well known that in most of the major irrigation schemes the official records available with Government agencies do not necessarily reflect the real situation on the ground. Large scale encroachments have taken place. The actual command area is some times substantially larger than the original command area. Fragmentation has increased the number of allottees and allotments. The practise of leasing colonisation allotments and mortgaging them is more widespread than appears on the surface. The Specification Register which has been developed from the Blocking - Out Plans of the Irrigation Department and the Paddy Lands Register must be carefully scrutinised and updated as early as possible. The Government of course has stipulated that the Specifications Register should be exhibited in a variety of places where farmers can have access to them and then make representations regarding any errors or omissions. While this procedure may appear to be equitable, one cannot really expect most farmers in these schemes to examine these Registers and make the necessary representation as administratively required.

8.10 Another cause of dissatisfaction among some farmers was that the extent of the paddy allotment that was registered under their name had not been correctly entered in the Specifications Register. For instance, the complaint was that the extent was higher than the extent of the allotment actually held by them. For instance, in the Mahaweli H area where the size class of the allotments are uniform, viz. 2.5 acres of lowland some of the farmers had been noticed to pay for extents higher than 2.5 and vice versa. Our comments on the Specifications Register would apply to this matter as well.

8.11 There are some categories of farmers who felt that the O & M charge was totally unjustifiable. One reason was that they were farmers who held allotments in the tail-end of the schemes and therefore did not receive irrigation water even though in theory they held irrigable land. This was particularly evident in stages 3 and 4 of Minipe and the tail-end tracts in Gal Oya Left Bank where there is no paddy cultivation during the Yala Season for lack of water and Maha cultivation is also carried out under rainfed conditions. It will be necessary to find a solution to this problem as early as possible as it seems unfair to impose O & M rates on farmers who rarely get the benefit of irrigation water either in Maha or Yala. Quite apart from the fairness or otherwise of this imposition of rates, the farmers in these tail-end allotments are even less than subsistence farmers and are a socially discontented group. It would be unrealistic to overlook this position retaining the formal view that they hold irrigated allotments in a major irrigation system. We consider it advisable that the Government should make a special study of the areas involved in the tail-end tracts, assess the number of families affected and evolve a plan to resettle them either in other irrigated schemes or in other forms of rural employment schemes such as the service sector which serves the head-end and middle-end areas of the irrigation schemes where productive agricultural activities take place. We understand that the

Ministry of Lands and Land Development has recently decided to exempt from O & M recoveries those schemes which are worked on rain-fall even though they are now classified as irrigation systems. Also, the Ministry has decided that in schemes where only supplementary irrigation is provided for cultivation during the Maha Season, the O & M recovery should be reduced to Rs. 75/- per acre.

8.12 Farmers also have to make payments other than O & M rates. One such charge is the acreage tax of Rs. 6/- charged by the Agrarian Services Committees under Section 46 (2) (b) of Agrarian Services Act. No. 58 of 1979. Nearly all the farmers interviewed were not in favour of this tax because they said that they did not receive any benefits or services from the Agrarian Services Committee and that they did not understand the purpose for which this money was collected. Since there appears to be a degree of discontent on this matter among farmers, it would be advisable for the Ministry of Lands and Land Development to take up this matter with the Ministry of Agricultural Development and Research and the Department of Agrarian Services and work out a system whereby the money collected as acreage tax in major irrigation systems is deposited in a separate fund for the benefit of the farmers in each major scheme just as is envisaged with O & M collections.

8.13 We do not suggest that the acreage tax provided under the Agrarian Services Act No. 58 of 1979 should be waived or withdrawn in respect of major irrigation systems; but a levy must have a meaning in terms of farmer perceptions and one way in which some meaning can be given is to ensure that the acreage tax collected, or at least a substantial portion of it, is invested in the scheme itself either to support O & M work or provide supporting services such as credit, purchase of inputs etc. If such a scheme is evolved, it is very likely that the farmers in major irrigation schemes will not grumble about the payment of the acreage tax.

8.14 A special situation exists in Minipe where a substantial extent of land, approximately 1,000 acres of paddy land in stages I and II are held by the Mahiyangane temple and land rents and house rents are collected on behalf of the temple. This may be an arrangement coming down from earlier times when the scheme was started. In the light of many socio-economic changes that have taken place in Minipe, we would suggest that some changes be made in the present system which would not adversely affect the temple authorities or the farmers.

8.15 The present definition of major irrigation systems, i.e. a system with a command area exceeding 200 acres has led to a situation where relatively small schemes have also to be managed by the Irrigation Department. If the definition of major irrigation was changed and schemes in extent of up to about 500 or 1,000 acres is handed over to the Department of Agrarian Services for management it will enable the Ministry of Lands and Land Development and the Irrigation Department to better concentrate on water management and the all-sided development of the really major irrigation systems. We understand that irrigation schemes in extent 500 acres and below will soon be classified as minor irrigation schemes and maintenance work handed over to the Department of Agrarian Services.

8.16 The charge of Rs. 200/- per acre per year as O & M rates is now a uniform all-island charge. The suggestion has been made to us that the principles of equity and justice require that the O & M rate should be a differential rate depending on the conditions prevailing in the different schemes. While this appears reasonable, we think that it raises serious implementational problems in Sri Lanka where egalitarian policies have been canvassed and upheld over a long period of time. If differential O & M rates were to be introduced, we expect very severe pressure to build up for reduced rates in areas where high rates are

imposed. We therefore would favour the maintenance of uniform rates as introduced at present with the proviso that the definition of major schemes be altered to enable irrigation schemes of up to about 1,000 acres to be handed over for management by the Department of Agrarian Services. An added advantage in this arrangement is that in the smaller schemes O & M costs will be well below Rs. 200/- per acre per year and the farmers in those schemes will not have a grievance that they are being called upon to pay rates far in excess of what they believe are the actual cost of O & M in relation to the size of the scheme in which they have been given land.

8.17 Some of the farmers interviewed also raised the question whether the O & M rate could be collected for each season rather than for a calendar year. This would mean that the initial recovery of Rs.100/- would be recovered at the rate of Rs. 50/- for each season. We think that, subject to an examination of the administrative problems of effecting collections across two seasons, the suggestion merits consideration.

8.18 The question was also raised whether farmers would be liable to O & M payments even when they had suffered crop failure. At present there is no provision for a waiver of O & M charges on the ground of crop failure apparently because farmers can cover such contingencies by joining the Government's crop insurance scheme. However, the decision whether crop failure has taken place or not in a farmer's field must be taken at a suitable level in the decision making hierarchy of the district administration and if crop failure has taken place the farmer should be informed without delay and without cumbersome form-filling that no recovery will be made in respect of the fields where crop failure has taken place.

8.19 Another suggestion was that the O & M rate for a given year or a given season should be adjusted according to cropping intensity. While on the face of it this suggestion appears reasonable, the administrative difficulties of implementing such a system must receive full consideration before any changes are made.

8.20 Some of the farmers interviewed also suggested that if they could be employed, particularly during off season times, in O & M work and paid out of O & M collections, it would help them economically and this will also enhance the quality of O & M work and secure better farmer support for O & M collection. We think that this is a useful suggestion which can be easily implemented.

8.21 We make the following basic suggestions arising from all the information collected in this study, the discussions we have made with farmers and officials at different levels, and even with persons who are not directly involved in work in major irrigation systems at present but nevertheless have valuable insights to offer in the light of their own past experiences.

- (i) We suggest that a very intensive publicity, propaganda and education campaign be organised in all the major irrigation systems utilising the fora of farmer groups at the smallest possible field level units. For instance, in the Mahaweli Scheme, intensive discussions on the recovery of O & M rates and the need for these recoveries and the manner in which the money is proposed to be utilised can take place in farmer turn-out groups. In major irrigation schemes outside Mahaweli, the farmer groups at the field channel level will prove a useful forum. The Kanna meetings held each season and the Project Committees established by the Irrigation Management Division of the Ministry

of Lands and Land Development can also be useful institutions in this propaganda and publicity drive.

- (ii) Towards the end of this year, the Ministry of Lands and Land Development as well as the Mahaweli Economic Agency should make a complete evaluation of the experience gained in O & M collections in the course of 1984 and introduce suitable modifications to the O & M collection system in 1985.
- (iii) The formation of Farmers' associations or Water Users' Associations should be pursued. At present only a beginning has been made in the formation of these associations and they have reached some stage of operational maturity at present in the Gal Oya Left Bank where major rehabilitation work is still going on. We make this suggestion on account of the fact that among other things the recovery of O & M rates will be greatly facilitated if farmer associations can function efficiently in as many major irrigation systems as possible. But we do not envisage that actual collection should be entrusted to farmer organisations.
- (iv) It should be a firmly established principle that the programme of O & M work which will be carried out in 1985 in any of the major irrigation systems utilising the funds collected in 1984 should be only on the basis of a list of O & M work priorities settled in consultation with the farmer organisations or farmer representatives in the irrigation schemes.

- (v) We do not favour the idea that as from 1985 the O & M recoveries from the farmers should be increased by a further 20 percent. At present this appears to be the policy decision. The chances of an O & M system getting stabilised will, in our view, be much greater if the recovery of Rs.100/- per acre per year is maintained for 1985 as well and the increase by a slab of 20 percent is introduced in 1986 after effecting suitable modifications and adjustments to the system in the light of experiences gained in collections in 1984.
- (vi) One of the important matters that require further consideration is the rate of Rs.200/- itself. An analysis of the break-down of the O & M charge of Rs. 200/- per acre per year shows that the greater part of this cost is the cost of labour. If the farmer organisations come forward to undertake some of the O & M work by organising their members it should be possible to reduce the total per acre cost of O & M by a substantial margin.

8.22 We have already discussed in the previous Section some of the legal implications of Operation and Maintenance Recoveries, (although we have not at any time held ourselves as qualified legal consultants). We would suggest that the full legal implications of O & M recoveries be examined by the Government without delay. We make this suggestion in the light of past experience where policies in the agrarian sector have come up against rulings in courts of law leading to very substantial changes in the entire programme that was to be implemented. We are thinking in particular of the history of the Paddy Lands Act of 1958.

ANNEXES

ANNEXES

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6. Circular No.163 of the Ministry of Lands and Land Development dated 22nd September 1983 on the same subject as Annex 5.	A.19
7. Circular No.177 of the Ministry of Lands and Land Development dated 10th February 1984 re: "Recovery of Operation and Maintenance Rates in Major Irrigation (Gravity) Schemes."	A.24
8. Statement issued by the Minister for Lands and Land Development and Mahaweli Development entitled "This precious water is for your benefit" (our translation).	A.43
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NOTE:

* The Annexes have been cumulatively numbered in sequence. Page numbers of the Annexes individually appear on the top right hand corner of each page. (from the second page of each annexe).

SCOPE OF WORK FOR STUDY OF RECURRENT COST
PROBLEMS IN IRRIGATION SYSTEM DEVELOPMENT IN ASIA

A) Country wide information.

To provide the type of data which is needed to make a useful cross-country comparison, the contractor will supply country level information on the following questions:

- 1) What government or quasi-government agencies are involved in the operation and maintenance of irrigation? By agency, what are their responsibilities and sources of government funds for O & M? What is the organization structure of these agencies and how are functions/responsibilities coordinated?
- 2) If government collects fees from farmers or other beneficiaries, what agencies do the collecting? (Note: terms such as fees, charges, taxes, levies, assessments, rates and prices may all be used to discuss payments farmers make for irrigation. What we are interested in is whether any of these payments are made by farmers or other beneficiaries. How are the funds handled after collection, and under what budget classification do they fall, e.g., general government operations or maintenance of irrigation projects?
- 3) How does government set the level of fees? Describe the process. Are fees set for each system or are charges uniform countrywide for the same types of systems? Are there seasonal differences in fees or differences by type of system?
- 4) What type of water charges are generally used (per acre charge, charge, per volume of water, tax on irrigated land, tax on irrigated crop, etc)? If a nationwide pricing policy exists, discuss rates currently in effect. Are fees collected by an irrigation agency retained by the agency or remitted to the National Treasury? Why is this particular type of charge used to collect fees (easy to estimate, easy to collect, etc.)? Historically, what changes have been made regarding type of water charges used? Why the changes? What has been the experience to date, with the newly instituted water charges in Sri Lanka?
- 5) Is irrigation and concern for water use a high priority for the central government? If so, in what way is this priority exhibited, e.g., water laws, budget allocations, construction, etc. When did the concern for improved water use begin, why, and how is concern manifested? What priority is given to O & M in project design?
- 6) How has government policy on fees changed over time? What is the rate of actual collections over time? Have rate changes matched changes in general price levels? Has the same agency collected the fees over time? If not, why, when and how has it changed?
- 7) Has government established or helped establish water user organizations? Was fee collection a primary reason for attempting to establish such organizations? To what extent do they now exist and what are functions? What is the nature of these organizations?

- 8) How do organizations enforce any fee payment rules? What is the government irrigation agency's response to farmers who do not pay water fees (e.g., water cut-off, nothing)? What is legally supposed to happen to farmers who do not pay their water fees? To what extent are legal sanctions imposed?
- 9) What is the government's general policy towards input (including irrigation water) and crop pricing for farmers? Does government generally subsidize or tax these prices?
- 10) How does the amount of O & M financed by the government following system construction vary among projects which have different sources of finance for construction (e.g., government financed, world bank financed, USAID financed, etc.)?
- 11) What is the budget allocation per hectare (in nominal command area and actual area irrigated) for O & M? How much is required per hectare to provide adequate operation and maintenance of projects? Show by type of irrigation project if possible. If the country was to spend the amount needed to provide, adequate O & M, what percent would this be of the total irrigation budget?
- 12) Are O & M staff identifiable from construction or other staff classifications? What are staffing levels for O & M nation wide? How have these changed over time? Is there a separate cadre for O & M or is it combined with construction functions?
- 13) What are the primary objectives of the government in collecting fees or taxes from farmers and other beneficiaries of irrigation projects (e.g., to improve economic efficiency, improve income distribution, recover project costs)? How successful is government in achieving its objectives?

3) Information on different types of irrigation systems.

The information to be provided under this section is to be obtained for your sample of irrigation systems (see section V). The data are placed in four categories, viz. (1) paying for O&M, (2) operating the system, (3) system characteristics, and (4) miscellaneous. The information requested under the last category will in many cases, require more time to collect than will be available. However, in some cases the information may be available from secondary sources, including studies already conducted. If the data are readily available from secondary sources, we want you to collect the data; if not already available, do not collect. Obtain the following information for each system in your sample:

1) Paying for O & M

1.1) What are types and amounts of fees over time (charge per hectare irrigated, volume of water received, etc.)?

1.2) What percent of farmers pay fees? What are cost recovery indexes (i.e. the percent of operation and maintenance costs covered by collections from farmers) over time?

1.3) How do changes in fees compare with the general price index?

- 1.4) How often are fees collected? What is the method of collection?
 - 1.5) Is there any link between fees paid and services provided for O & M? What do farmers think they obtain from fees they pay?
 - 1.6) For the most successful efforts to collect fees (the systems with the highest collection percentages), what factors have helped the collection process (good services, close contact with farmers, etc.)? which factors seem to be the most important?
 - 1.7) How much does the government spend per hectare for O & M on each of the sample systems? What is the amount they need? Could some of the difference be made up by increased collections from farmers? Are O & M expenses indentifiable in the systems budget? Is a distinction made between O & M and overhead expenses?
 - 1.8) What is the penalty for non-payment to government agencies and to water user associations?
- 2) Systems Operation
- 2.1) What is method of delivering water (continuous flow, rotation, demand)?
 - 2.2) To whom can farmers complain if they don't get "their" water? To what extent and how quickly are complaints acted upon?
 - 2.3) Who is responsible for O & M at different levels of the system?
 - 2.4) Are water user organizations, formal or informal, active in the following:
 - A) Maintaining Ditches?
 - B) Collecting Fees?
 - C) Allocating Water?
 - D) Other?
 - 2.5) How effective are water user organization in,,e.g., allocating water, collecting fees, cleaning ditches? What progress are they making and how are they monitored? What factors seem to influence the effectiveness of these institutions, e.g., scarce water, no large economic difference among farmers, etc.? Which factors appear to be critical?
 - 2.6) If water users organizations maintain or operate the system, how is it done? Do farmers provide free labour for O & M?
- 3) Systems Characteristics
- 3.1) What is the age of system?
 - 3.2) What is history of rehabilitation of systems? What is the time of last major rehabilitation, if any?

- 3.3) What percent of the command area is irrigated during each season?
- 3.4) Who "owns" the water? Who "owns" system facilities? What is the water typically available for all seasons, only during wet season for supplemental irrigation? Are supplies reliable and predictable?
- 4) Miscellaneous (If obtainable from existing reports)
 - 4.1) Water charges are what percent of incremental farm income?
 - 4.2) How many farms are served? What is average farm size? What is variation in farm size?
 - 4.3) What crops are grown? What are crop yields and the cropping intensity?
 - 4.4) What is annual rainfall and variance in rainfall?

O & M, AND ENERGY, COSTS IN LIFT
----- IRRIGATION SCHEMES -----

These cost computations have been worked out by the Department of Irrigation based on 1982 prices.

DIESEL PUMPS

O & M cost per acre - Rs. 525
Cost of fuel for cultivation per acre - Rs. 621

The above costs have been based on a 150 acre block under lift irrigation from one pump house with two 6" pumps.

The duration of pumping is 160 days x 8 hrs. = 1280 hrs.
average 12 consumptions = 1.3 gls/hr.

ELECTRIC PUMPS

O & M cost per acre - Rs. 564
Electricity* rate per acre based on - Rs. 2426
average cultivation

NOTE

* This cost varies depending on fuel adjustment charges that have been imposed for some time now by the Ceylon Electricity Board. These charges have increased the unit cost of electricity considerably.

The data regarding the cost of operating electric pumps have been worked out on the assumption that they will be operated and maintained by the Department of Irrigation. When farmers take over operation of pumps there should be a substantial reduction in cost. But no data is available.

Irrigation Department
ANNUAL COSTS OF OPERATION AND MAINTENANCE

Year	Operation and Maintenance Expenditure	Recurrent Expenditure	Capital Expenditure
	Rs. Million	Rs. Millior	Rs. Million
1946 - 51	10.4		
1952 - 56	13.1		
1957 - 61	51.7 A		
1962 - 66	16.8		
1967 - 73	20.0 B		
1974	15.0	12.2	39.2
1975	17.6	14.6	46.2
1976	18.8	15.2	43.9
1977	22.5	32.8	52.0
1978	23.0	54.0	144.4
1979	42.4	78.2	307.1
1980	65.5	107.5	489.2
1981	66.3	109.0	508.3
1982	68.5	111.6	601.0
1983*	67.7	134.6	659.1
1984*	62.0	142.3	631.5

NOTE

- A. includes flood damage repairs following the major flood 1957.
- B. Figures for 1971 for major and village works are not included. The figure for the previous yeat is Rs. 5.25 M for these two items.

SOURCES : Irrigation, Land and Forestry Development Strategy, Ministry of Lands and Land Development, October 1984, and
Irrigation Department (for 1983 and 1984).

TYPICAL O&M COSTS PER AC. PER ANNUM FOR GRAVITY IRRIGATION WORKS (1982 PRICES)

(Based on analysis of 1981 performance in 16 selected schemes at one per Range)

Description 1	Quantity 2	Manpower		Unit Rate in Rs. 5=1-3	Amount in Rs. 6=2x5	Labour in md 1/			
		Output/day 3	daily Wage 4			Regular 7=6-4	Casual 8=6-4		
A. LABOUR									
1. To Attendants including + 10% to cover Headworks	1.0 ac	500ac/360	32.08 a/	25.40	25.40	0.79	-		
2. Weeding	20.0 sq	25.0 sq	28.50 b/	1.14	22.80	0.80	-		
3. Removal of salvinia	2.0 sq	12.0 sq	28.50	2.38	4.75	-	0.17		
4. Desilting	0.5 cu	0.5 cu	28.50	57.00	28.50	-	1.00		
5. Filling scours	0.15 md	1.0 md	28.50	28.50	4.28	0.15	-		
6. Repairs to structures	0.10 md	1.0 md	62.39 c/	62.39	6.24	0.10	-		
Spreading gravel	0.2 sq	10.0 sq	28.50	2.85	0.57	0.02	-		
Total for A					92.54	1.86	1.17		58.9%
B. SUPERVISION									
Work Supervisor	1.0 ac	2500ac/360	35.00	5.04	5.04	-	-		3.2
C. DRIVERS AND OPERATORS									
1. Drivers of Jeeps, lorries, tippers @ 1% of Labour cost in A	1.0 ac	-	-	3.70	3.70	-	-		
2. Operators of farm tractors @ 3% of Labour cost in A	1.0 ac	-	-	1.85	1.85	-	-		3.5%
D. TRAVELLING & COMBINED ALLOWANCE									
1. Work Supervisor - 3600 mls m/c @ Rs. 1/- plus 48 days @ Rs. 45/-	1.0 ac	2500ac/360	16.00	2.30	2.30	-	-		
2. To Attendant - Bicycle allowance @ Rs. 16/- per month	1.0 ac	500 ac/360	0.53	0.38	0.38	-	-		1.7%
E. FUELS AND REPAIRS TO VEHICLES									
1. Fuel for Jeeps, lorries, tippers and farm tractors	0.25 gl	-	-	28.00	7.00	-	-		
2. Repairs to vehicles @ 50% of fuel cost	1.0 ac	-	-	3.50	3.50	-	-		
3. Overtime for Drivers and Operators @ 5% item 1	1.0 ac	-	-	0.35	0.35	-	-		6.9%

	Quantity	Output per annum	Annual Cost in Rs.	Unit Rate in Rs.	Amount in Rs.
1. Technical Assistants	1.0 ac	5,000 acs	14,000	2.80	2.80
2. Administration & OH of Range Office	1.0 ac	40,000 acs	190,250	4.76	4.76
3. Administration & OH of Divisional Office	1.0 ac	12,000 acs	85,500	7.13	7.13
4. Travelling, Combined Allowance (Per Diem Expenses), Overtime and repairs @ 20% of items 1 to 3	1.0 ac	-	-	2.94	2.94
5. Physical contingency @ 5% of items 1 to 4 Administration and OH cost for O&M per ac per annum	1.0 ac	-	-	0.88	<u>0.88</u>
					18.51 say Rs. 18.50

DEPRECIATION OF VEHICLES AND EQUIPMENT

3 Jeeps, 1 Lorry and 5 Farm Tractor Trailers are required for O & M for 15,000 acres.

Assume depreciation period is 5 years

Average Investment Cost (AIC) = 0.6 Capital Cost

Insurance is 1% of AIC

Depreciation per annum is as below :

	3 Jeeps	1 Lorry	5 T/Trailers
Fixed Cost	90,000	47,000	155,000
Insurance	2,700	1,410	4,650
Overhead at 10%	9,270	4,841	15,965
	<u>101,970</u>	<u>53,251</u>	<u>175,615</u>

1. Depreciation cost of jeeps	1.0 ac	-	-	6.80	6.80
2. Depreciation cost of lorry	1.0 ac	-	-	3.55	3.55
3. Depreciation cost of tractor trailers	1.0 ac	-	-	11.71	11.71
4. Depreciation cost of miscellaneous items @ 5% of 1 to 3	1.0 ac	-	-	1.10	1.10
5. Contingency at 5% of 1 to 3 Depreciation Cost for O & M per ac. per annum	1.0 ac	-	-	1.10	<u>1.10</u>
					24.26 say Rs. 24.50
TOTAL O & M COST PER AC. PER ANNUM					Rs. 200.00
1/ md = man - day					
a/ Semi-skilled wage (32.08)					
b/ Unskilled wage (28.50)					
c/ Skilled wage (33.89) + Unskilled wage (28.50)					

Irrigation Department
March 1983

Description 1	Quantity 2	Manpower		Unit Rate in Rs. 5=4-3	Amount in Rs. 6=2x5	Labour in md 1/ Regular Casual		
		Output/day 3	Daily wage 4			7=6-4	8=6-4	
F. PURCHASE OF MATERIALS AND TOOLS								
1. Cement	0.1 bg	-	-	82.75	8.28	-	-	
2. Sand	0.005 cu	-	-	216.00	1.08	-	-	
3. Metal	0.005 cu	-	-	526.00	2.63	-	-	
4. Rubble	0.005 cu	-	-	461.00	2.31	-	-	
5. Gravel	0.05 cu	-	-	228.00	11.40	-	-	
6. Paints	0.005 gl	-	-	325.00	1.63	-	-	
7. Gunnybags	0.15 bag	-	-	15.00	2.25	-	-	
8. cane baskets	0.05 No.	-	-	8.00	0.40	-	-	
9. Miscellaneous materials @ 5% of items 1 to 8	1.0 ac	-	-	1.50	1.50	-	-	
10. For replacement of tools @ 5% of items 1 to 8	1.0 ac	-	-	1.50	1.50	-	-	
G. PHYSICAL CONTINGENCY at 5% of items A to F	1.0 ac	-	-	7.48	7.48	-	-	4.8%
Base cost for O & M per ac per annu -Total of Items AtoG					157.12	say Rs.	157.00	

H. ADMINISTRATION AND OVERHEADS

Description	Annual salary in Rupees	Range		Division	
		No.	Amount in Rs.	No.	Amount in Rs.
Deputy Director	38,000	1	38,000	-	-
Senior Irrigation Engineer	25,000	1	25,000	-	-
Irrigation Engineer	22,000	1	22,000	1	22,000
Accounting Officer	20,000	1	20,000	-	-
Accountant	24,000	1	24,000	1	-
Head Clerk	12,500	1	12,500	1	12,500
Clerks & Typists	10,500	12	126,000	7	73,500
Minor Employees	8,000	5	40,000	3	24,000
Drawing Office Assistants	20,500	1	20,500	-	-
Draughtsmen	10,500	5	52,500	2	21,000
Divisional Assistants (Senior Technical Assistants)	18,000	-	-	1	18,000
			380,500		171,000

Note:

The administration costs tabulated on the left hand side are apportioned equally for "Investigation, Design and construction" and "Operation and Maintenance" respectively.

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My No.02/9/2/2 (iii)

Ministry of Lands & Land Development
No.500, T.B. Jayah Mawatha,
Colombo 10.

12th September, 1983.

TO: The Govt. Agents of Anuradhapura,
Polonnaruwa, Ampara, Batticaloa,
Jaffna, Mullaitivu, Vavuniya, Mannar,
Matale, Kandy, Kurunegala, Puttalam,
Ratnapura, Moneragala, Badulla,
Hambantota and Trincomalee Districts.

REVISION OF IRRIGATION SPECIFICATION REGISTER
TO RECOVER O & M COSTS FROM MAJOR IRRIGATION
(GRAVITY) SCHEMES

I refer to my letter of 7.9.83, on the above subject.

The Government has decided to recover O & M costs commencing in 1984 from farmers benefitted by the irrigation water issued in major irrigation systems. The Programme to recover O & M costs will replace the existing arrangements to collect irrigation rates.

According to the present estimates, an average cost of Rs.200/- per acre is required to be expended by the Government to meet the cost of O & M in major irrigation systems. Since the Government's financial resources cannot sustain this amount of expenditure, it is planned to recover the total cost of expenditure in the following manner :

<u>Year</u>	<u>Expenditure by Government</u>	<u>Contribution by farmers</u>	<u>Total</u>
1984	Rs.100.00	Rs.100.00	Rs.200.00
1985	Rs. 80.00	Rs.120.00	Rs.200.00
1986	Rs. 60.00	Rs.140.00	Rs.200.00
1987	Rs. 40.00	Rs.160.00	Rs.200.00
1988	Rs. 20.00	Rs.180.00	Rs.200.00
1989	Rs. 00.00	Rs.200.00	Rs.200.00

As a Preliminary step it is necessary to revise the current Irrigation Specification Register as provided under section 50 of the Irrigation Ordinance. The purpose of this Circular is to provide guidelines and instructions to adopt a procedure for the revision of registers.

FIRST STEP :

Typing of Registers :

Commencing from 15th September 1983, action should be initiated to type the specification registers kept in the Kachcheries. Format to be used in typing details of lands alienated by the Government is given in the list 'L' (annexed) and details in respect of private lands fed by major irrigation systems should be typed in the format given in list 'P' (annexed). The purpose of making such a distinction is to accommodate extra details that need to be included in respect of private lands.

Separate registers have to be prepared for each scheme. It is recommended that the register should be prepared according to tract numbers. Typing of the register should be completed by 30th September, 1983.

SECOND STEP :

Exhibition of Registers :

All registers in the District should be displayed in a prominent place in the Kachcheri for inspection by the public. Action should also be taken to exhibit the relevant registers in A.G.A.'s Offices, A.S.C. Offices, Colonisation Officers' Offices and Irrigation Offices from 5th October, 1983 to 26th October, 1983 (inclusive of both days). If the A.G.A.'s Office serves more than one major irrigation system, the registers of the relevant irrigation systems should be made available for inspection by the public in that office. Similarly in the case of other Offices and locations appointed to display the register, it is necessary to correctly identify the scheme served by that office to display only the relevant register or registers. Action will be taken by this Ministry to inform the public of the dates of such exhibition through mass media publicity.

THIRD STEP :

Application for Revision :

Claims for revision of names should be submitted only by farmers who are entitled to water and whose names are not shown in the current register, because only the farmers shown in the final specification register will be issued with water. Farmers whose names are not shown in the specification register are therefore required to submit their claims to the Asst. Government Agent of that area by using the format given in Form 'C' before 26th October, 1983. Action should also be taken in respect of requests for corrections to names and extents of paddy fields after due inquiry.

FOURTH STEP :

Inquiries :

On receipt of claims by farmers in Form 'C', the AGA who receives such claims should issue an acknowledgement and simultaneously inform the applicant of the date of inquiry by using the Form 'R'. It is advisable to fix the dates for inquiries before the exhibition of register commences, so that such dates could be duly intimated together with the acknowledgement. It would also facilitate the expeditious completion of the inquiries. Since the number of farmers who submit such claims are likely to be few, it would be more prudent to dispose of these claims as soon as possible. However, this would be possible only if the claims are submitted while the AGA is physically present in Office and sufficient evidence is available to substantiate the claims submitted for inquiry. These inquiries should be conducted only by the AGA of the area and in his absence an Officer such as a DLO may be appointed as a substitute. Inquiries into claims should be completed before 8th November 1983, and the decisions should be intimated immediately to the G.A. to prepare the lists of names for addition and deletions.

FIFTH STEP :

Preparation of the Lists of Names for Deletions and Inclusions :

On completion of inquiries on claims submitted by farmers, names for which decisions have been made to include into the register should be separately shown in a list, and another list should be prepared separately to show the corresponding names to be deleted. Lists showing the names to be deleted will be designated 'A' list and the list showing the names for inclusions will be called the 'B' list. The typing of these lists should be completed by 17th November, 1983.

SIXTH STEP :

Re-display of lists for public inspection:

The above mentioned 'A' lists 'B' lists together with the main list should be exhibited for Public inspection between 22nd November 1983, to 30th November 1983, (inclusive of both days) in the same places as before. To facilitate the inspection by farmers, it is recommended that the names to be deleted are struck-off the main register in red ink while at the same time add new names in blue ink.

The objective behind exhibiting the register for the second time is to enable the farmers to know the course of action taken by the G.A. on claims submitted by them and also to give them a further opportunity to object to the decisions made therein, if any. The new register will be prepared with reference to the main list, the list of names to be deleted and the list of names to be added.

Objections arising from the exhibition of registers for the second time should be forwarded to the A.G.A. by farmers in the form of appeals upto 30th November 1983. As far as possible decisions on these matters should be made almost on the same day.

The number of 'A' and 'B' lists that should be duplicated will substantially depend upon the number of places in which they will be displayed for public inspection. The A.G.AA. should take care to keep the main list sent up for exhibition, so that it can be re-used again for exhibition together with 'A' and 'B' lists.

SEVENTH STEP :

Certification of Revised Lists :

The typing of revised registers should be completed on or before 15th of December 1983, On 15th December 1983, the G.A. or the Addl. G.A. (Lands) should place his certificate on the last page of the register. Should there be any mistake which occurred in the process of duplication, typing etc., such instances should be corrected under the personal hand of the G.A./Addl. G.A. (Lands).

J. Alwis
Director (WRD)

Sgd : Nanda Abeywickrema
Secretary

MINISTRY OF LANDS & LAND DEVELOPMENT

CC:- S/Home Affairs

:- D.I.

:- L.C.

:- Regional Deputy Directors of Irrigation.

N.B. : Special instructions on the revision of the Specification Registers are attached hereto.

SPECIAL INSTRUCTIONS RELEVANT TO THE
REVISION OF SPECIFICATION REGISTER

Immediately on receipt of this Circulars, the respective G.AA. should furnish the following information to the Ministry with regard to the Current Specification Register kept in the Kachcheries:

<u>Names of the Scheme</u>	<u>No. of names to be Typed</u>	<u>Whether the Registers are available in Kachcheries</u>
----------------------------	---------------------------------	-----------------------------------------------------------

- 1.
- 2.
- 3.

2. While the above information is being provided, action should also be taken to commence the typing of stencils to prepare the registers. If the current lists have been sent out of the Kachcheri for collection of rates, steps should be taken to bring back such registers for typing. It is necessary to keep the Ministry informed that all registers have been returned to the Kachcheries.
3. For typing each name and other details required to be shown in the register a piece-rate payment of 08 cents will be paid with another 02 cents for checking the typed details. In addition, a payment of 10 cents per stencil is authorised for duplication.
4. In order to expedite the preparation of the register, if sufficient officers are not available for typing, action should be taken to discuss with Asst. Commissioner of Elections the possibility of obtaining the assistance of the Election Office Staff for the purpose.

5. It is expected that the respective Govt. Agents will take suitable actions to appoint the Addl. G.A. (Lands) to co-ordinate the activities pertaining to the revision of specification register. It is practically expedient to obtain the necessary information from one such officer. If there is no separate Addl. G.A. for land work, the G.A. should appoint a suitable Officer, and inform the name, designation and the telephone number of such Officer to the Ministry. Similar steps should be taken in respect of the Addl. G.A. appointed to deal with this matters.
6. On the completion of the register for exhibition as explained in the First Step, five copies of the register should be forwarded to the Deputy Director of Irrigation in the relevant District/Region. He will deploy his officers in the schemes to conduct a comparative assessment of the farmers shown in the list to issue water. Information provided by the Irrigation staff could be made use of for making determinations during the inquiries into claims submitted by farmers.
7. Current registers should be kept in safe custody in the Kachcheries, since the registers will be required to calculate the arrears.
8. In irrigation schemes and tracts where Tamil speaking farmers live, it is necessary to prepare the registers both in Sinhala and Tamil. In areas where only Tamil speaking farmers live, registers should be prepared in Tamil as well as in Sinhala.

Form 'C'

REVISION OF SPECIFICATION REGISTERS

- 1. Name of Applicant :
- 2. Address :
- 3. Name of the Irrigation Scheme :
- 4. Tract No. :
- 5. B.O.P. No. :
- 6. Lot No./Survey Reference :
- 7. Extent of Paddy Land : A. R. P.
- 8. Whether applicant is the proprietor/Allottee/Tenant :

.....
Signature of the Applicant

Date :.....

Form 'F'

Mr./Mrs./Miss.

REVISION OF SPECIFICATION REGISTERS

Dear Sir,/Madam,

I am in receipt of your claim date It is hereby notified that an inquiry will be held on..... at regarding your claim to insert the name in the Specification Register, and you are requested to be present with all relevant documents in support of your claim.

Yours sincerely

List 'L'
(State Lands)

SPECIFICATION REGISTER

Name of the Irrigation Scheme :

Tract No. :

Serial No.	Lot No. or Survey Reference	Name of the Paddy Land	Name & Address of the Allottee	Extent	
				A.	S.

List 'P'
(Private Lands)

SPECIFICATION REGISTER

Name of the Irrigation Scheme :

Tract No. :

Serial No.	Lot No. or Survey Reference	Name of the Paddy Land	Name of the Proprietor	Name of the farmer	Extent	
					A.	S.

MINISTRY CIRCULARNO. 163

My No.02/9/2/2 (iii)

Ministry of Lands & Land Development
No.500, T. B. Jayah Mawatha,
Colombo 10.

22 September, 1983.

TO: The Govt. Agents of Anuradhapura,
Polonnaruwa, Ampara, Batticaloa,
Jaffna, Mullaitivu, Vavuniya, Mannar,
Matale, Kandy, Kurunegala, Puttalam,
Ratnapura, Moneragala, Baddulla,
Hambantota and Trincomalee Districts

REVISION OF IRRIGATION SPECIFICATION REGISTER
TO RECOVER C & M COSTS FROM MAJOR IRRIGATION
(GRAVITY) SCHEMES

I refer to my Circular No.162 dated 12.09.83, and also to the discussions held at this Ministry on 13.09.83.

The intention of this Circular is to clarify and provide certain extra guidelines for the preparation of the Specification Register.

1ST STEP : TYPING OF REGISTERS -

Preliminary typing of the Specification Register for exhibition should be done with reference to the Land Ledgers. If there are any discrepancies, the names given in the land ledger should be accepted. Errors and omissions could be rectified during the inquiry stage.

Since the first round of typing is for the purpose of exhibiting the register for inspection by the public, the language to be adopted for initial typing should be on the following basis :

- a) Where only Sinhala speaking farmers live, the register to be typed only in Sinhala;
- b) Where both Sinhala speaking and Tamil speaking farmers live, typing should be in both Sinhala and Tamil. However, within the same Scheme, if certain tracts can be identified as distinctly speaking one language, the initial register can be typed in that language. Practically the purpose

is to enable the farmers to inspect the register of their area in a language they can read and understand;

- c) Where only Tamil speaking farmers live, the typing should be only in Tamil;

N.B.

In the typing of the final list for certification, the language policy of the Government should be adopted, for which separate instructions are given below

It would be sufficient to give a minimum of two registers (not necessarily 5 copies) to the Regional Deputy Director of Irrigation. Depending on the number of copies required for small schemes, typing on tissues can help in reducing the costs.

Time targets for typing have been extended up to 07.10.1983. Please see the time table given at the end of this Circular.

2ND STEP : EXHIBITION OF REGISTERS -

The period for the exhibition of registers is now revised to 12.10.1983, as the commencing date and 26.10.1983 as the completion date.

3RD STEP : APPLICATION FOR REVISION -

The period for applications is now revised to 12.10.1983, as the date of commencement and 26.10.1983 as the date of completion.

4TH STEP : INQUIRIES -

It is necessary for the inquiring officers to be convinced that the objective of this exercise is to list the names of farmers, who obtain irrigation water for cultivation from a major irrigation (gravity) system. For the present, farmers under lift

200

irrigation schemes are not included. The inquiries should be conducted by the Divisional ACA or by DLO/Asst. Land Commissioners. This occasion to prepare the Specification Register should not be made an opportunity to settle land disputes. As a matter of fact, even if the name of the farmer who actually cultivates the allotment is not the person shown in the register, the name given in the land ledger should be accepted for this specific purpose. Furthermore, the possibility of including the names of persons whose lands are not shown in the Specification Register but who actually cultivate for over a long period of time should be examined by deploying the field staff of the Land Commissioner's Department and the Irrigation Department. The Director of Irrigation has concurred with the proposal to include such lands into the Specification Register, provided that such inclusion and commitment will not interfere with the operation of the irrigation infra-structure. In addition to this step, these officers in the Irrigation Department and the Land Commissioner's Department must get together to discuss and forward their recommendations to the Divisional ACA for necessary action. On being satisfied with the above recommendations the inquiring officers should include into the Specification Register these names that have been recommended in the manner explained above. Even when such farmers do not submit their claims to enter their names into the register, action should be taken to inform the respective farmers that their names have been included. Revised dates for this purpose are from 12.10.1983 to 18.11.1983.

5TH STEP : PREPARATION OF A & B LISTS -

Revised dates are from 22.1.1983 to 30.11.1983.

6TH STEP : RE-DISPLAY OF LISTS -

Revised dates for the re-display and appeals and objections are from 02.12.1983 to 16.12.1983 and for decisions on such appeals and objections are from 02.12.1983 to 20.12.1983.

7TH STEP : TYPING OF REVISED LISTS AND CERTIFICATION -

In order to conform to the language policy and legal requirements, the language for final typing of the register should be selected in keeping with the following procedure :

- a) Where the Sinhala speaking farmers live, the final register to be prepared in Sinhala only;
- b) Where both Sinhala and Tamil speaking farmers live, the final register should be prepared in Sinhala and Tamil;
- c) Where only Tamil speaking farmers live, the final register should be both in Sinhala and Tamil. (For purpose of exhibition, only the Tamil registers were recommended but in this instance preparation of register should be in both languages).

Revised dates for typing the final lists are from 20.12.1983 to 10.01.1984. New date for certification of Registers is on or before 15.01.1984.

Other matters :

Payments -

Although instructions have been issued to pay 08 cts., and 02 cts. for typing and checking respectively, the Govt. Agents are authorised to vary these rates according to their discretion without exceeding the total amount of 10 cts.

Time Table :

The dates given in Circular No.162 are now revised as follows :

<u>Step</u>	<u>Operation</u>	<u>Date of Commencement</u>	<u>Date of Completion</u>
1	Typing the Specification Register (for exhibition)	15.09.83	07. 10. 83
2	Exhibition of Registers	12.10.83	26. 10. 83
3.	Accepting Claims for the revision	12.10.83	26. 10. 83
4.	Inquiries into claimes	12.10.83	18. 11. 83
5.	Typing of A & B Lists	22.11.83	30. 12. 83
6 a.	Exhibition of A & B lists with the original registers	02.12.83	16. 12. 83
b.	Appeals and objections	02.12.83	16. 12. 83
c.	Inquiries and decisions in respect of appeals and objections	02.12.83	20.112. 83
7 a.	Typing of revised lists	20.12.83	10. 01. 84
b.	Certification of final Registers	---	16. 01. 84

Please acknowledge the receipt of this circular.

J. Alwis
Director (WRD)

Sgd : Nanda Abeywickrema
SECRETARY

- CC:- 1. S/Home Affairs;
;- 2. Director of Irrigation;
;- 3. Land Commissioner;
;- 4. Regional Deputy Directors of Irrigation.

MINISTRY OF LANDS & LAND DEVELOPMENT

MINISTRY CIRCULAR NO. 177

10th February, 1984

TO ALL GOVERNMENT AGENTSRECOVERY OF OPERATION AND MAINTENANCE RATES
IN MAJOR IRRIGATION (GRAVITY) SCHEMES

Your attention is drawn to Circular No. 162 of 12th September, 1983 and 163 of 22nd September, 1983 regarding the revision of the Specification Register and also to my letter No. 2/9/2/2 of 4th December, 1983 on the appointment of collectors.

2. On completing certification of the Specification Registers, arrangements should be made for the recovery of O & M Cost soon after the Maha harvest 1983/84. It is necessary that there should be a high degree of uniformity in procedures adopted in the remittance of collections as well as in the documentation and monitoring the details of payment.

APPOINTMENT OF COLLECTORS

3. Instructions have been already forwarded to you by my letter No. 2/9/2/2 of 4th December, 1983 to identify the officers who should be appointed as Collectors. All Collectors must be permanent officers, who can provide a security. The Government Agents are authorised to delegate to the Co-ordinating Officers who are placed in charge of each Project/Scheme to issue letter of appointment to collectors. The names of collectors should however be approved by the Government Agents. Suitable clauses for the appointment letter to Collectors are given in Annexe I. You are free to add further information as are found necessary to suit your specific requirements.

APPOINTMENT OF CO-ORDINATING OFFICERS

4. All Project Managers should be appointed as co-ordinating officers for the purpose of monitoring and supervising the field level collections. If no project manager is available the Irrigation Engineer/ Senior Technical Officer placed in charge of the scheme

should be appointed as Co-ordinating Officer. The Divisional Assistant Government Agent whose office is located close to the Project may also be considered if the Irrigation Engineer or the Senior Technical Officer operates from a place far away from the Project area. Where any other officer is considered for appointment as Co-ordinating Officer, please explain the circumstance under which the decision is made and covering approval be obtained from the Ministry.

5. USES OF THE SPECIFICATION REGISTERS

Arrangements have been made to prepare several copies of the Specification Registers. This register will serve as principal document which will be used to collect all Operation and Maintenance rates from the farmers. In addition, it is also expected that extra copies of the registers could be justifiably used to collect information that may be necessary for the next revision of the Specification Registers.

6. The Specification Register will be used at three levels, namely:
1. District level by the G.A. in the Kachcheri
 2. Project or Scheme level by the Co-ordinator
 3. Field collection unit level by the Collector

7. DISTRICT/KACHCHERI LEVEL

A clear print of the register carefully checked for its accuracy and duly certified by the G.A. should be kept in safe custody to serve as master copy. All changes in the names, addresses, extent etc., authorised by the G.A. should be recorded in the appropriate place in the register under the hand of the G.A.

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8. A second copy should be kept for office use to record the collection in each unit reported from the Project level.
9. A third copy may be used for inspection in case it is requested by members of the Public.

PROJECT/SCHEME LEVEL

10. The Co-ordinating Officer operating at the Project/Scheme level will use at least two copies, one of which will be taken to record details of payment reported by collectors. Each page of this copy will be pasted with the recommended form to the right hand side of each page, to note down the amount paid by the farmers and the receipt number issued for the payment in each year as per instructions given in my letter No. 02/9/2/2 of 31.1.84.
11. The second copy will be used in the Co-ordinators Office to take down notes on changes that will be of use in the next revision of register, when such information comes to his notice, or reported by the field level staff.
12. A third copy may be used for the purpose of inspection by the Public when a request is made.
13. Co-ordinators may also take action to obtain a few extra copies for distribution among other field level officers who in the course of their duties will find the register useful for their work, and also assist in unravelling land problems or problems of ownership which could be sorted out by the respective Departments with the least delay. The information provided by these officers will be significantly important in the next revision of the Specification Registers.

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FIELD COLLECTORS LEVEL

14. The distribution of registers among the collectors should be handled by the Co-ordinator. The Co-ordinator should obtain sufficient number of registers from the G.A. for that purpose.
15. Each Collector may be given two copies of the extracts pertaining to his area of collection and another complete copy of the register.
16. A copy of the extract will be used exclusively to record payment made by farmers. These extracts will be posted in each page with the recommended format used to record payment.
17. A second copy of the extract may be used by collectors to take notes on the changes that will have to be made in the next revision and also for any other administrative purpose.
18. To summarise the above, three copies will be used at the Kachcheri level and two or more copies will be used at the Project/Scheme level. Each Collector will have to be issued with one complete copy of the register and two copies of extracts pertaining to each Collector's area.

ISSUE OF RECEIPT BOOKS AND TAKE OVER OF COUNTERFOILS

19. Adequate number of Receipt Books should be issued to co-ordinating officers who will in turn issue them to Collectors. All receipts should be franked with the legend 'Operation and Maintenance Rates' in Sinhala/Tamil before the books are issued to Co-ordinating Officers by the Kachcheri. It is also necessary to issue CR Registers to keep records both by collectors and Co-ordinating Officers.

20. All receipt books issued to Co-ordinating Officers should be entered in a Register. There should be separate pages allocated to enter the details in respect of each project.
21. Co-ordinating Officers will also maintain a similar register to record the distribution of receipt books among collectors and also the return of counterfoils. For this purpose please use the format given in Annexe II (OMR/I). A quarterly return should also be furnished by the Co-ordinating Officer to the Kachcheri on the distribution of receipt books and take over of counterfoils. The format given in Annexe III (OMR/2) should be used for that,
22. In taking over counterfoils from respective Collectors by the Co-ordinating Officer in his Office, a careful check should be made against the details provided by the Collector in his reports and the Bank Receipts submitted by him. On completion of this check for the take over of counterfoils, the legend 'checked' should be franked on all counterfoils and Bank Receipts.

IDENTIFYING UNITS FOR COLLECTION

23. As per instructions conveyed by my letter No. 2/9/2/2 of 4th December, 1983 an area served by a single water source (hydrologic area) should be identified for each Collector. This arrangement would help in identifying the amounts to be allocated for each area according to payments made by farmers in that area. At the co-ordinator's level separate files should be opened for each unit area identified for each collector to which a copy of the appointment letter to the collector will also be posted. Other correspondence regarding the issue of receipt books and return of counterfoils to respective collectors should also be dealt with through these files.

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COLLECTION ACCOUNT

24. Arrangements have been made to open a Collection Account in the District Branch of the Bank of Ceylon. Government Agents must ensure that action is taken to commence the operation of this account by making a request to the Bank Manager.

25. The purpose of this Collection Account is to ensure that rates deposited by the Collectors at the Bank Branches of the Bank of Ceylon mainly located in the Agrarian Service Centres will be regularly transferred to this Collection Account in the District capital. Arrangements should be made with the Manager of the District Branch to prepare the monthly statement of account in duplicate and send a copy each to this Ministry and the Government Agent. The Government Agent should arrange to review this statement regularly by comparing the bank balance with the details of collection furnished by the Co-ordinating Officers on Form OMR/3 given in Annexe IV. Any Shortfalls should be inquired into and action taken to rectify such shortcomings.

26. At the end of every month a summary of the statement of Collections furnished by Co-ordinators on Form OMR/3 should be prepared at the Kachcheri. This summary should contain the total amount payable as C & M rates in that year, collection at the end of that month and the outstanding amount at the end of the month. A copy of the summary report should be sent to the Ministry of Lands & Land Development before the 15th of the following month without fail. Please use the format given in Annexe V (OMR/4) for this purpose.

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27. The unit in the Kachcheri dealing with monitoring the collection should be set up in the Accounts Branch. Officer should be provided with necessary training and guidance to supervise and monitor the activities connected with reporting the collections to Kachcheri.
28. An amount up to Rs.2000/- will be made available by me on request for printing necessary forms, sets and to obtain registers etc.

PROCEDURE TO BE ADOPTED BY THE CO-ORDINATING OFFICERS AT THE PROJECT/SCHEME LEVEL-----

29. Adequate number of receipt books should be collected from Kachcheries for distribution among Collectors.
30. An up-to-date account should be maintained of receipt books collected from the Kachcheri, the details of issues made to collectors and return of counterfoils. Separate pages may be allocated to each Collector in the register to record the above details.
31. The statements of collections submitted by Collectors on form OMR/5 given in Annexe VI should be checked and verified with the counterfoils, bank receipts, and the Specification Register of the name of the payee, correctness of additions, timely deposits etc. Shortcoming should be noted and suitable action taken to rectify them.
32. After the verification of counterfoils, statements on collections etc., are complete the legend 'checked' should be franked on bank receipts and counterfoils which were subject to verification and found correct.

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33. The form OMR/3 should be certified by the Co-ordinator and sent to the Kachcheries before 10th of every month for the Government Agent to furnish his statement to the Ministry before 15th of each month.
34. Form OMR/5 submitted by Collectors should be kept in the respective files opened for each Collection Unit.
35. It is necessary to ensure that each Collector is allocated with a target for collections. This target should be to collect at least 50% of O & M rates soon after each harvest.
36. Co-ordinating Officers should be fully conversant with the procedures that have been recommended for compliance by the Collectors for proper supervising and monitoring of their activities.
37. At every turn, the Co-ordinators should endeavour to understand specific problems in the scheme which affect the collection of rates. This information will be important in reviewing the performance of each system.
38. It is necessary for the Co-ordinators to impress upon the Collectors and also the farmers, as much as possible, that the quality of service in respect of Operation and Maintenance will depend largely upon the collection of rates in each scheme. The rates collected in any particular scheme will be used only in that scheme and it would not be possible to bring in funds from other schemes for O & M work.

OPERATION AND MAINTENANCE RATES

39. In the year 1984, the amount to be recovered as O & M rates is Rs.100/- per acre per year.

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It is not intended to make uniform reductions all over when a successful crop in one season is followed by a crop failure in the next season. However, decisions will have to be made on locations-specific situations which arise from time to time.

40. Crop losses or failures which come within the ambit of the Agricultural Insurance Programme for payment of compensation will not be considered for the waiver of rates. It is expected that farmers should take Insurance cover for their crops and benefit by the new programme to pay full compensation.

COMMISSION PAYMENT

41. The Collectors will be paid a commission of 5% on their collections. The commission payable should be settled separately from allocations given to each District. Under no circumstances should commissions be deducted from the collections which are meant only for deposits.

REMITTANCE OF COLLECTIONS UNDER SPECIAL CIRCUMSTANCES-----

42. In areas where Bank Branches have been closed down with only the District Branches operating in the District capital, it would be necessary for Government Agents to make special arrangements to remit the collections at least through the Post Offices. Such situations should receive your special attention and the course of action taken by to resolve such problems should be intimated to this Ministry.

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COLLECTION OF RATES FROM UNAUTHORISED CULTIVATORS

43. Farmers whose names do not appear in the Specification Register for some reason or the other but continue to draw water from the irrigation facilities provided under the scheme should also be charged the same rates. If the names are incorrectly shown in the register, action may be taken by collectors to accept rates and issue a receipt explaining the nature of the payment as being an imposition for obtaining unauthorised water. Action should however be taken during a reasonable period of time by the Collectors and Co-ordinators to report such matters to the Government Agent for remedial action. Unauthorised cultivators who continue to draw water for cultivation should be dealt within a similar way. In the report submitted by the collectors, such payments should be shown separately to avoid possible confusion in accounting and monitoring work.

ANNEXE I

SUGGESTED CLAUSES FOR THE APPOINTMENT LETTER
TO COLLECTORS -----

- (1) In addition to the duties assigned to your Post you are also appointed as Collector of Operation and Maintenance rates within the Collection unit consisting of the following areas in Scheme/Project:
 - (a)
 - (b)
 - (c)
- (2) The amount to be collected as rates from farmers will be Rs.100/- per acre per annum for 1984. Revisions in this figure will be intimated to you from time to time by the Co-ordinator.
- (3) You are responsible for the recovery of rates in the area assigned to you.
- (4) You may be called upon to act as Collector to other areas as decided by the Co-ordinating Officer of the Scheme/Project.
- (5) You should maintain a constant dialogue with the farmers to educate them on the importance of paying Operation and Maintenance rates. The Hand Book containing questions and answers may prove to be useful for this purpose.
- (6) You will be paid a commission of 5% on the amount collected by you.
- (7) Operation and Maintenance rates should be recovered only on the issue of official receipts. No temporary receipts should be issued under any circumstances.

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- (8) Receipts should carry the legend, 'Operation and Maintenance Rates' franked on it before issuing.
- (9) Collectors should maintain a Register showing an up-to-date account of receipt books issued to them and the counterfoils returned to the Co-ordinating Officer. The following format should be used for that purpose.
- | Date of Receipt | Serial No. of Receipt Books | Date of Return of Counter-foil Bills | Total Amount Collected on the Book | Signature of Officer Returning Counterfoils |
|-----------------|-----------------------------|--------------------------------------|------------------------------------|---------------------------------------------|
|-----------------|-----------------------------|--------------------------------------|------------------------------------|---------------------------------------------|
- (10) When farmers call to pay Operation and Maintenance rates the name of the farmer as given in the register, specification number, the amounts to be paid and the year in respect of each payment should be written on the receipt. If there is any discrepancy or error in the entries appearing in the register, the Co-ordinating officer should be informed so that he could obtain the recommendations of the Government Agent and rectify the error. Amendments to the Register could be made only on written instructions received from the Co-ordinating Officer/Government Agent.
- (11) In collecting receipt books and in returning counterfoils collectors should sign the register maintained by the Co-ordinating Officer who is responsible for the issue of receipt books and for accepting counterfoils.
- (12) Collectors should not retain with them an amount exceeding Rs.1000/- on any day without depositing the money in the Bank. As far as possible every endeavour should be made to deposit rates collected on each day.

- (13) In depositing the money in the Bank Branch, deposit receipts should be prepared in duplicate. A copy of this receipt issued by the Bank should be retained with the Collector and the other should be sent to the Co-ordinating Officer.

- (14) The monthly statement of collection should be prepared in Form CMR/5.....
Before the 5th of every month Collectors should personally submit the statement for the previous month together with counterfoils, bank receipts and the register to the Co-ordinating Officer for verification and check. The Co-ordinating Officer will check and place his signature in the appropriate place, and certify the statement to its correctness and prepare a statement on the collection made by each Collector for submission to the Kachcheri.

- (15) At the end of each day the Collector should verify the collected amount given in counterfoils. This information should be posted in the CR register for that purpose. In recording the above information the following format should be used :

Date	Receipt No.	Specification No. & Farmer's Name	Amount collected	Year for the Payment	Deposits		Checking Officer's Signature
					Date	Bank Branch	

- (16) Farmers whose names do not appear in the Specification Register but obtain irrigation water from channels should also be charged on the basis that they obtain unauthorised water. In such instances official receipts must be issued to them and the nature of the levy should be clearly described in the receipt. Such collection should be separately accounted for in the reports submitted to the Co-ordinating Officer.

- (17) The Government Agent/Co-ordinating Officer will issue instructions from time to time regarding the collection of rates. You should adhere to such instructions in carrying out your duties as a Collector.

REGISTER OF RECEIPT BOOKS RECEIVED AND ISSUED BY THE CO-ORDINATING OFFICERS

Name of the Project :

Name of the Co-ordinating Officer :

Date of Receipt	Serial No of Receipt Books	Date of issue to the Collector	Name of the Collector	Signature of Collector	Total amount collected on these books	Signature of the officer receiving	Date of returning counterfoils to Kachcheri	REMARKS

ANNEXE 3

OMR/2

OPERATIONS AND MAINTENANCE RATES
QUARTERLY STATEMENT OF THE ISSUE OF RECEIPT BOOKS AND

RETURN OF THE COUNTERFOILS

Quarter :

Name of the Project :

Year :

Name of the Co-ordinating Officer:

Serial Nos. of the Receipt B-oks	Date of Issue	Name of the collec- tor	Date of Receiving Counter- foil	Total amount collec- ted on the Book	Remarks if any

Signature of the Co-ordinating Officer

OPERATIONS AND MAINTENANCE RATES

PROJECT CO-ORDINATOR'S MONTHLY STATEMENT - COLLECTIONS FOR THE MONTH OF.....OF THE YEAR.....

Name of the Project :

Co-ordinating Officer's Name :

Collection Unit	Name of the Collector	Amount collected and deposited	Total amount due for the year	Total amount collected at the end of the month	Outstanding amount for the current year	Remarks if any
TOTAL						

.....
Signature of the Co-ordinating Officer

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COLLECTION OF OPERATIONS AND MAINTENANCE RATES year

District

Progress Report for the Month of

Name of the Scheme	Total O&M cost due for the current year	Total Collection at the end of the previous month	Amount collected in this month	Total collected at the end of the current month	Total amount outstanding	Remarks if any
TOTAL						

Secretary
Ministry of Lands and Land Development forwarded.

* Please follow the same order in all Reports

Date.....

.....
Government Agent

.....
District

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ANNEXE 6

FORM OMR/5

OPERATION AND MAINTENANCE RATES

Statement of Collection for the month ofof the year.....

Name of the Project

Name of the area of collection.....

Name of the collector

Name of the farmer	Specification No.	No. of the receipt issued and date	Amount collected		Date of the Deposit	Name of the Bank Branch	Remarks if any
			Rs.	Cts.			

TOTAL AMOUNT COLLECTED FOR THE MONTH	Rs	Cts.
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TOTAL AMOUNT COLLECTED FOR THE YEAR AT THE END OF THE MONTH

OUTSTANDING AMOUNT FOR THE CURRENT YEAR

.....
Signature of the Collector

.....
Date

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STATEMENT OF THE HON. MINISTER OF
LANDS AND LAND DEVELOPMENT (OUR TRANSLATION)

This Precious Water is for Your Benefit

The irrigation system operating in our country from ancient times is the greatest national heritage we possess. It is also the sustaining life line of our economy.

In the past whenever foreign enemies manoeuvred to capture the country by destroying the harmonious relationship between the economy and the community, it is these irrigation systems that they first of all attacked. History records that quite often these tactics succeeded. But our heroic rulers were able to rebuild the irrigation systems so destroyed and bring peace and prosperity to the people.

With the arrival of the European powers in comparatively recent times, not only did the irrigation systems but also the social stability that existed for sustaining these systems were shattered and our organisational abilities were eroded. Along with that the prosperity of the country also declined. In order to revive that ancient glory we have been spending throughout the last fifty years or so a considerable portion of national income and have been successful in creating a system of tanks not inferior to the irrigation tanks which existed in the days of ancient kings.

But our forward march has not stopped there. With the aid of the light emanating from our ancient glory we are tirelessly persevering in the present and striving with determination to reach out to the future.

In our effort to attain that goal the farmer is our helmsman. The most important assignment in this new

programme for developing irrigation canals is reconstruction of the irrigation canals which already exist and revitalisation of their deteriorating productive strength. My conviction is that in order to perform that function satisfactorily the effort and participation of the farmer and of all others under him is a sine qua non.

It is the accepted responsibility of the Government to construct new irrigation systems and repair them in course of time. In any system of irrigation, on the elapse of 20-25 years, repairs become necessary before further deterioration in canals and structures set in.

But day to day maintenance of irrigation canals is absolutely necessary prior to repairs being effected at the end of a long period. Proper maintenance should be attended to so that any possible breakdown in the functioning of irrigation canals may be arrested beforehand. There is no difference of opinion on this. The only snag is that the Government cannot supply the full amount of funds needed to maintain the canals properly. What is the reason ?

In the agricultural settlements under the new Inginimitiya and Lunugamvehera schemes, the expenditure which the Government has to bear per settler farmer's family is over 3.5 lakhs. About 30 years ago the corresponding expenditure was in the region of Rs. 5,000/-.

It has also been seen that the Government's costs of fully repairing major dilapidated irrigation systems are more than the total expenses incurred by the Government for the Inginimitiya and Lunugamvehera schemes. Yet the Government has launched programmes of reconstructing large scale and small scale irrigation systems in order to enable several lakhs of acres to be irrigated. Those programmes

are now partly completed and others are being attended to. The balance programmes will be covered in the next few years. The Government will be spending about Rs.450 crores over it. It is expected that about 4.5 lakhs of acres will be irrigated through these programmes.

The following come within the purview of the programme irrigation development activities in 8 co-ordinated rural development projects; the scheme for reconstructing minor tanks numbering about 1,200 in isolated rural localities; repairs to tanks at Mahavilachchiya, Padaviya, Mahakandarawa, Pavakkulam, Vavunikulam, Gal Oya, Rajangana, Nachchaduwa, Iranamadu, Yodawewa, Morawewa, Kantalai, Uda Walawe, P-Sector lands in the Mahaweli Development area, Nagadipa, Parakrama Samudra, Minipe, Giritale, Kaudulla.

In addition to expenditure over reconstruction work in these places the Government sets apart annually large sums from the central budget and also makes large allocations from the decentralised district budgets specifically for providing irrigation water facilities.

Besides the above-mentioned expenses incurred over the development of irrigation systems, the Government has to spend a large portion of the national income over activities which neither yield financial profit nor lead to generation of income - such as education, health, social welfare. Hence the Government's inability to provide all the money necessary for the maintenance of irrigation works.

But it is not possible to postpone or neglect the maintenance of irrigation systems. The Government will therefore implement the following measures from 1984 onwards :

- (1) As the gross irrigation system maintenance expenditure per year per acre is Rs.200/-, half of it, that is Rs.100/- per year per acre, will be provided from the central budget. The balance Rs.100/- per acre per year will be obtained as a contribution from farmers who cultivate the fields irrigated by the major irrigation systems.
- (2) The contributions thus collected from farmers will be deposited in a separate maintenance fund. Those monies will be spent only for the maintenance of the respective schemes in which the contributions were made. Any balance left over at the end of the year will be brought forward for the succeeding year's accounts and will not be sent to the Treasury.
- (3) Once the maintenance fund is established, the water tax instituted earlier will be abolished.

I know that it is no easy task to get money for maintenance work and to see that the work is done methodically. It is there that the earnest participation of the farming community is necessary. I think it is as important as, or even more important than, obtaining funds. Steps will also be taken to ensure that farmer associations are established for that purpose, that tank repairs are attended to in accordance with the ideas expressed by these associations, that a suitable method of operation be introduced to achieve that end. The aim of this programme is therefore to strengthen the self-reliance of farmers and raise the productive capacity of the irrigation system so that thereby the farming community will be benefited best.

In order to improve their productive capacity, irrigation canals should be maintained properly and regularly. If that is neglected, work will get held up and even an axe may become useless to handle work which can be otherwise

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done with finger nails. Great care is necessary in utilising water. Playing about flippantly with water is more dangerous than playing with fire. Great world civilisations sustained by Governments which constructed tanks disappeared completely as a result of the total neglect of water management. Some of those areas of the globe are now overrun by deserts.

We Sri Lankans have set out on a fresh journey of accomplishment treading the paths trod by our ancestors. We do so because we are determined to revive our past glory. That determination prompts us to promise to achieve many things which have been hitherto thought to be unattainable. The giant Mahaweli Scheme, which no other developing country can even dream of undertaking, is now operating on an accelerated programme and is due to be completed soon. So far over Rs. 3,000 crores have been spent. The day is not far when Sri Lanka will be resplendent with beams of light from the Mahaweli programme.

This request is therefore addressed to farmers whose paddy fields are irrigated with water from major irrigation works.

This golden water flows for you.

Give us therefore your support to protect the noble heritage of our irrigation systems which have been constructed at the expense of money and labour.

Please pay your contributions to its maintenance fund. Be a sharing participator in this national scheme.

GAMINI DISSANAYAKE
HON. MINISTER OF LANDS, LAND
DEVELOPMENT AND MAHAWELI DEVELOPMENT

1984.

OPERATION & MAINTENANCE
OF IRRIGATION SYSTEMS

PROGRAMME FOR THE
RECOVERY OF RATES

Information booklet No 1

MINISTRY OF LAND & LAND DEVELOPMENT

1984

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Question No.I

What is meant by Operation and Maintenance (O & M) of Irrigation Systems?

Answer

All irrigation systems in Sri Lanka have been constructed to benefit small farmers.

Irrigation provides an insurance against risks in water supplies. Water can be diverted in the desired manner by constructing channels, bunds, structures etc. Thus it is possible to provide a predictable supply of water to a specified extent. It is because of this possibility of providing a predictable supply of water at the correct time and in right quantity that irrigation can provide a high degree of insurance against risks and avoid crop losses.

These irrigation systems have not been constructed by a single individual for the benefit of a few persons. They have been built by the State and operated by persons having different interests and belonging to different strata in the society. Some of them are officials belonging to various departments in Government Services. The others are farmers. Because irrigation systems are public property operated by different groups of people, it is important to have programmes based on targets to optimise benefits that accrue to the beneficiaries and to the society at large. It is only through such a programme of work that each Department, Agency and Office can identify the responsibilities assigned to each of them. The farmers also have similar responsibilities. Therefore the most useful outcome of a programme is to bring together the efforts of several persons in various groups into a unified and integrated plan of action through a process of reconciliation. In developing such programmes which seek to enhance the participation of everybody concerned for active involvement, the officials and farmers come to understand each others' roles and problems much better than when they work in isolated compartments. It helps to build a more meaningful rapport by reducing areas of conflicts. Both sides get a unique opportunity to understand and appreciate each others view points, problems and the need for united action to reach a common goal. In addition to the coordinating functions resulting from these organised activities at each level, there is also the coordination which takes place through better understanding of human relationships which constitutes the central theme underlying all these action.

In the final analysis all these activities are intended to achieve certain expectations and goals. One of the most significant objectives relevant to irrigated agriculture is the equitable distribution of water and optimising production potential.

In order that these objectives are constantly kept in focus to make better judgements of each situation it is necessary to ascertain the amount of water required to raise the crops in each season, how much of that will be provided by rainfall according to expectations and how forward planning should take place to maximise the use of rain water with corresponding reduction in

issues from the reservoir, and how much is available in the tank for water issues, and how much can be conserved in the tank for the next season? A series of such issues need to be examined in the proper perspective. Officials from the Departments of Agriculture and Irrigation do make certain recommendations on the extent of lands that could be cultivated, the cropping patterns, dates of cultivation etc. based on certain data and past experience. The farmers and officials have to join together to discuss and examine each of these operational issues very closely before arriving at a set of recommendations acceptable to all concerned. Decisions pertaining to the distribution of water are normally based on these conclusions, and the forum for such decision-making is the cultivation meeting. The process leading to the planning of operation and actual operation of the system according to the decisions reached in the cultivation meeting is generally known as the 'Operation' of the system.

As most other utility items, even the irrigation systems are subject to a process of decay and sometimes undergo rapid deterioration due to constant use. Actions which are designed to remove constraints, arrest decaying process and contain deterioration to ensure efficient functioning of the systems are called 'maintenance'.

Usually maintenance activities are mainly concerned with the visible structures and canal systems etc, which can be easily seen in the irrigation systems. It is true that these canals, bunds, structures are indispensable to distribute water according to plans and schedules. Equally important are the reservations set apart to ensure the proper functioning of bunds, channels and also the catchment area which provides the run off to the tank supply. But these aspects which are of importance do not necessarily receive our attention. It is necessary that the Irrigation system should be viewed as an integrated organisation of all these components.

Question No: 2

Why is it that a properly planned programme of work is essential for operation and maintenance in irrigation scheme?

Answer

Irrigation systems are public property designed to benefit large groups of people in the society. As such the operation of these systems cannot be accomplished according to the wishes of a few individuals. It is therefore necessary to ensure that the operation of the system should be based on a common programme of work designed according to decisions of farmers who are the ultimate beneficiaries of the programme. Therefore the decision making frame-work and the concepts that undergird the use of private property do not necessarily apply in the operation of irrigation systems because they are intended to benefit a large group of small farmers.

The operation of the system with or without consulting the farmers is being done by public officials who are in the payroll of the Government. From time to time, these officers get transferred out of the schemes. The only group of people who continue to remain with the system to make a living out of it are the farmers who are given lands benefitted by the scheme. Therefore it is important that the farmers should be enabled to take a sustained interest in the operational efficiency of the system.

In addition to the natural decay of the system, often times irrigation infrastructure also become the target of vandalism. There are also damages through animal trespass. If these damages to the system are not taken care of at the proper time, the deterioration that sets in is immense. The reasons for the sad condition existing in most irrigation systems are due to lack of attention to these aspects. The situation arising out of a rapid deterioration of the irrigation network affects the people who make a living out of these systems and very often the Government is forced to modernise or rehabilitate and repair the entire irrigation system to avert further disaster.

Although the lack of adequate funds is considered a major constraint for proper O & M programme, it does not necessarily mean that more and more funds can provide all the solutions to keep the system in productive condition.

Equally important is a proper programme prepared for operation and maintenance work. A programme of work can render the participation of several groups of people more and more meaningful because the active involvement of all these people is indispensable in the preparation and implementation of operation and maintenance work. It is only through such a programme of work that priorities can be properly spelt out. Again priorities can be made acceptable only if they are determined in consultation with people who are concerned with that programme. Through consultation with farmers it is possible to incorporate valuable experiences and knowledge which farmers have accumulated over a long period of time through constant vigilance and association with the irrigation systems. Through this consultation process the farmers are made to feel that their participation has been counted upon as an essential part of the solution. Thus the farmers evoke a greater sense of responsibility and commitments for work expected of them. Therefore a properly worked out operation and maintenance programme can facilitate the efficient performance of the system and also provide an opportunity and an added advantage to develop a better institutional framework for system management. Furthermore by adopting this process, in preparing and implementing operation and maintenance programmes a unique opportunity is provided to identify the positive and negative aspects in the systems and also a better understanding of the opportunities for interventions to improve system performance.

Question No. 3

If O & M Programmes are so important in the development of Irrigation facilities, why were they not given adequate priority all these years?

Answer

Many years ago the O & M activities were the responsibility of the farmers who benefitted by the irrigation water in that Schemes. Institutional measures such as the old Vidane system which are now being revised were used in the past to assure O & M in the irrigation system.

However, several factor contributed to the neglect of the importance attached to O & M in these systems. Following are some of them:

- a) In allocating high priority for programmes concerned with the development of irrigation facilities by the successive Government.

State interventions to safeguard its interests in these large investments also become more and more involved and complex. As a result of recruiting and appointing more and more officials for different assignments concerned with irrigation systems an impression was given to farmers almost unwittingly that the Irrigation systems were inalienable property, which belonged to the State and the Department which was set up to operate the system. The most serious outcome of this state of affairs was the alienation of the farmer community from the management, operation and maintenance of the system although they should have been most concerned with its activities.

- b) Over a period of more than five decades, emphasis was largely on the construction of new irrigation systems, Ancient irrigation systems that were in ruins were the choice of these programmes. In that environment it was necessary to develop the technical capability and expertise of the Irrigation Department in matters concerning design and construction of new irrigation systems. The pre-occupation of the Irrigation Department principally in matters concerned with design and construction of new Irrigation projects is being attributed as the primary reason for the neglect of O & M activities. For the same reason it was considered that no special skills will be required to attend to O & M work which in any case received low priority in the professional attitudes of engineering and technical cadres. Therefore the conceptual approaches to O & M work have not seen any improvement until recently when it was found that the irrigation systems have been very badly run down due to poor O & M work.
- c). There was no priority attached to O & M work within the organisation responsible to implement the work nor was there any commitment in the organisational approaches to treat O & M work as an important area of attention. As such the funds allocated were also inadequate to carry out satisfactory programme of work in O & M. Therefore even if the need for O & M was very high the lack of adequate funds allocated for the purpose contributed in a large measure to divert the attention of irrigation bureaucracy away from this important functions.

Question No.4

What is the need to attach high priority to O & M just now ?

Answer

Reference have been already made in the previous paragraphs explaining the need to provide adequate attention and action for O & M to ensure the efficient performance of the systems and thus achieve optimum levels in productivity. It is therefore considered very important that around changes in policies concerning irrigation development should be made with a view to forge corresponding changes in concepts professional attitudes and policies concerning resource allocations to give the pride of place for O & M work. Besides these the following are also considered important.

- a). Irrigation works in Sri Lanka have been in use for over 25 years. These systems have decayed and deteriorated so much that problems concerning the distribution of water have been found to be very acute all over. As

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a result of this situation the irrigation system operate much below their designated capacities and the reason for this state of affairs is largely attributed to inadequate attention been given for O & M both in the management of the systems and as well as in the allocation of resources to maintain these systems in good working order.

- b). Today most of these systems cannot be rejuvenated through normal O & M works. The irrigation infrastructure which includes bunds, channels, structure etc., are no longer in working condition for the systems to achieve control capability. Therefore action has to be taken by the Government to incur large expenditure for the rehabilitation of these irrigation systems.
- c). The present policies of the Government demonstrate a major thrust in the direction of improving irrigation facilities in the established systems by formulating systematic approaches and programmes. The rehabilitation and modernisation of irrigation systems is an important strategy in this policy. The Tank Irrigation Modernisation Project which was implemented with World Bank assistance can be considered a pioneering effort made recently to improve irrigation facilities in major irrigation systems. This project included Mahakanadarawa, Mahawilachchiya, Padaviya, Vavunikulam, and Pavattakulam in the North Central and Northern provinces. Still another Project under implementation is the Gal Oya Water Management Project in the Left Bank of Gal Oya which is being assisted by funds provided through USAID.

The World Bank has already commenced the preparation of a Major Rehabilitation Project which includes Nachchaduwa, Huruluwewa, Rajangana, Giant's Tanks, Irananadu, Morawewa and Kantale. This Project will commence implementation in 1985. Similar Projects are being formulated to include major irrigation systems in Polonnaruwa,

Trincomalee and Uda Walawe. Besides these projects dealing with major irrigation systems large sums of money are being spent under several other programmes to improve the irrigation facilities in minor irrigation schemes. The programmes under Integrated Rural Development Project have also set apart large allocation of funds to improve irrigation facilities in the respective districts.

- d) All these foreign aids are provided on the basis of repayable loans. The foreign agencies involved in this programme are the World Bank USAID, Asian Development Bank and several other bilateral agencies. The reasons which prompted these agencies to select these projects for investment is the benefits that accrue to a large cross section of rural farmers through increased farm incomes. But all these efforts at improving rehabilitation and modernisation of irrigation systems will be in vain if corresponding action is not taken to allocate sufficient resources to ensure better upkeep of the systems through O & M Programmes. Therefore there is an imperative demand, to concentrate more on the O & M in irrigation systems to assure productive returns from these investments.

In fact this is one of the binding conditions in all agreements entered into by government to obtain foreign assistance to improve irrigation facilities in this country.

In this background it is necessary for officials and farmers to understand and be convinced of the importance of giving attention to O & M work. Thereafter programmes have to be identified jointly by farmers and officials and the available resources should be allocated on a priority basis. In implementing these programmes it is necessary to evolve methods by which farmer corporation could be harnessed at all levels. The management should be accountable to the farmers about the manner in which the funds contributed by them have been spent in improving the systems. These components have to be incorporated into the programme through the development of an institutional framework which ensures farmers of their rights to participate in the decision making process. Procedures which safeguard these rights should be built into the management framework.

Question No.5

What is meant by Operation & Maintenance rates ?

Answer

It is estimated that an average of Rs. 200/- per year would be required to operate and maintain an acre of irrigated land in a major Irrigation system. This amount of money would be required to meet the cost of material, labour, staff and equipment.

It is expected that in the year 1984 half this amount i.e. Rs. 100/- should be recovered as rates from the farmers. The Government has decided to contribute the balance Rs. 100/- through an Advance Account. Accordingly the farmers have to pay Rs.100/- per acre per year in 1984. This levy is called O & M rates.

Question No.6

Why cannot the Government bear this expenditure ?

Answer

The Government is required to raise funds for the purpose of constructing new irrigation systems to settle farmers for irrigated agriculture. About 25 years back the government incurred an approximate cost ranging from Rs. 5,000/- to Rs.7,000/- to settle one farm family on an allotment of land in a major Irrigation Settlement. On analysing the expenditure required for constructing the Lunuganwehera Irrigation Settlement Scheme it appears that the amount of expenditure required to settle a farm family has escalated to Rs. 350,000/- or more. The entire cost of this scheme will have to be borne by the Government. Any Government is required to incur this expenditure initially because it would be simply impossible for the farmers to bear the cost of establishing such large systems. The Government is therefore required to initiate such activities as programmes by the Government and in this regard programmes for Irrigation development have always received priority attention.

All these years the Government has provided the expenditure incurred in operating & maintaining Irrigation systems. However, the amount provided by

the Government was less than the amount of money actually required to operate and maintain these systems. If however the government is required to foot this entire bill for operation and maintenance expenditure it will have to be accomplished by cutting down on the investment allocation voted for social welfare and development activities.

Question No. 7.

Why should the farmers bear these costs ?

Answer

In the past as mentioned earlier in every Irrigation Scheme, functions concerning O & M work were considered the direct responsibility of the farmers. Periodical changes in policies were mainly responsible in weaning away farmers from this activity, but there was no corresponding improvement in the nature of O & M work performed in these schemes without farmers involvement or assistance. The reasons for creating such a situation have been already enumerated.

Nevertheless it is clear that the victims of crisis situations arising out of poor O & M work are always farmers and no one else. In certain countries in Asia even the construction costs of these schemes are being given as long term loans to the farmer community and the expenditure incurred is recovered in instalments. In many countries cost of rehabilitation is always recovered from farmers. Expenditure incurred by the Government in O & M activities are also normally recovered from farmers.

When these irrigation systems are built entirely for small farmers by the government the recovery of O & M cost from farmers could be considered reasonable. For instance, when a house built by the Government is being given to an individual it is the duty of the recipient of the house to maintain it. Furthermore the cost of the house or a part of it should also be paid by the recipient. As between a house and an Irrigation system, the Irrigation system brings in return on a continuous basis.

Question No.8

What are the responsibilities of farmers O & M work?

What responsibilities are assigned to the Irrigation Department regarding O & M work ?

Answer

There are three important areas of work on which O & M programmes should concentrate on namely,

1. The main system consisting of canal, sluice and other head works.
2. Main channel, Branch channel, D channel and other intermediate structures.
3. Field and drainage channels.

The main system consisting of the bund, the sluice and other head works are considered the most important components in safeguarding the irrigation system. Therefore, they have to be operated with optimum efficiency. The responsibilities and duties concerned with maintaining the safety of the system specially the headwork is the direct responsibility of the Irrigation Department.

The proper upkeep of the main channels, Branch channels and D Channels is also the responsibility of the Irrigation Department. It is necessary to ensure that obstacles which constrain the flow of water are removed and that gates regulators, control structures, measuring devices are in good working order to improve the control capability of the system. It is necessary for the farmers to be vigilant and concerned about these aspects since problems affecting the devices conveying and regulating water have a direct impact on downstream control of water distribution.

The field canals and the drainage canals are the closest to the farmers' fields. The proper upkeep of these canals is the direct responsibility of the farmers. It is for this reason that cultivation meeting discussions are required to take care of these activities.

It is the duty of the farmers to co-ordinate these activities at farm level resolve conflicts and problems which arise in the implementation stages and ensure the fulfilment of the programme drawn up for O & M work.

As pointed out earlier, it is necessary for farmers to provide the required information to programme O & M work for implementation. Monitoring the implementation and the outcome, are matters in which farmers can effectively participate and provide their contribution for quality O & M work.

It is often believed that these matters should remain outside the purview of farmers' interests. Such misconceptions have been entertained even by farmers because over time the irrigation schemes were deemed to be the property belonging to the Government. It is true that Irrigation Department has a role to play as custodian of irrigation systems on behalf of the government and the people. But that does not mean that farmers who benefit by these systems should entertain doubts about their role and responsibilities in respect of these systems which have been established for their benefit. Problems in water availability, water delivery, control and distribution have a direct impact on the lives of the farmers and as such the farmers have to take the initiative in providing solutions to problems in irrigation systems.

As far as the Irrigation Department is concerned, close association of its personnel with farmers is significantly important for better O & M work in the system. It is much easier to finalise the O & M Programme at the beginning of the year by ascertaining the needs of the farmers and the priorities that should be attached to items indicated in the interests list. It is still more desirable to complete the finalisation of the selections and priorities with the concurrence of the farmers during the tail end of the previous year so that no time is lost in the following year in implementation.

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The identification and the programming of O & M work items should be attended to on the basis of field channels and D channels. Thereby it facilitates the farmers working in each field channel area for organised work and arrange to benefit by their own experience in working along these channels.

Question No. 9

What is the benefit that farmers get in paying O & M rates?

Answer

In the previous paragraphs adequate explanations have been provided to show how good O & M programme facilities the protection of the irrigation infrastructure which are an indispensable component in any irrigation system and also how in the absence of such O & M programmes, the irrigation infrastructure could be badly run down.

Farmers expect a good irrigation system to achieve the following:

- i. Equitable distribution of water.
- ii. Assure reliability in the supply of water in the right time and in the right quantity.

To achieve these, the following will have to be accomplished.

1. Assuring the efficiency of the irrigation infrastructure by regularly providing necessary programmes of work to look after the maintenance of the scheme.
2. Establishing a better rapport between farmers and officials so that the understanding of each others roles and problems would facilitate the building up of an organisation or an institution. No useful purpose is served by having such organisations set up on a temporary basis. These organisations should be strong enough to sustain their effectiveness throughout the period of scheme. It should also stabilise the rights of farmers and enhance their bargaining power against contending forces. The activities carried out in the schemes can be effective and meaningful only through an organised attempt to establish such institutions which represents interests of farmers and of the scheme.

Firstly all these go to show that good O & M programme can help in creating a better working environment for officers and farmers to unite in a combined effort.

Secondly a good O & M Programme enable the farmers and officers to appreciate each others problems and view points and thus help in strengthening the institutional character of the scheme.

Thirdly, such a course of action always provides a more meaningful opportunity to involve the farmers actively in the decision making process

thus helping them to enhance their own capabilities and also incorporate their unique experiences in the O & M programme.

Question No.10

What is the difference between the irrigation rate hitherto charged and the present rate which covers O & M costs ?

Answer

Irrigation rate levied on farmers was a charge on the water issued to farmers. These irrigation rates recovered from farmers are directly credited to Government revenue. At the same time, the government also allocated a separate amount of money to do O & M. The money allocated for O & M in irrigation systems was by no means adequate to carry out proper O & M. In short there was no meaningful or logical link between the Irrigation rate and the quality of O & M provided in the Scheme.

The O & M rate which will be collected now will be credited to a separate account called the O & M Fund. It is intended to allocate funds separately to each Scheme together with the Government contribution provided through the Advance Account. Before this arrangement was made, the balance money remaining at the end of the year after attending to the O & M work was sent back to the Treasury. A significant feature in the present arrangement is the possibility of retaining the balance money in the funds generated by farmers' contribution so that it could be carried over to the next year without remitting the money to the Treasury.

On analysis it would appear that O & M rates is a charge which is recovered from farmers for a service provided to them. Therefore there will be a meaningful link between the O & M rate collected from farmers and the service provided to them. The link is principally established by providing a service which commensurates with the amount of money provided by farmers. It is for this reason that adequate collection of rates combined with farmer participation through active involvement can bring about a good O & M programme in a Scheme.

Question No. 11

Will there be a separate levy as an irrigation rate in addition to O & M rate.?

Answer

No.

Question No.12.

How are the farmers given an opportunity to participate in O & M work?

Answer

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Till now opportunities afforded to farmers to participate in taking decisions were very limited. Therefore the farmers were not altogether happy with the manner in which repairs and improvements to irrigation systems were being carried out. Once the farmers contribute towards the cost of O & M, the officers concerned with these duties will have to be accountable to the farmers on the O & M programmes and about the manner in which the programmes have been planned out and executed. There is also the need to provide a service to the farmers which commensurates with the payments they have made. To achieve this it is necessary to obtain meaningful participation and active involvement of farmers in the identification, planning and implementation of O & M works.

The lessons and experiences from other projects indicate, that farmer participation could be mobilised effectively by handing over small contracts to farmers organisations and by providing guidelines for farmers to organise among themselves in preparation for these tasks. It is also desirable to have a representative of farmers in the Tender Boards and encourage them to monitor the quality of the work by providing with information regarding terms and conditions in the contracts. Such actions will always help to offer better prospects for more cooperation and farmers could be able to ascertain for themselves the quality of service that could be expected for the payments they make. It would also help in evolving measures to improve the quality of work by mobilising their active involvement.

Irrigation systems are constructed entirely for the benefit of small farmers. These farmers make their living by using the water provided through these irrigation systems. Much more important is the fact that they take all investment decisions regarding the cultivation work. Therefore the farmers have an inalienable right to be associated and involved with all matters concerning the irrigation systems. It is possible that farmers do not necessarily have all the required knowledge to make their involvement and participation more and more meaningful to themselves and to others. In such instances it is the duty of the officials concerned to provide such knowledge and guide farmers, and also create a cordial environment to encourage farmers to come forward. Such approaches are considered essential in setting up a fully integrated management system and an institutional framework which promotes such activities.

Question No.13

Who will collect these rates ?

Answer

The Government Agents in respective districts will take action to appoint a collector to an area which approximately conforms to an area served by a D channel. The collector may be a Colonisation Officer, a Field Instructor or any other suitable officer. The work of these collectors will be supervised, co-ordinated and monitored at the project level by an officer such as Project Managers, District Land Officers or Irrigation Engineer. An official receipt will be issued by the collector in respect of every payment. Arrangements have also been made to remit the payments to the O & M funds through the bank branches in Agrarian Services Centres.

Question No.14

What action is being contemplated against farmers who willfully default in the payment of rates ?

Answer

The payment of O & M rates is provided under Section 56 of the Irrigation Ordinance. Therefore the farmer is obliged legally to pay their rates. Provisions have also been made in the Irrigation Ordinance to recover these rates from farmers who avoid payment. In that event Section 78 provides for the recovery of rates by one of two methods, namely,

- a) The Government Agent is empowered to deduct from the sale of produce by the farmer to the government or arrange to make the necessary deductions from any other payments which the government will make to the farmer.

In the alternative

- b) The Government Agent is empowered to file a case against the farmer and recover the rate as if that amount is payable by the farmer as a loan from the government.

Besides other legal provisions and requirements the farmers who pay rates will insist on others also to pay, lest they will be deprived of the benefits that accrue to them through better O & M work.

Question NO.15

What steps are being taken against persons who wilfully cause damage to the physical infrastructure in irrigation system ?

Answer

Very often farmers cause wilful damages to irrigation infrastructure and attempt to obtain unauthorised water because the problems caused by poor O & M result in constraints to good water supply and availability of water at the farm level. It is expected that with adequate funds being made available by farmers, better O & M will prevail and consequently the incidents of such damages will also be reduced. However action will be instituted against offenders to bring them to book under the provisions of the Irrigation Ordinance.

This would mean that action could be taken under Section 64 of the Irrigation Ordinance against persons who violate regulations framed for the protection of Irrigation Schemes.

In terms of Section 65 of the Irrigation Ordinance action could be taken against persons who obstruct and encroach upon any channels or Irrigation Schemes. Moreover it is possible under this legal provisions to recover the cost of removing such obstruction or repairing the damage.

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Section 66 of the Irrigation Ordinance provides for the following:-

- a. to stop water for unauthorised lands not included in the specification register.
- b. to collect the harvest from the land cultivated with unauthorised water.
- c. to recover the cost of water obtained without authority.
- d. to recover the cost of damages caused to a lawful cultivator as a result of depriving him of his due share of water and compensate the lawful farmer.

Question 16

In certain schemes classified as major irrigation systems only rain-fed cultivation work is being carried out for lack of irrigation water for over three or four years. Will it be necessary for these schemes which now engage in rain-fed cultivation also to pay O & M rates ?

Answer

No.

However there is no intention to exempt schemes which have low yield levels due to poor management of farms by the cultivators, such as low application of inputs like fertiliser and chemicals.

Question No. 17

On payment of O & M rates at the end of a good Maha harvest, if farmers are unable to get a crop for want of water during the following Yala, will action be taken to make a corresponding reduction in the next payment of O & M rates by taking into account the losses that farmers have incurred ?

Answer

No.

However it would be necessary to evaluate and analyse the situation existing in various schemes, before a judgement is made on this matter. In principle there is no intention to make corresponding reductions after a good season either because a good harvest was not obtained or because no cultivation was done in the season that follows. It is necessary to remember that among other things the quality of the O & M works depends on the amount of funds recovered as rates. The purpose of this exercise is to provide good O & M for optimum levels of efficiency.

Question 18

Will there be reduction in the O & M rates on account of crop losses or damages during the course of a cultivation season?

Answer

No.

The Government has now decided to offer full compensation under the Agricultural Insurance Scheme in the event of a crop loss or damage. This programme is now being implemented by the Agricultural Insurance Board. As such, farmers should be encouraged to provide insurance to the crops under this scheme. It is necessary for farmers to recover their losses incurred by crop damage through the Agricultural Insurance Scheme provided for the purpose.

Question No.19

What steps are being taken to recover O & M rates in respect of farmers, whose names do not appear in the Specification Register, but continue to cultivate with irrigation water the lands they have encroached upon or annexed from reservations?

Answer

In such instances it is necessary for the Project Manager or the Co-ordinating Officer to take action to recover an amount which is equivalent or higher than the specified rates. Legal Provision is available in the Irrigation Ordinance for this purpose. The levy imposed on such farmers amount to a fine for unauthorised use of irrigation water for cultivation.

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GUIDE LINES FOR FIELD INVESTIGATORS

SURVEY OF THE RECURRENT COST PROBLEMS OF IRRIGATION SCHEMES

SEPTEMBER, 1984

Name of the Scheme :

Name of the Farmer :

Colony/Tract/Unit No. :

Farmers Allotment No. :

Name of the Field Channel (if drainage, please indicate so) :
.....

Location of Block/s Along the Field Channel/s :

Block No.	Locational Category (Indicate the Channel Name Under Each Appropriate Category)		
	Head	Middle	Tail

Date of the Interview :

Name of the Interviewer :

1. Tenure and Water Supply

1.1 Land Tenure :

Allotment Number/s	Extent	Ownership	Method of Operation in 1984 Yala	Source of water supply	Water Problems if any (Crop failure, no water for cultivation)

1.2 Indicate in general the type of water problem you have already experienced in relation to lowland allotments :

ALLOTMENT NO.	Water Problem (indicate by 'X' in appropriate cages)							
	Yala				Maha			
	Irregular supply	Inadequate water	No Water	Other (Please specify)	Irregular supply	Inadequate water	No Water	Other (Please Specify)

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2. Water Problems :

2.1 Please describe the reasons for water problems shown in question 1.2 for each of the major categories of land, wherever applicable.

a. Colony Land :

b. Encroached Land :

c. Other Land :

2.2 Do you think that above water problems (Q. 2.1) are due to some errors of the conveyance system. Please explain.
.....

2.3 If yes, for Q. 2.2, indicate how can they be rectified ?
.....

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2.4 Can water problems (Q. 2.1) for your allotments be due to poor maintenance/lack of repair of the conveyance system? Please explain in respect of different types of channels i.e. field channel, distributory channel and branch channel. Also indicate who is responsible for such activities?
.....

2.5 If yes, (Q. 2.4) explain why channel maintenance/repair work has been poor ?
.....

2.6 If you have water problems, whom do you complain to? How soon is action on such complaints taken ?
.....

2.7 How do you propose to carry out channel maintenance work regularly? (Indicate by whom, frequency of such work and how the quality of work can be ensured).

a. Field Channel :

b. Distributory Channel :

c. Other :

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2.8 Please indicate whether channel maintenance was ever attended to before. Explain when and how it was organised.

.....

2.9 Do you think that water problems faced by you are due to waste of water in the head area ? If yes, explain reasons e.g. channel leakage, unrepaired structures, extravagant water use practices of head farmers, water use for the highland etc.

.....

3. Systems Operation :

3.1 Who prepares the water issue programme for your area and indicate whether you have been involved in its preparation ?

.....

3.2 Are the actual water deliveries agreeable to the issue plan? If no, please explain how it differs and the extent of deviation.

.....

3.3 Are the water problems faced by you due to poor operation of the system ? (e.g. your participation in the preparation of water issue programme and its implementation not ensured, other circumstances which make it necessary to change in the water schedule drawn up etc.)

.....

3.4 How do you propose that water distribution programme can be improved ?

a. At field channel level :

b. At distributory channel level :

c. At systems level :

3.5 Explain your opinion towards the officers who are responsible for the operation of the system (Ask whether they attend to it properly and if not reasons).

.....

3.6 Are the present operational problems due to insufficient staff or funds ? If so please explain what categories of staff and what activities are inadequately looked after ?

.....

3.7 What is your opinion about providing an incentive scheme for officers in order to get better O & M service from them ? (Indicate his willingness and for which category of officers should the incentives be given).

.....

4. Farmer Organizations :

4.1 Is there a farmer organization for water management in your area ? (To facilitate water distribution, channel cleaning, maintenance work etc.)

.....

4.2 If yes, explain the activities undertaken by farmer organisations during the last two seasons.

.....

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4.3 Are you a member of the organisation (Q. 4.1 ? If no, explain why not.

.....

4.4 Do you envisage that if a farmer organisation is formed, the O & M activities can be better accomplished ? Explain how ?

.....

4.5 If a farmer organisation is already in existence, are you satisfied with its performance ? Please explain.

.....

4.6 What facilities do you think that farmer organisations be given if they are to play a successful role in O & M activities ?

.....

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4.7 If farmer organization does not exist, how do you propose that it be established ? (Ask who should take the responsibility, specific person whom do you think would lead and farmer attitude towards the 'organisation' in general).
.....

5. Role of the Government

5.1 Area of responsibility

In your opinion, explain what area of responsibility the government should held in irrigation schemes, i.e. what specific activities should the government undertake.

a. Operation of the system :

Field Level :

Systems Level :

b. Maintenance activities :

Field Level :

Systems Level :

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5.2 Contribution

Do you think that the government should also contribute funds for the operation and maintenance of the system ? (Explain what proportion of the total funds should be contributed by the government, specific activities that the government should support).

.....

6. Recovery of O & M Costs :

6.1 Do you pay any rates/taxes to the government in respect of your land and water ? If so, please explain the type, who is responsible for collection, the amount and how frequently they are collected).

.....

6.2 How the fees thus collected are utilised ? (Please ask for which activities are the funds spent).

.....

6.3 Suppose that an O & M cost is recovered from the water users for frequent up keep/repairs of the conveyance system. (Please indicate his willingness to pay for and how/who should handle it).

.....

6.4 If you disagree, (Q. 6.3) please suggest alternative methods by which channel maintenance/repair work can be attended to.

.....

6.5 What do you think would be the sufficient amount to accomplish frequent up keep work ? (Please indicate in terms of cost per acre).

.....

6.6 How would you propose that a system of cost recovery can be implemented ? (Ask who should be given the responsibility of collection, how frequently should it be collected and how should it be based i.e. based on acreage, land productivity etc.)

.....

6.7 How do you think the defaulters be dealt with ?

.....



6.8 Please explain what other facilities you would expect in order to improve agricultural production in the event that O & M costs are recovered from water users?

.....

6.9 Please suggest how you think that O & M recoveries be spent? e.g. farmers to clean the channels for payment etc. the proportion that should be allocated for maintenance at different levels - i.e. field channel level, distributory channel level and other levels.

.....

TABLES INCORPORATING ANALYSIS
OF FARMER RESPONSES ON SEVERAL ISSUES

The information obtained has been tabulated under the following heads:

Table A	Classification of sources of water supply by allotments;
Table B	Number of farmers with water problems by scheme;
Table C	Type of water problems during Yala season;
Table D	Type of water problems during Maha season;
Table E	Reasons for water problems;
Table F	Farmer response in terms of defects of the conveyance system;
Table G	Farmer reasons for poor channel maintenance work;
Table H	Type of persons contacted by farmers when confronted with water problems;
Table I	Time period taken to remedy water problems;
Table J	Farmer suggestions to improve channel maintenance;
Table K	Farmer responses with regard to previous channel clearing work;
Table L	Farmer attendance and participation at Kanna meetings;
Table M	Conformity of Kanna meeting decisions with actual deliveries;
Table N	Number of days delay between actual water delivery and Kanna meetings decisions;
Table O	Farmer satisfaction with the method of operation of the system;

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Table P	Farmer suggestions to improve water distribution at field channel level;
Table Q	Farmer suggestions to improve water distribution at distributory channel level;
Table R	Farmer attitudes towards officers;
Table S	Activities accomplished by farmer organisations during the last two seasons;
Table T	Farmer attitudes towards farmer organisations;
Table U	Farmer suggestions regarding Government's responsibility in respect of operation of the scheme;
Table V	Farmer suggestions regarding Government's responsibility in respect of maintenance work;
Table W	Type of taxes and utilisation of funds;
Table X	Farmer attitudes towards C & M levy;
Table Y	Farmer suggestions to recover O & M levy from defaulters; and
Table Z	Farmer suggestions regarding the utilisation of O & M funds.

TABLE A
CLASSIFICATION OF SOURCE OF WATER SUPPLY
BY ALLOTMENT (NUMBER OF ALLOTMENT)

Scheme	Source of Water Supply		
	Irrigation Channel	Drainage Channel	Rainfed
Minipe	18	1	1
Mahaweli System H	33	2	0
Gal Oya LB	33	9	1
Parakrama Samudraya Scheme (PSS)	20	2	1

TABLE B
NUMBER OF FARMERS WITH WATER PROBLEMS BY SCHEME

Scheme	With Water Problems	Without Water Problems
Minipe	11	9
System H	23	9
Gal Oya LB	6	16
PSS	16	4

TABLE C
TYPE OF WATER PROBLEMS DURING YALA SEASON
(NUMBER OF INDIVIDUAL PLOTS WITH RELEVANT PROBLEMS)

Scheme	Water Problems				Number without Reported Problems
	Irregular Supply	Insufficiency of Water	No Water	Other	
Minipe	5	15	8	2	2
System H	2	22	2	3	3
Gal Oya LB	4	5	2	1	29
PSS	1	13	3	1	5

Note : Some plots have more than one problem.

TABLE D
TYPE OF WATER PROBLEMS DURING
MAHA SEASON (NUMBER OF ALLOTMENTS)

Scheme	Irregular Supply	Water Problems Insufficiency of Water	No Water	Other	Number Without Reported Problems
Minipe *	6	6	7	6	2
System H	1	14	1	3	12
Gal Oya LB *	2	2	2	1	37
PSS	1	6	1	11	4

* Some plots have more than one water problem

TABLE E
REASONS FOR WATER PROBLEMS
(NUMBER OF FARMERS REPORTED)

Scheme	Waste of Water by other Farmers/ Management Problems	Poor Maintenance Work	Lack of Water in the Reservoir	Defects of Conveyance System	No Response
Minipe *	1	9	0	13	3
System H *	5	12	0	22	1
Gal Oya LB *	11	10	0	3	6
PSS	4	4	0	1	3

* Some farmers reported more than one reason

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TABLE FFARMER RESPONSE IN TERMS OF DEFECTS OF THE
CONVEYANCE SYSTEM (NUMBER OF FARMERS REPORTED)

Scheme	Defects of Channels	Defects of Pipe Inlets	No Response
Minipe	6	1	13
System H	9	12	11
Gal Oya LB	7	1	14
PSS	7	4	9

TABLE GFARMER REASONS FOR POOR CHANNEL
MAINTENANCE WORK (NUMBER OF FARMERS)

Scheme	Poor Work of Contractor	Weaknesses of Farmers	Cattle Damage	Negligence of the Authorities	Not Known	No Res- ponse
Minipe	1	2	1	6	2	9
System H	4	1	0	5	3	20
Gal Oya LB	0	6	4	2	0	13
PSS	3	1	4	13	0	0

Note : Some farmers reported more than one reason. Cattle damage is also a weakness of farmers.

TABLE HTYPE OF PERSONS CONTACTED WHEN CONFRONTED WITH WATER
PROBLEMS (NUMBER OF FARMERS REPORTED)

Scheme	Jala Palaka *	Technical Assistant	Irrigation Engineer	Yaya * Niyojitha	Other	No Res- ponse
Minipe	9	2	3	2	3	1
System H	0	1	0	27 ^a	1	4
Gal Oya LB	15	0	0	6	0	3
PSS	2	2	4	5	3	0

Note:

^a Unit Manager

Some farmers contacted more than one person

* See text and footnotes on page 83

TABLE I
TIME PERIOD TAKEN TO REMEDY WATER
PROBLEMS (NUMBER OF FARMERS REPORTED)

Scheme	Very Early	Within One Day	Within Few Days	Within Few Weeks	Action Never Taken	No Response
Minipe	2	2	4	4	6	2
System H *	13	3	9	3	6	4
Gal Oya LB	3	14	1	0	0	4
PSS	4	2	7	1	5	1

* Some farmers suggested more than one category.

TABLE J
FARMER SUGGESTIONS TO IMPROVE CHANNEL
MAINTENANCE (NUMBER OF FARMERS REPORTED)

Scheme	<u>Field Channel</u>			<u>Distributory Channels</u>		
	Farmers to Clean	Government to Clean	No res- ponse	Farmers to Clean	Government to Clean	No res- ponse
Minipe	17	2	1	17	1	2
System H ⁺	20	5	7	22	3	7
Gal Oya LB	14	0	8	17	0	5
PSS	18	2	0	9	10	1

+ Few farmers suggested that farmers should clean channels with supervision by officials.

TABLE K

FARMER RESPONSES WITH REGARD TO PREVIOUS CHANNEL CLEARING WORK

(NUMBER OF FARMERS REPORTED)

Scheme	Field Channel					Distributory Channel					Branch Channel			No response
	Clearing done once every season	Cleaning done once a year	Not within last 2 years	Never	No response	Once every season	Once a Year	Not within last 2 years	Never	No response	Not within last 2 years	Never		
Minipe	10	5	2	1	2	6	7	3	3	1	1	9	10	
System H	7	4	1	13	7	3	21	1	2	5	0	3	29	
Gal Oya LB	8	0	5	2	7	2	0	13	2	5	5	3	14	
PSS	6	2	3	6	3	0	1	3	12	4	3	3	14	

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TABLE L

FARMERS ATTENDANCE AT KANNA MEETINGS AND THEIR
PARTICIPATION THEREOF (NUMBER OF FARMERS REPORTED)

Scheme	<u>Attendance</u>			<u>Participation⁺</u>		
	Attended	Not Attended	No Res- ponse	Participated in Decision Making	Not Parti- cipated	No Res- ponse
Minipe	12	4	4	3	3	14
System H	20	7	5	8	18	6
Gal Oya LB	2	19	1	1	14	7
PSS	7	11	2	2	15	3

+ Participation here defined as a process where farmers together with officers make decisions with regard to water allocation, water issue and agricultural production.

TABLE M

CONFORMITY OF KANNA MEETING DECISIONS WITH
ACTUAL WATER DELIVERIES (NUMBER OF FARMERS REPORTED)

Scheme	Deviated from Decisions	Not Deviated from Decisions	No Response
Minipe	6	12	2
System H	23	7	2
Gal Oya LB	8	6	8
PSS	9	9	2

TABLE N

NUMBER OF DAYS OF DELAY BETWEEN ACTUAL WATER
DELIVERY AND KANNA MEETING DECISIONS
(NUMBER OF FARMERS REPORTED)

Scheme	<u>Period of Delay</u>			
	Few Days	One Week	More than 10 Days	No Response
Minipe	9	9	2	18
System H	6	1	1	13
Gal Oya LB	7	2	1	2
PSS	9	2	2	3

TABLE O

FARMERS SATISFACTION WITH THE METHOD OF OPERATION
OF THE SYSTEM (NUMBER OF FARMERS REPORTED)

Scheme	Satisfied	Not Satisfied	No Response
Minipe	7	13	0
System H	9	17	6
Gal Oya LB	11	10	1
PSS	9	10	1

TABLE P

FARMER SUGGESTIONS TO IMPROVE WATER DISTRIBUTION
AT FIELD CHANNEL LEVEL (NUMBER OF FARMERS REPORTED)

Scheme	No change Suggested	Change from Intermittent Supply to continuous Supply	Replace Gates	Other	No Response
Minipe	2	4	0	0	14
System H ^a	9	3	0	0	20
Gal Oya LB	2	6	0	0	14
PSS	4	8	3	1	4

^a 4 Farmers suggested installing pipe system of water supply which is being experimented in RB of System H.

TABLE Q

FARMER SUGGESTIONS TO IMPROVE WATER DISTRIBUTION
AT DISTRIBUTORY CHANNEL LEVEL (NUMBER OF FARMERS REPORTED)

Scheme	No Change Suggested	Change from Intermittent Supply to continuous Supply	More Frequent Water Rotations	Replace Gates	No Response
Minipe	3	5	0	0	12
System H	22	2	0	0	8
Gal Oya LB	3	7	6	2	4
PSS	4	2	1	10 ^a	6

Note : Some farmers suggested more than one answer

^a Three farmers suggested installing field channel gates while 7 of them urged installing gates at distributory channels.

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TABLE R

FARMER ATTITUDES TOWARDS OFFICERS
(NUMBER OF FARMERS REPORTED)

<u>Scheme</u>	<u>Lack of Officer Interest</u>	<u>No useful Service</u>	<u>Not faithful</u>	<u>Poor Decision Makers</u>	<u>No Relations with Farmers</u>	<u>Performed a Good Service</u>
Minipe	7	2	1	9	2	9
System H	7	6	1	16	6	16
Gal Oya LB	10	10	1	9	7	9
PSS	10	6	1	6	2	6

Note : Some farmers gave more than one answer

TABLE S

ACTIVITIES ACCOMPLISHED BY FARMER ORGANISATIONS
DURING LAST 2 SEASONS (NUMBER OF FARMERS REPORTED)

<u>Scheme</u>	<u>Channel Cleaning</u>	<u>Rehabilitation Earth work</u>	<u>Water Rotation</u>	<u>Improve Farmer's knowledge</u>	<u>Not Applicable</u>	<u>No Response</u>
Minipe	1	0	5	1	14	2
Gal Oya LB	10	3	6	4	5	7

Note : In PSS and System H, farmers did not answer this question.
Some farmers reported more than one activity.

TABLE T

FARMER ATTITUDES TOWARDS FARMER ORGANISATIONS
(NUMBER OF FARMERS REPORTED)

<u>Scheme</u>	<u>Satisfied with the farmer organisations</u>	<u>Not Satisfied</u>	<u>No Response</u>
Minipe	5	7	3
System H ⁺	0	31	1
Gal Oya LB	14	6	2

Note: This refers to turn out groups

Farmer Organisations are not established in the PSS

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TABLE U

FARMER SUGGESTIONS FOR GOVERNMENT RESPONSIBILITY IN RESPECT OF OPERATION
OF THE SCHEME (NUMBER OF FARMERS REPORTED)

Scheme	Field Channel				Distributory Channel			
	Farmers to Undertake	Government to Undertake	Government to Undertake with Farmer Consultations	No Response	Farmers to Undertake	Government to Undertake	Government to Undertake with Farmer Consultations	No Response
Minipe	6	9	0	5	0	8	2	10
System II	14	15	2	1	0	21	0	11
Gal Oya LB	4	10	0	8	1	13	0	8
PSE	9	9	1	1	0	17	0	3

TABLE V

FARMER SUGGESTIONS FOR GOVERNMENT RESPONSIBILITY IN RESPECT OF MAINTENANCE WORK
(NUMBER OF FARMERS REPORTED)

Scheme	Field Channel			Distributory/Branch Channel		
	Government to Undertake full Responsibility	Farmers to Clean and the Government to Undertake Responsibility at Specific Times	No Response	Government to Undertake full Responsibility	Farmers to Undertake Responsibility with some assistance from the Government	No Response
Minipe	5	13	2	10	0	10
System II	6	17	9	24	5	3
Gal Oya LB	1	21	0	17	5	0
PSE	0	20 ^a	0	10	9	1

^a Eighteen farmers said that farmers should be made responsible to clean while 2 suggested farmers to clean under the supervision of officers.

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TABLE W
TYPE OF TAXES AND UTILISATION OF FUNDS
(NUMBER OF FARMERS REPORTED)

Scheme	Type of Taxes Collected			How Funds are Utilised		
	Acreage Tax	Water Tax	Other	No know-ledge	Maintain Channels/Roads	Other
Minipe	19	11	7 ^a	16	4	0
System H	12	28	0	24	4	1
Gal Oya LB	19	0	0	17	2	0
PSS	4	9	0	16	2	0

^a Temple Charges

TABLE X
FARMER ATTITUDES TOWARDS O & M LEVY
(NUMBER OF FARMERS REPORTED)

Scheme	Willing to Pay	Not Willing To Pay	Conditional Willingness to Pay+
Minipe	14	5	1
System H	28	3	1
Gal Oya LB	19	2	1
PSS	17	2	1

+ Farmers willing to pay if water supply is made dependable.

TABLE Y
FARMER SUGGESTIONS TO RECOVER O & M LEVY
FROM DEFAULTERS (NUMBER OF FARMERS REPORTED)

Scheme	By Legal Means	By Persuasion	By Depriving of Water	No Res- ponse
Minipe	17	0	2	1
System H	22	2	7	1
Gal Oya LB *	16	2	6	1
PSS	17	0	3	0

* some farmers suggested more than one measure.

TABLE Z

FARMER SUGGESTIONS REGARDING THE UTILISATION
OF O & M FUNDS (NUMBER OF FARMERS REPORTED)

<u>Scheme</u>	<u>Farmers to</u> <u>work on</u> <u>Payment through</u> <u>O & M Funds</u>	<u>Engage</u> <u>Contractors</u>	<u>Government</u> <u>to undertake</u>	<u>No</u> <u>Response</u>
Minipe	9	5	1	5
System H	25	2	2	3
Gal Oya LB	14	6	1	1
PSS	12	7	0	1

LIST OF OFFICIALS INTERVIEWED

1. Mr. Nanda Abeywickrama,
Secretary,
Lands and Land Development.
2. Mr. J. Bandaragoda,
Executive Director,
Mahaweli Economic Agency.
3. Mr. R. S. Jayaratne,
Additional Secretary
Ministry of Lands and Land Development
4. Mr. D. G. Premachandra,
Additional Secretary,
Ministry of Lands and Land Development
5. Mr. D. Nilaweera,
Additional Secretary,
Ministry of Agricultural Development and Research
6. Mr. H.P.G.J. Alwis,
Director,
Water Resources Development Division,
Ministry of Lands and Land Development.
7. Mr. K.D.P. Perera,
Director,
Irrigation Management Division,
Ministry of Lands and Land Development.
8. Mr. S. Senthinathan,
Deputy Director of Irrigation, Amparai Range.
9. Mr. D. Buddhadasa,
Consultant Agronomist,
Mahaweli Development Authority.
10. Mr. Jinasena,
Ministry of Agricultural Development & Research.
11. Officers of the Department of Regional Development,
Ministry of Plan Implementation.

MINIPE SCHEME

12. Mr. J. B. A. Jayasekera,
Irrigation Engineer,
Hasalaka.
13. Mr. N.H.W. Palliyaguru,
Technical Assistant,
I.E. Office,
Hasalaka.
14. Technical Assistant, Hasalaka
15. Technical Officer attached to the
Minipe Water Management Project.

MAHAWELI SYSTEM 'H'

16. Mr. Gunatilleke,
Deputy Resident Project Manager/Water Management
Galnewa Region.
17. Mr. Jayasinghe,
Lands Officer, Galnewa Region.
18. Mr. Yatawara,
Irrigation Engineer, Flow Monitoring Unit, System H
19. Mr. P.T.P. Fernando,
Irrigation Engineer, Galnewa Block
20. Mr. A. C. Hewaratne,
Engineering Assistant, Galnewa Block
21. Mr. Herath,
Unit Manager, Galnewa Block, Unit 1
22. Mr. W.M.N. Weerasekera,
Lands Officer, Galnewa Block.
23. Mr. W.N. Boteju,
Unit Manager, Galnewa Block, Unit 6.
24. Irrigation Engineer, Block 404
25. Three Unit Managers in Block 404

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GAL OYA LEFT BANK

26. Mr. Godaliyadda,
Irrigation Engineer, Ampara
27. Mr. S. Munasinghe,
District Lands Officer, Ampara
28. Mr. Ibra Lebbe,
Assistant Commissioner,
Department of Agrarian Services (DAS)
Ampara
29. Technical Assistant,
I.Es Office, Ampara
30. Divisional Officer,
Agrarian Service Centre (ASC),
Uhana.
31. Divisional Officer,
ASC, Central Camp.

PARAKRAMA SAMUDRAYA SCHEME

32. Mr. L.T. Wijesuriya,
Deputy Director of Irrigation,
Polonnaruwa Range.
33. Mr. Arasalingam,
Chief Irrigation Engineer,
Polonnaruwa Range.
34. Mr. Ivan Silva,
Irrigation Engineer, Polonnaruwa.
35. Mr. Wijemanna,
Divisional Assistant,
I.Es Office, Polonnaruwa.
36. Technical Assistant,
I.Es Office, Polonnaruwa.
37. Divisional Officer,
ASC, Pulasthigama.